

## 13 CONDUCT OF OPERATIONS

### 13.1 Organizational Structure of Applicant

#### 13.1.1 Introduction

Duke Energy Carolinas', LLC. (Duke) (the applicant) organizational structure includes the design, construction, and preoperational responsibilities of the organizational structure. The management and technical support organization includes a description of the corporate or home office organization, its functions and responsibilities, and the number and the qualifications of personnel. The applicant's organizational structure activities include facility design, design review, design approval, construction management, testing, and operation of the plant. The descriptions of the design and construction and preoperational responsibilities include the following:

- how these responsibilities are assigned by the headquarters staff and implemented within the organizational units
- the responsible working- or performance-level organizational unit
- the estimated number of persons to be assigned to each unit with responsibility for the project
- the general educational and experience requirements for identified positions or classes of positions
- early plans for providing technical support for the operation of the facility

This section of the of the William States Lee III Nuclear Station (WLS) combined license (COL) Final Safety Analysis Report (FSAR) also describes the structure, functions, and responsibilities of the onsite organization established to operate and maintain the plant.

#### 13.1.2 Summary of Application

WLS COL FSAR, Revision 11, Section 13.1 incorporates by reference AP1000 Design Control Document (DCD), Revision 19, Section 13.1.

In addition, in WLS COL FSAR Section 13.1, the applicant provided the following:

##### AP1000 COL Information Items

- WLS COL 13.1-1

The applicant provided additional information in WLS COL 13.1-1 to resolve COL Information Item 13.1-1 (COL Action Item 13.1-1). COL Information Item 13.1-1 requires the COL applicant to describe its organizational structure. WLS COL 13.1-1 describes organizational positions of the nuclear power station and owner/applicant corporations and associated functions and

responsibilities. WLS COL FSAR Table 1.8-202, "COL Item Tabulation," provides WLS COL 13.1-1 cross-references.

- WLS COL 9.5-1

The applicant provided additional information in WLS COL 9.5-1, describing the fire protection program in WLS COL FSAR Section 9.5.1.8. For this WLS COL item, the applicant added a new WLS COL FSAR Section 13.1.1.2.10, "Fire Protection," and a new WLS COL FSAR Section 13.1.2.1.2.9, "Engineer - Fire Protection." WLS COL FSAR Table 1.8-202, "COL Item Tabulation," provides WLS COL 9.5-1 cross-references.

- WLS COL 18.6-1

The applicant provided additional information in WLS COL 18.6-1, describing the qualifications of the nuclear plant technical support personnel. WLS COL 18.6-1 is addressed under WLS COL FSAR Section 13.1.1.4, "Qualifications of Technical Support Personnel,"; WLS COL FSAR Section 13.1.3.1, "Qualification of Nuclear Plant Personnel,"; WLS COL FSAR Table 13.1-201 "Generic Position/Site Specific Position Cross Reference,"; and WLS COL FSAR Table 13.1-202 "Minimum On-Duty Operations Shift Organization For Two-Unit Plant"; and WLS COL FSAR Table 1.8-202, "COL Item Tabulation," provides WLS COL 18.6-1 cross-references.

- WLS COL 18.10-1

The applicant provided additional information in WLS COL 18.10-1 to address the responsibilities of the manager in charge of nuclear training. WLS COL 18.10-1 is addressed in WLS COL FSAR Section 13.1.1.3.2.4, "Functional Manager – Training and Development" WLS COL FSAR Table 1.8-202, "COL Item Tabulation," provides WLS COL 18.10-1 cross-references.

### **13.1.3 Regulatory Basis**

The regulatory basis of the information incorporated by reference is addressed in NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design," and its supplements.

In addition, the acceptance criteria associated with the relevant requirements of NRC regulations for WLS COL 13.1-1, WLS COL 9.5-1, WLS COL 18.6-1, and WLS COL 18.10-1 are given in WLS COL FSAR Sections 13.1.1, "Management and Technical Support Organization," and 13.1.2-13.1.3, "Operating Organization," of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition."

The applicable regulatory guidance for the organizational structure of the applicant is as follows:

- American National Standards Institute (ANSI)/American Nuclear Society (ANS)-3.1-1993, "American National Standard for Selection, Qualification, and Training of Personnel for Nuclear Power Plants," as endorsed and amended by Regulatory Guide (RG) 1.8, Revision 3, "Qualification and Training of Personnel for Nuclear Power Plants."

The applicable regulations and regulatory guidance for the management, technical support, and operating organizations of the applicant are as follows:

- Title 10 of the *Code of Federal Regulations* (10 CFR) 50.34, “Contents of applications; technical information”
- 10 CFR 50.40, “Common standards”
- 10 CFR 52.47, “Contents of applications; technical information”
- 10 CFR 50.48, “Fire Protection”
- 10 CFR 50.50 Appendix B, “Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants”
- 10 CFR 50.54, “Conditions of licenses”
- 10 CFR Part 55, “Operator’s Licenses”
- 10 CFR 50.71, “Maintenance of records, making of reports”
- 10 CFR 52.79, “Contents of applications; technical information in final safety analysis report”
- RG 1.33, Revision 2, “Quality Assurance Program Requirements (Operation)”
- RG 1.8, “Qualification and Training of Personnel for Nuclear Power Plants”
- RG 1.28, “Quality Assurance Program Criteria (Design and Construction)”
- RG 1.33, “Quality Assurance Program Requirements (Operation)”
- RG 1.68, “Initial Test Programs for Water-cooled Nuclear Power Plants”
- RG 1.114, “Guidance to Operators at the Controls and to Senior Operators in the Control Room of a Nuclear Power Unit”
- RG 1.160, “Monitoring the Effectiveness of Maintenance at Nuclear Power Plants”
- RG 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis.”
- RG 1.175, “An Approach for Plant-Specific, Risk-Informed Decisionmaking: Inservice Testing”
- RG 1.177, “An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications”
- RG 1.178, “An Approach for Plant-Specific Risk-Informed Decisionmaking for Inservice Inspection of Piping”
- RG 1.182, “Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants”

- RG 1.206 “Combined License Applications for Nuclear Power Plants (LWR Edition)”
- NUREG-0660, “NRC Action Plan Developed as a Result of the TMI-1 Accident”
- NUREG-0694, “TMI-Related Requirements for New Operating Licenses”
- NUREG-0711, “Human Factors Engineering Program Review Model”
- NUREG-0718, “Licensing Requirements for Pending Applications for Construction Permits and Manufacturing License”
- NUREG-0737 and Supplement 1, “A Clarification of TMI Action Plan Requirements”

#### **13.1.4 Technical Evaluation**

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed WLS COL FSAR Section 13.1 and checked the referenced DCD to ensure that the combination of the DCD and the COL application represents the complete scope of information relating to this review topic.<sup>1</sup> The NRC staff’s (the staff) review confirmed that the information in the application and incorporated by reference addresses the required information relating to the organizational structure of the applicant. The results of the staff’s evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

The staff reviewed the information in the WLS COL FSAR:

##### AP1000 COL Information Items

- WLS COL 13.1-1

The staff reviewed WLS COL 13.1-1 related to the organizational structure of the COL applicant included under WLS COL FSAR Section 13.1. WLS COL FSAR Section 13.1 describes the organizational positions of a nuclear power plant and owner/applicant corporations and associated functions and responsibilities.

The applicant provided the following additional WLS site-specific COL information to resolve COL Information Item 13.1-1, which addresses the organizational structure of the COL applicant. COL Information Item 13.1-1 states:

Combined License applicants referencing the AP1000 certified design will address adequacy of the organizational structure.

The commitment was also captured as COL Action Item 13.1-1 in NUREG-1793, Appendix F, which states:

The COL applicant will describe its organizational structure.

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<sup>1</sup> See Section 1.2.2 of this report for a discussion of the staff’s review related to verification of the scope of information to be included in a COL application that references a design certification (DC).

The applicant provided additional information as part of the WLS COL FSAR to describe the organizational positions of a nuclear power station and owner/applicant corporations and associated functions and responsibilities. The position titles used in the text are generic and describe the function of the position. The applicant stated that WLS COL FSAR Table 13.1-201, "Generic Position/Site-Specific Position Cross-Reference" provides a cross-reference to identify site-specific position titles.

The applicant added new sections and information related to the site-specific organizational structure to WLS COL FSAR Section 13.1 beyond the structure given in RG 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)." The new section titles are:

Section 13.1.1, "Management and Technical Support Organization"

Section 13.1.2, "Operating Organization"

Section 13.1.3, "Qualifications of Nuclear Plant Personnel"

Section 13.1.4, "Combined License Information Item"

Section 13.1.5, "References"

Table 13.1-201, "Generic Position/Site-Specific Position Cross-Reference"

Table 13.1-202, "Minimum On-Duty Operations Shift Organization for Two-Unit Plant"

Figure 13.1-201, "Plant Management Organization"

Section 13.1-202, "Shift Operations Organization"

Section 13.1-203, "Nuclear Executive Organization"

Section 13.1-204, "Duke Energy Corporate"

Section 13AA-201, "Construction Management Organization"

Section 13AA-202 "Hiring Schedule for Plant Staff"

In addition, the applicant added a new appendix to Chapter 13 titled, "Appendix 13AA, Design and Construction." This appendix describes the applicant's construction organization. Once plant operation commences, this appendix will become historical.

The staff reviewed WLS COL 13.1-1 and concludes that the management, technical support, and operating organizations, as described are acceptable and meet the requirements of 10 CFR 50.40(b) based on the following.

The applicant described its organization for the management of, and its means of providing, technical support for the plant staff for the design, construction, and operation of the facility and described its plans to manage the project and utilize the nuclear steam system supplier (NSSS) vendor and architect-engineer (AE). These plans provide reasonable assurance that the applicant will establish an acceptable organization and that sufficient resources are available to

provide offsite technical support and to satisfy the applicant's commitments for the design, construction, and operation of the facility.

The applicant described the assignment of plant operating responsibilities; the reporting chain up through the chief executive officer; the functions and responsibilities of each major plant staff group; the proposed shift crew complement for single-unit or multiple-unit operation; the qualification requirements for members of its plant staff; and staff qualifications. In WLS COL FSAR Table 1.9-202, "Conformance with SRP Acceptance Criteria," the applicant noted an exception to the criteria of NUREG-0800, Section 13.1.2-13.1.3 that suggests resumes of personnel holding plant managerial and supervisory positions be included in the WLS COL FSAR. The staff finds this exception to the criteria of NUREG-0800, Section 13.1.2-13.1.3 acceptable because resumes for management and principal supervisory and technical positions will be available for review after position vacancies are filled.

NUREG-0800, Section 13.1.2-13.1.3, "Operating Organization," provides the following acceptable characteristics for an applicant's operating organization:

1. The applicant is technically qualified, as specified in 10 CFR 50.40(b).
2. An adequate number of licensed operators will be available at all required times to satisfy the minimum staffing requirements of 10 CFR 50.54(j).
3. On-shift personnel are able to provide initial facility response in the event of an emergency.
4. Organizational requirements for the plant manager and radiation protection manager have been satisfied.
5. Qualification requirements and qualifications of plant personnel conform to the guidance of RG 1.8.
6. Organizational requirements conform to the guidance of RG 1.33.

The staff finds that the operating organization proposed by the applicant will comply with these characteristics. These findings contribute to the judgment that the applicant complies with the requirements of 10 CFR 50.40(b). That is, the applicant is technically qualified to engage in design and construction activities and to operate a nuclear power plant; that the applicant will have the necessary managerial and technical resources to support the plant staff in the event of an emergency; and that the applicant has identified the organizational positions responsible for fire protection matters and delegated the authorities to these positions to implement fire protection requirements as discussed under WLS COL 9.5-1 below.

- WLS COL 9.5-1

The applicant added text to WLS COL FSAR Section 13.1.1.2.10, "Fire Protection," indicating that the nuclear power station is committed to maintaining a fire protection program as described in WLS COL FSAR Section 9.5.1.8, and that the site executive in charge of plant management, through the engineer in charge of fire protection, is responsible for the fire protection program. The applicant added text to WLS COL FSAR Section 13.1.2.1.2.9,

“Engineer - Fire Protection,” describing the responsibilities of the engineer in charge of the fire protection program.

The staff reviewed WLS COL 9.5-1 relative to the text added to Sections 13.1.1.2.10 and 13.1.2.1.2.9 of the WLS COL application. Based on the management descriptions provided in WLS COL FSAR Sections 13.1.1.2.10 and 13.1.1.3.2.1.4, the staff finds the applicant’s fire protection organization meets the guidance of NUREG-0800. The technical review for WLS COL 9.5-1, as it relates to the programmatic requirements, is addressed in Section 9.5.1.8 of this report.

- WLS COL 18.6-1

The staff reviewed WLS COL 18.6-1, which describes the qualifications of the nuclear plant technical support personnel.

In WLS COL FSAR Table 1.9-202, “Conformance with SRP Acceptance Criteria,” the applicant noted an exception to the criteria of NUREG-0800, Section 13.1.1. The SRP acceptance criteria suggest that the experience requirements of managers and supervisors of the technical support organization are to be included in the WLS COL FSAR. The staff finds this exception to the criteria of NUREG-0800, Section 13.1.1 acceptable because the applicant added text to WLS COL FSAR Section 13.1.1.4, “Qualifications of Technical Support Personnel,” stating the qualifications of managers and supervisors of the technical support organization will meet the education and experience requirements described in ANSI/ANS-3.1-1993 and RG 1.8.

The applicant added text to WLS COL FSAR Section 13.1.3, “Qualification of Nuclear Plant Personnel,” stating, in WLS COL FSAR Section 13.1.3.1, the qualifications of managers, supervisors, operators, and technicians of the operating organization will meet the education and experience requirements described in ANSI/ANS-3.1-1993 and RG 1.8. In addition, WLS COL FSAR Section 13.1.3.2 states that resumes and other documentation of the qualifications and experience of initial appointees to appropriate management and supervisory positions will be available for review after position vacancies are filled.

The applicant added WLS COL FSAR Table 13.1-202, “Minimum On-Duty Operations Shift Organization for Two-Unit Plant.” WLS COL FSAR Table 13.1-202 describes the minimum composition of the operating shift crew for all modes of operation. Position titles, license requirements and minimum shift manning for the various modes of operation are addressed in Technical Specifications and will be addressed in administrative procedures.

The staff reviewed the text added to WLS COL FSAR Sections 13.1.1.4 and 13.1.3.1 relative to WLS COL 18.6-1 and concludes that the qualification requirements are acceptable and meet the requirements of 10 CFR 50.40(b) based on the following.

The applicant described its organization for the management of, and its means of providing, technical support for the plant staff for the design, construction, and operation of the facility and described its plans for managing the project and utilizing the NSSS vendor and AE. These plans give reasonable assurance that the applicant will establish an acceptable organization and that sufficient resources are available to provide offsite technical support and to satisfy the applicant's commitments for the design, construction, and operation of the facility.

- WLS COL 18.10-1

The staff reviewed WLS COL 18.10-1 included under WLS COL FSAR Section 13.1.1.3.2.4, "Functional Manager – Training and Development." This section describes the responsibilities of the manager in charge of nuclear training relative to the site training programs required for the safe and proper operation and maintenance of the plant. This item is cross-referenced to WLS COL FSAR Section 18.10 in WLS COL FSAR Table 1.8-202, "COL Item Tabulation." The staff concludes that the qualification requirements are acceptable and meet the requirements of 10 CFR 50.40(b) and the regulatory guidelines in NUREG-0800, Sections 13.1.1 and 13.1.2-13.1.3 because the applicant described how the training manager will carry out his or her position responsibilities for designing, developing, implementing, and maintaining training programs for the safe and proper operation and maintenance of the plant.

### **13.1.5 Post Combined License Activities**

There are no post COL activities related to this section.

### **13.1.6 Conclusion**

The staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant addressed the required information relating to the organizational structure of the applicant, and there is no outstanding information expected to be addressed in the WLS COL FSAR related to this section. The results of the staff's technical evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

The applicant described clear responsibilities and definite resources for the design and construction of the facility and has described its plans for managing the project and utilizing the Nuclear Steam Supply System (NSSS) vendor and architect engineer (AE). The staff reviewed these plans and determined that they provide adequate assurance that an acceptable organization has been established and that sufficient resources are available to satisfy the applicant's commitments for the design and construction of the facility. These findings contribute to the judgment that the applicant complies with the requirements of 10 CFR 50.34, 10 CFR 50.40, 10 CFR 50.48, 10 CFR Part 50 Appendix B, 10 CFR 52.47, 10 CFR 52.79, and 10 CFR 52.80, as applicable; that is, the applicant is technically qualified to engage in design and construction activities.

The applicant described its organization for the management of, and its means of providing, technical support for the plant staff during operation of the facility. These measures have been reviewed and the staff finds that the applicant has an acceptable organization and adequate resources to provide offsite technical support for the operation of the facility under both normal and off-normal conditions.

The applicant described the assignment of plant operating responsibilities; the reporting chain up through the chief executive office of the applicant; the proposed size of the regular plant staff; the functions and responsibilities of each major plant staff group; the proposed shift crew complement for single-unit or multiple-unit operation; the qualification requirements for members of its plant staff; and plant staff qualifications (through personnel resumes for management and



principle supervisory and technical positions as submitted during the later stages of plant design, construction, and licensing).

The staff finds that the operating organization proposed by the applicant is acceptable because it meets the requirements of 10 CFR 50.40(b), as applicable. That is, the applicant is technically qualified to operate a nuclear power plant; and will have the necessary managerial and technical resources to support the plant staff in the event of an emergency and has identified the organizational positions responsible for fire protection matters and delegated the authorities to these positions to implement fire protection requirements.

In addition, the staff concludes that the information presented in the WLS COL FSAR is acceptable because it meets the acceptance criteria provided in NUREG-0800, Section 13.1. The staff based its conclusion on the following:

- WLS COL 13.1-1, as it relates to the organizational structure of the COL applicant, is acceptable because it meets the requirements of 10 CFR 50.40(b).
- WLS COL 9.5-1, as it relates to the fire protection organization meets the guidance of NUREG-0800, Section 13.1 and is acceptable.
- WLS COL 18.6-1, as it relates to the qualifications of nuclear plant technical support personnel, is acceptable because it meets the requirements of 10 CFR 50.40(b).
- WLS COL 18.10-1, as it relates to the qualification requirements for the manager in charge of nuclear training, is acceptable because it meets the requirements of 10 CFR 50.40(b).

## **13.2 Training**

### **13.2.1 Introduction**

This section of the WLS COL FSAR addresses the description and schedule of the training program for reactor operators (ROs) and senior reactor operators (SROs) (i.e., licensed operators). This section of the WLS COL FSAR addresses the scope of licensing examinations as well as training requirements. The licensed operator training program also includes the requalification programs as required in 10 CFR 50.54(i) (i-1) and 10 CFR 55.59, "Requalification." In addition, this section of the WLS COL FSAR includes the description and schedule of the training program for non-licensed plant staff.

### **13.2.2 Summary of Application**

WLS COL FSAR, Revision 11, Section 13.2, incorporates by reference AP1000 DCD, Revision 19, Section 13.2.

In addition, in WLS COL FSAR Section 13.2, the applicant provided the following:

AP1000 COL Information Items

- STD COL 13.2-1

The applicant provided additional information in Standard (STD) COL 13.2-1 to resolve COL Information Item 13.2-1 (COL Action Item 13.2-1), which incorporates the provisions of Nuclear Energy Institute (NEI) 06-13A, "Template for an Industry Training Program Description," providing the description and scheduling of the training program for plant personnel, including the requalification program for licensed operators.

- STD COL 18.10-1

The applicant provided additional information in STD COL 18.10-1 to address training for those operators involved in the Human Factors Engineering (HFE) Verification and Validation Program, using a systematic approach to training and Westinghouse Commercial Atomic Power (WCAP)-14655, "Designer's Input to the Training of the Human Factors Engineering Verification and Validation Personnel."

License Conditions

- Part 10, License Condition 3, Items B.1, C.3

The applicant proposed a license condition in Part 10 of the WLS COL application, which provides the milestones for implementing the Reactor Operator Training (B.1) and the applicable portions of the Non-Licensed Plant Staff Training Program (C.3) related to radioactive material required in accordance with 10 CFR 50.120, "Training and Qualification of Nuclear Power Plant Personnel." The license condition related to the portions of the Non-Licensed Plant Staff Training Program applicable to radioactive material is addressed in Chapter 1 of this report.

- Part 10, License Condition 6

The applicant proposed a license condition to provide a schedule to support the NRC's inspection of operational programs included in WLS COL FSAR Table 13.4-201, including the Non-Licensed Plant Staff Training Program, required in accordance with 10 CFR 50.120, Reactor Operator Training Program, and the Reactor Operator Requalification Program.

**13.2.3 Regulatory Basis**

The regulatory basis of the information incorporated by reference is addressed in NUREG-1793 and its supplements.

In addition, the acceptance criteria associated with the relevant requirements of NRC regulations for the description and schedule of the training program for licensed operators are given in WLS COL FSAR Sections 13.2.1 and 13.2.2 and in NUREG-0800, Chapter 18.

The applicable regulations and regulatory guidance documents for STD COL 13.2-1 are as follows:

- 10 CFR 50.54(m)

- 10 CFR Part 55, “Operators’ licenses”
- RG 1.8
- RG 1.149, “Nuclear Power Plant Simulation Facilities for Use in Operator Training and License Examinations”
- NUREG-1021, “Operator Licensing Examination Standards for Power Reactors”

The applicable regulations for the Non-Licensed Plant Staff Training Program are as follows:

- 10 CFR 50.120
- 10 CFR 52.79(a)(33), “Contents of applications; technical information”

The applicable regulations for the licensed operators training program are as follows:

- 10 CFR 55.13, “General exemptions”
- 10 CFR 55.31, “How to apply”
- 10 CFR 55.41, “Written examinations: Operators”
- 10 CFR 55.43, “Written examinations: Senior operators”
- 10 CFR 55.45, “Operating tests”

The applicable regulations for the licensed operator’s requalification program are found in the following:

- 10 CFR 50.34(b), “Final safety analysis report”
- 10 CFR 50.54(i)
- 10 CFR 55.59

The applicable regulatory guidance for STD COL 18.10-1 is as follows:

- NUREG-0711, “Human Factors Engineering Program Review Model”

#### **13.2.4 Technical Evaluation**

The staff reviewed WLS COL FSAR Section 13.2 and checked the referenced DCD to ensure that the combination of the DCD and the COL application represents the complete scope of information relating to this review topic.<sup>1</sup> The staff’s review confirmed that the information in the application and incorporated by reference addresses the required information relating to the description and schedule of the training programs for nuclear plant personnel. The results of the staff’s evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

Section 1.2.3 of this report provides a discussion of the strategy used by the staff to perform one technical review for each standard issue outside the scope of the design certification (DC) and use this review to evaluate subsequent COL applications. To ensure that the staff's findings on standard content that were documented in the SER for the reference COL application (Vogtle Electric Generating Plant (VEGP), Units 3 and 4) were equally applicable to the WLS Units 1 and 2 COL application, the staff undertook the following reviews.

- The staff compared the VEGP COL FSAR, Revision 5 to the WLS COL FSAR. In performing this comparison, the staff considered changes made to the WLS COL FSAR (and other parts of the COL application, as applicable) resulting from responses to requests for additional information (RAIs).
- The staff confirmed that all responses to RAIs identified in the corresponding standard content evaluation were endorsed.
- The staff verified that the site-specific differences were not relevant.

The staff completed its review and found the evaluation performed for the standard content to be directly applicable to the WLS COL application. This standard content material is identified in this report by use of italicized, double-indented formatting. Section 1.2.3 of this report provides an explanation of why the standard content material from the SER for the reference COL application (VEGP) includes evaluation material from the SER for the Bellefonte Nuclear Station (BLN) Units 3 and 4 COL application.

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.2.4:

AP1000 COL Information Items

- *STD COL 13.2-1*

*The NRC staff reviewed STD COL 13.2-1 related to COL Information Item 13.2-1 (COL Action Item 13.2-1) included under Section 13.2 of the BLN COL FSAR. COL Information Item 13.2-1 states:*

*The Combined License applicants referencing the AP1000 certified design will develop and implement training programs for plant personnel. This includes the training program for the operations personnel who participate as subjects in the human factors engineering verification and validation. These Combined License applicant training programs will address the scope of licensing examinations as well as new training requirements.*

*The commitment was also captured as COL Action Item 13.2-1 in Appendix F of the NRC staff FSER for the AP1000 DCD (NUREG-1793), which states:*

*The COL applicant will develop and implement training programs for plant personnel.*

*The applicant provided the following text to supplement Section 13.2, "Training," of the AP1000 DCD, dealing with the training program for plant personnel.*

*This section incorporates by reference NEI 06-13 (sic) [NEI 06-13A], Template for an Industry Training Program Description. See Table 1.6-201.*

*This technical report provides a complete training program description for use with COL applications. The staff has endorsed NEI 06-13A, Revision 1, as it provides an acceptable template for describing licensed operators and non-licensed plant staff training programs. The applicant has incorporated by reference NEI 06-13A, Revision 1.*

*The applicant provided the following text to supplement Section 13.2, "Training," of the AP1000 DCD, which is included in the [design certification] DC amendment as part of the BLN COL FSAR to address STD COL 13.2-1, dealing with the training program for plant personnel.*

*Table 13.4-201 provides milestones for training implementation.*

*NUREG-0800, Section 13.2.1, establishes milestones for the licensed operators and non-licensed plant staff training programs and for the licensed operator requalification training program. The BLN COL FSAR has identified those milestones in Table 13.4-201. The staff determined that this is acceptable, as the milestone information included in this table meets the criteria found in NUREG-0800.*

- *STD COL 18.10-1*

*The NRC staff reviewed STD COL 18.10-1, related to COL Information Item 18.10-1 (COL Action Item 18.10.3-1). COL Information Item 18.10-1 states:*

*Combined License applicants referencing the AP1000 certified design will develop and implement training programs for plant personnel. This includes the training program for the operations personnel who participate as subjects in the human factors engineering verification and validation. These Combined License applicant training programs will address the scope of licensing examinations as well as new training requirements.*

*The commitment was also captured as COL Action Item 18.10.3-1 in Appendix F of the NRC staff's FSER for the AP1000 DCD (NUREG-1793), which states:*

*With regard to the training program development, the COL applicant will: (1) address the training program development considerations in NUREG-0711, (2) address relevant concerns identified in this report [NUREG-1793], and (3) identify the minimum documentation that the COL applicant will provide to enable the staff to complete its review.*

*This section refers to Sections 13.1, "Organizational Structure of Applicant" and 13.2, "Training" regarding the training program development.*

*The NRC staff reviewed the resolution to STD COL 18.10-1, related to staffing and qualifications included under Section 18.10 of the BLN COL FSAR. The applicant provided the referenced NRC-endorsed NEI 06-13A, Revision 1, to address COL Information Item 18.10-1.*

*NEI 06-13A, Revision 1 was written to provide COL applicants with a generic program description for use with COL application submittals. In a letter dated December 5, 2008, the staff stated that the training template of NEI 06-13A, Revision 1, was an acceptable means for describing licensed operator and non-licensed plant staff training programs. The staff finds the applicant's incorporation of NEI 06-13A, Revision 1 to be acceptable because it utilizes an NRC-endorsed methodology.*

*In Table 1.9-202, "Conformance with SRP Acceptance Criteria," of the BLN COL FSAR, the applicant identified two exceptions to the criteria of NUREG-0800, Section 13.2, which recommends following the guidance in NUREG-0711 and RG 1.149. Further, the applicant stated in Table 1.9-202 that NEI 06-13A is incorporated by reference into the BLN COL FSAR. The staff's safety evaluation report for NEI 06-13A (ML0709504790) states that NEI 06-13A complies with the guidance in NUREG-0711 and RG 1.149. Therefore, the staff finds the two exceptions to the criteria in NUREG-0800, Section 13.2 to be acceptable because NEI 06-13A complies with the guidance in NUREG-0711 and RG 1.149.*

#### License Conditions

- *Part 10, License Condition 3, Item B1*

*The NRC staff finds the implementation milestone for the Reactor Operator Training Program (18 months prior to schedule date of initial fuel load) to be acceptable because it is consistent with 10 CFR 50.120.*

- *Part 10, License Condition 6*

*The applicant proposed a license condition in Part 10 of the VEGP COL application to provide a schedule to support the NRC's inspection of operational programs, including the Non-Licensed Plant Staff Training Program, (required in accordance with 10 CFR 50.120), Reactor Operator Training Program, and Reactor Operation Requalification Program. The proposed license condition is consistent with the policy established in SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," for operational programs in general, and is acceptable.*

### **13.2.5 Post Combined License Activities**

For the reasons discussed in the Technical Evaluation section above, the staff finds the following license conditions acceptable:

- License Condition (13-1) – The licensee shall implement the Reactor Operator Training Program at least 18 months prior to schedule date of initial fuel load.
- License Condition (13-2) – No later than 12 months after issuance of the COL, the licensee shall submit to the Director of the Office of New Reactors (NRO) a schedule that supports planning for and conduct of NRC inspection of the operational programs (the Non-Licensed Plant Staff Training Program (required in accordance with 10 CFR 50.120), Reactor Operator Training Program, and Reactor Operation Requalification Program). The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until these operational programs have been fully implemented.

### **13.2.6 Conclusion**

The staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant addressed the required information relating to the description and schedule of the training program for licensed operators, and there is no outstanding information expected to be addressed in the WLS COL FSAR related to this section. The results of the staff's technical evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

In addition, the staff concludes that the information presented in the WLS COL FSAR is acceptable because it meets the acceptance criteria provided in NUREG-0800, Section 13.2. The staff based its conclusion on the following:

- STD COL 13.2-1 incorporates by reference Nuclear Energy Institute (NEI) 06-13A, Revision 1, which provides an acceptable template for describing licensed operators and non-licensed plant staff training programs. The staff finds this acceptable, as it applies an NRC-endorsed approach.
- STD COL 18.10-1, relating to training, references WLS COL FSAR Section 13.2, in which the applicant committed to use WCAP-14655 to ensure a systematic approach to training development and has referenced NEI 06-13A, Revision 1. The staff finds this acceptable because it applies an NRC-endorsed approach.

## **13.3 Emergency Planning**

### **13.3.1 Introduction**

This section of the WLS COL FSAR addresses the plans, design features, facilities, functions, and equipment necessary for radiological emergency planning (EP) that must be considered in a COL application (hereinafter referred to as "COLA" or "application"). This includes both the COL applicant's onsite emergency plan and State and local (offsite) emergency plans, which the

NRC and the Federal Emergency Management Agency (FEMA) evaluated to determine whether the plans are adequate, and that there is reasonable assurance that they can be implemented. The emergency plans are an expression of the overall concept of operation and describe the essential elements of advance planning that have been considered and the provisions that have been made to cope with radiological emergency situations.

Duke is the applicant for the WLS Units 1 and 2 COLs (hereinafter referred to as “Lee Nuclear Station” for discussions of the site or plant, “WLS” as a description of the applicant, or “applicant”). Duke submitted its COLA (Revision 0) on December 12, 2007, for two new nuclear reactors, which will be located in the eastern portion of Cherokee County in north central South Carolina, approximately (56 kilometers (km)) (35 miles (mi)) southwest of Charlotte, North Carolina (NC). WLS encompasses approximately 768.9 hectares (1900 acres) of property. In the early 1970s, the site was evaluated for construction of three nuclear units. The NRC docketed the application on February 25, 2008 (Docket Nos. 52-018 and 52-019).

The applicant submitted a complete and integrated emergency plan for WLS pursuant to 10 CFR 52.79(a)(21), which consists of the Lee Nuclear Station Emergency Plan in Part 5 of the COLA (hereinafter referred to as “Emergency Plan” or “WLS Emergency Plan”), supplemental information that includes the offsite radiological emergency response plans for the States of South Carolina and North Carolina and the Counties of Cherokee, Cleveland, York, and the Lee Nuclear Station Evacuation Time Estimate (ETE) Report No. KLD TR-407, Revision 2, “William S. Lee Nuclear Station– Development of Evacuation Time Estimates,” March 2010 (hereinafter referred to as “ETE Report”). The application also includes Table 3.8-1, “Emergency Plan Inspections, Tests, Analyses, and Acceptance Criteria,” in Part 10, “License Conditions and ITAAC,” which provides a listing of EP ITAAC that address required elements of emergency planning that cannot be completed during the COLA stage, and that will be completed before initial fuel load. The COLA also references the AP1000 standard design certification, NUREG-1793 “Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design,” Revision 19.

As described below, in consultation with FEMA, the staff reviewed the COLA, ETE Report, the applicant’s responses to RAIs, and generally available reference material in accordance with the guidance provided in the Standard Review Plan (SRP) NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition,” Revision 3, March 2007, Section 13.3, “Emergency Planning,” and Section 14.3.10, “Emergency Planning – Inspections, Tests, Analyses, and Acceptance Criteria.” FEMA reviewed the offsite radiological emergency response plans of the States of South Carolina and North Carolina and local government plans for Cherokee, Cleveland, and York Counties.

In a February 17, 2010, letter, FEMA provided the NRC with its Interim Finding Report for Reasonable Assurance for the WLS COLA, which found that all planning standards associated with their review are adequate; the State and local emergency plans are adequate; and there is reasonable assurance that the plans can be implemented with no corrections needed. The staff reviewed the FEMA findings, and the overall FEMA conclusions are reflected below in Sections 13.3.4 and 13.3.6 of this report.



### 13.3.2 Summary of Application

WLS COL FSAR, Revision 11, Section 13.3, incorporates by reference AP1000 DCD, Revision 19, Section 13.3. In addition, the applicant provided the following in the COLA.

#### Departures

In WLS COL FSAR Tier 2<sup>2</sup>, Table 1.8-201, "Summary of FSAR Departures from the DCD," and WLS COLA Part 7, "Departures and Exemption Requests," the applicant identified one plant-specific departure from the AP1000 generic DCD, which is associated with emergency planning:

- WLS DEP 18.8-1

The Technical Support Center (TSC) is not located in the control support area (CSA) as identified in AP1000 DCD Section 18.8.3.5; the TSC location is as described in the Emergency Plan. Additionally, the Operations Support Center (OSC) is also being moved from the location identified in AP1000 DCD Sections 12.5.2.2 and 18.8.3.6 and as identified on AP1000 DCD Figures 1.2-18, 9A-3 (Sheet 1 of 3), 12.3-2 (Sheet 11 of 15), and 12.3-3 (Sheet 11 of 16); the OSC location is as described in the Emergency Plan.

The staff's evaluation of the applicant's description of this AP1000 DCD departure is addressed below in Section 13.3.4.8 of this report.

#### AP1000 COL Information Items

Consistent with the AP1000 Tier 2 DCD, in WLS COL FSAR Table 1.8-202, "COL Item Tabulation," the applicant identified AP1000 DCD COL (information) items, including the AP1000 DCD subsections and WLS COL FSAR sections where each COL item is resolved. In WLS COL FSAR Section 13.3, the applicant identified the following two COL items relating to emergency planning:

- STD COL 13.3-1

The applicant provided additional information in STD COL 13.3-1 to address COL Information Item 13.3-1 (COL Action Item 13.3-1) of the AP1000 DCD, which states:

Combined License applicants referencing the AP1000 certified design will address emergency planning including post-72 hour actions and its communication interface.

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<sup>2</sup> The definitions of Tier 1, Tier 2, and Tier 2\*, which reflect design-related information contained in the generic AP1000 DCD, are provided in 10 CFR Part 52, Appendix D, Section II.

- STD COL 13.3-2

The applicant provided additional information in STD COL 13.3-2 to address COL Information Item 13.3.1 of the AP1000 DCD, which states:

Combined License applicants referencing the AP1000 certified design will address the activation of the emergency operations facility [EOF] consistent with current operating practice and NUREG-0654/FEMA-REP-1 [“Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” Revision 1 (hereinafter referred to as “NUREG-0654”)].

The applicant also identified the following three additional COL items in their respective WLS COL FSAR sections, which relate to emergency planning:

- WLS COL 9.5-9 and WLS COL 9.5-10

In WLS COL FSAR Sections 9.5.2.5.1, “Offsite Interfaces,” and 9.5.2.5.2, “Emergency Offsite Communications,” the applicant provided additional information to address AP1000 DCD COL Information Items 9.5-9 and 9.5-10. As addressed by the applicant, offsite interfaces and emergency offsite communication are described in the Emergency Plan. COL Information Items 9.5-9 and 9.5-10 are as follows:

WLS COL 9.5-9 – Combined License applicants referencing the AP1000 certified design will address interfaces to required offsite locations; this will include addressing the recommendations of NRC Bulletin (BL)-80-15 (COL Reference 21)<sup>3</sup> regarding loss of the emergency notification system due to a loss of offsite power.

WLS COL 9.5-10 – The emergency offsite communication system, including the crisis management radio system, will be addressed by the Combined License applicant.

- WLS COL 18.2-2

In WLS COL FSAR Section 18.2, “Human Factors Engineering Program Management,” the applicant provided additional information in WLS COL 18.2-2 to address AP1000 DCD COL Information Item 18.2-2 (COL Action Item 18.2.3.1-1). Specifically, the applicant stated that the EOF and TSC communication strategies and human factors attributes are described in the Emergency Plan. COL Information Item 18.2-2 states:<sup>4</sup>

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<sup>3</sup> NRC IE Bulletin No. 80-15 (BL-80-15), “Possible Loss of Emergency Notification System (ENS) with Loss of Offsite Power,” June 18, 1980.

<sup>4</sup> See also, Section 18.2.7, “Evaluation of COL Information Item 18.2-2 (no comparable NUREG-1793 section),” of NUREG-1793, Supplement 2, Volume 2, “Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design – Docket No. 52-006,” August 5, 2011 (published September 2011).

Specific information regarding EOF and TSC communications, and EOF and TSC human factors attributes will be provided by the Combined Operating License applicant to address the Combined License information requested in this [DCD] subsection [i.e., DCD Tier 2 Subsection 18.2.6].

The staff's evaluation of the applicant's resolution of these five COL items is addressed below in Section 13.3.4.18 of this report.

Supplemental Information

- STD SUP 13.3-1

In WLS COL FSAR Section 13.3, "Emergency Planning," the applicant provided supplemental information in STD SUP 13.3-1, which states that WLS COL FSAR Table 13.4-201, "Operational Programs Required by NRC Regulations," provides milestones for emergency planning program implementation. STD SUP 13.3-1 is evaluated by the staff as part of its evaluation of License Condition 6 in Section 13.3.4.19 of this report.

- WLS SUP 14.3-1

The applicant provided the following statement in WLS COL FSAR Section 14.3.2.3.1, "Emergency Planning ITAAC (EP-ITAAC)," with regard to EP ITAAC:

EP-ITAAC have been developed to address implementation of elements of the Emergency Plan. Site-specific EP-ITAAC are based on the generic ITAAC provided in Appendix C.II.1-B of Regulatory Guide 1.206. These ITAAC have been tailored to the specific reactor design and emergency planning program requirements.

The EP ITAAC are identified below in Table 13.3-1 of this report, and WLS SUP 14.3-1 is evaluated by the staff in Section 13.3.4.19 of this report.

Onsite Emergency Plan

Emergency planning for Units 1 and 2 is addressed throughout WLS COL FSAR, with the Radiological Emergency Plan for Units 1 and 2 (WLS Emergency Plan) provided in COLA Part 5. The WLS Emergency Plan addresses guidance and meets the intent of the criteria established in NUREG-0654. The WLS Emergency Plan consists of a full and integrated emergency plan. In addition, the WLS Emergency Plan is structured to have ten appendices (listed below), one of which is not used, which provide additional detailed information on specific aspects of emergency planning.

- Appendix 1 [Not Used]
- Appendix 2 Radiological Assessment and Monitoring
- Appendix 3 Public Alert and Notification System Description
- Appendix 4 Evacuation Time Estimate

- Appendix 5 Implementing Procedures
- Appendix 6 Emergency Equipment and Supplies
- Appendix 7 Certification Letters
- Appendix 8 Cross References to Regulations, Guidance, and State and Local Plans
- Appendix 9 Justification for Common EOF
- Appendix 10 Technical Support Center Description

### Offsite Emergency Plans

Pursuant to 10 CFR 50.33, "Contents of Applications; General Information," paragraph (g), a COL applicant is required to submit the radiological emergency response plans of State and local governments that are wholly or partially within the 16-kilometer (km) (10-mi) plume exposure pathway emergency planning zone (EPZ), as well as plans of State governments wholly or partially within the 80-km (50-mi) ingestion pathway EPZ (hereinafter referred to as the "10-mi EPZ" and "50-mi EPZ"). The WLS COLA includes supplemental information, consisting of the offsite radiological emergency response plans of the States of South Carolina and North Carolina and local government plans for Cherokee, Cleveland, and York Counties. The supplemental information also includes the detailed ETE Report for the 16-km (10-mi) EPZ, which is discussed in Section 13.3.4.17 of this report.

### ITAAC

Part 10, "Proposed License Conditions (Including ITAAC)," of the WLS COL application provides information regarding EP ITAAC. The EP ITAAC is evaluated in Section 13.3.4.19 of this report.

### License Conditions

COLA Part 10, "License Conditions (Including ITAAC)," includes the following proposed license conditions related to EP:

- Part 10, License Condition 1

The applicant proposed a license condition to incorporate EP ITAAC into the COL, which are identified in Table 3.8-1 of Appendix B to Part 10 of the WLS COL application.

- Part 10, License Condition 4 (Emergency Planning Actions)

The licensee shall submit a fully developed set of site-specific Emergency Action Levels (EALs) to the NRC in accordance with the NRC-endorsed version of NEI 07-01, Rev. 0, with no deviations. The EALs shall have been discussed and agreed upon with State and local officials. These fully developed EALs shall be submitted to the NRC for confirmation not less than 180 days prior to the date scheduled for initial fuel load. (Identified below as License Condition (13-3))

Prior to the full participation exercise to be conducted in accordance with the requirements of Appendix E to 10 CFR Part 50, Duke Energy shall identify the specific locations of the reception centers and relocation sites and shall obtain Letters of Agreement for locations not under Duke Energy's control. (Identified below as License Condition (13-4))

At least two (2) years prior to scheduled initial fuel load, Duke Energy shall have performed an assessment of emergency response staffing in accordance with NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0. (Identified below as License Condition (13-5))

Prior to the full-participation exercise to be conducted in accordance with the requirements of Appendix E to 10 CFR Part 50, Duke Energy will have available for NRC inspection Letters of Agreement with the entities listed in Appendix 7 of the Lee Nuclear Station COLA Part 5, Emergency Plan. These Letters of Agreement will detail each entity's specific emergency planning responsibilities, including response to hostile action affecting the plant site, and certify the entity's concurrence with their responsibilities. (Identified below as License Condition (13-6))

Prior to fuel load, Duke Energy will demonstrate the integrated capability and functionality of the Emergency Operations Facility (EOF) for activation and operation of the facility to respond to emergency events at both the Lee Nuclear Station and one additional nuclear facility that is supported by the EOF. Integrated communication and data capability and functionality will include the Technical Support Centers for Lee Nuclear Station and one additional nuclear facility, and other Federal, State, and local coordination centers as appropriate. (Identified below as License Condition (13-7))

- Part 10, License Condition 6, Items a. and e. (Operational Program Readiness)
  - a. The licensee shall submit to the appropriate Director of the NRC, a schedule, no later than 12 months after issuance of the COL, that supports planning for and conduct of NRC inspections of operational programs listed in the operational program FSAR Table 13.4-201. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until either the operational programs in the FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first. This schedule shall address:
  - e. An emergency response data system (ERDS) implementation program plan consistent with 10 CFR Part 50, Appendix E, Section VI. (Identified below as License Condition (13-9))
- Part 10, License Condition 12.C (Fukushima Actions – Emergency Planning Actions)  
Staffing (Identified below as License Condition (13-10))

At least two (2) years before the latest date set forth in the schedule for completing the inspections, tests, and analyses in the ITAAC submitted in accordance with 10 CFR 52.99(a), the Licensee shall have performed assessments of the on-site and augmented staffing capability to satisfy the regulatory requirements for responding to a multi-unit event. The staffing assessments will be performed in accordance with NEI 12-01, Revision 0.

- Incorporation of corrective actions identified in the staffing assessments required by this condition, and
- Identification of how the augmented staff will be notified given degraded communications capabilities.

Communications (Identified below as License Condition (13-11))

At least two (2) years before the latest date set forth in the schedule for completing the inspections, tests, and analyses in the ITAAC submitted in accordance with 10 CFR 52.99(a), the Licensee shall have performed an assessment of on-site and off-site communications systems and equipment relied upon during an emergency event to ensure communications capabilities can be maintained during an extended loss of ac power. The communications capability assessment shall be performed in accordance with NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0.

At least one hundred eighty (180) days before the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR 52.103(a), the Licensee shall complete implementation of corrective actions identified in the communications capability assessment described above, including any related emergency plan and implementing procedure changes and associated training.

ITAAC

WLS COLA Part 10 proposes License Condition 1 (described above) that incorporates into the COL the ITAAC identified in Appendix B of Part 10. WLS COLA Part 10, Appendix B includes Table 3.8-1 (EP ITAAC) and incorporates by reference AP1000 DCD Tier 1, Table 3.1-1 (ITAAC). The EP ITAAC are evaluated below in this report.

**13.3.3 Regulatory Basis**

The regulatory basis of the AP1000 DCD information incorporated by reference is addressed in NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design," and its supplements. The applicable regulatory requirements and guidance for emergency planning are as follows:

- 10 CFR 52.79(a)(21) requires that the FSAR include emergency plans that comply with the requirements of 10 CFR 50.47, "Emergency plans," and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities." In addition,

10 CFR 52.79(a)(22)(i) requires emergency planning certifications from State and local governmental agencies with emergency planning responsibilities. Under 10 CFR 50.47(a)(1)(ii), no initial COL under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. In addition, 10 CFR 50.47(a)(2), states that the NRC will base its findings on a review of the FEMA findings and determinations as to whether State and local emergency plans are adequate, and whether there is reasonable assurance that they can be implemented, and on the NRC assessment as to whether the applicant's onsite emergency plans are adequate and whether there is reasonable assurance that they can be implemented.

- The staff also considered the applicable requirements in 10 CFR 50.33(g); 10 CFR 52.80, "Contents of applications; additional technical information"; 10 CFR 52.83, "Finality of referenced NRC approvals; partial initial decision on site suitability"; and 10 CFR 100.21, "Non-seismic siting criteria."
- NUREG-0800 identifies NUREG-0654 and other related guidance that the staff should consider during its review. The related acceptance criteria are identified in NUREG-0800, Section 13.3.II, and the applicable regulatory guidance for reviewing emergency preparedness as an operational program is established in NUREG-0800, Section 13.4. In addition, the staff considered NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimate Studies" (November 2011), the current guidance for conducting and evaluating evacuation time estimates; NUREG/CR-6863, "Development of Evacuation Time Estimate Studies for Nuclear Power Plants" (January 2005); and Interim Staff Guidance (ISG) NSIR/DPR-ISG-01.<sup>5</sup>
- 44 CFR Part 350, "Review and Approval of State and Local Radiological Emergency Plans and Preparedness," and 44 CFR Part 352, "Commercial Nuclear Power Plants: Emergency Preparedness Planning," provide procedures for FEMA's review and evaluation of the adequacy of offsite radiological emergency planning and preparedness. Pursuant to 44 CFR Part 353, "Memorandum of Understanding Between Federal Emergency Management Agency and Nuclear Regulatory Commission Relating to Radiological Emergency Planning and Preparedness," Appendix A, "Memorandum of Understanding Between Federal Emergency Management Agency and Nuclear Regulatory Commission" (58 FR 47996, September 14, 1993), FEMA provided its findings and determinations on offsite planning to the NRC for NRC's use in the licensing process.

### 13.3.4 Technical Evaluation

The staff reviewed the information in WLS COL FSAR Section 13.3, "Emergency Planning," and the WLS Emergency Plan for conformance with applicable standards and requirements

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<sup>5</sup> NSIR/DPR-ISG-01, Revision 0, "Interim Staff Guidance - Emergency Planning for Nuclear Power Plants," November 2011, provides updated guidance based on changes to emergency planning regulations in 10 CFR 50.47 and 10 CFR Part 50, Appendix E, that were published as a Final Rule in the *Federal Register* (FR) on November 23, 2011 (76 FR 72560), and on integrated offsite response organization event response concepts with onsite emergency planning programs.

identified in NUREG-0800, Sections 13.3 and 14.3.10. The complete set of emergency planning ITAAC for the new reactors is provided in Table 13.3-1, "WLS Units 1 & 2 ITAAC," of this report, and various ITAAC are discussed throughout this section of the report. In addition, the staff reviewed selected portions of the emergency response plans for the States of South Carolina and North Carolina and local government plans for Cherokee, Cleveland, and York Counties. The staff completed this review for understanding and content, in relation to consistency with various sections of the WLS Emergency Plan that address offsite support and response. The staff checked the referenced DCD to ensure that the combination of the DCD and the COLA represents the complete scope of information relating to this review topic.<sup>6</sup> The staff's review confirmed that the information in the application and incorporated by reference addresses the required information relating to emergency planning pursuant to 10 CFR 52.77, 10 CFR 52.79, 10 CFR 52.80, and 10 CFR 100.21. The results of the staff's evaluation of the referenced DCD are documented in NUREG-1793 and its supplements.

The staff's and FEMA's technical reviews of the WLS COLA addressed all of the relevant evaluation criteria in the 16 planning standards (i.e., A through P) of NUREG-0654, consistent with NUREG-0800, Section 13.3, which cites the applicable regulations.

In WLS COLA Part 1, the applicant incorporated by reference the AP1000 DCD. WLS COL FSAR Section 13.3 further incorporates by reference AP1000 DCD Section 13.3, "Emergency Planning." WLS COLA Part 5 provides the WLS Emergency Plan, which consists of the basic emergency plan and ten appendices. The basic plan follows the format of NUREG-0654, and provides detailed information regarding each of the 16 planning standards and associated evaluation criteria in NUREG-0654. The format of the staff's review of the WLS Emergency Plan is patterned after the 16 planning standards, which reflect the requirements in 10 CFR 50.47(b)(1) through (b)(16). 10 CFR Part 50, Appendix E, provides additional requirements that duplicate or supplement the evaluation criteria associated with the planning standards. The staff's review of the various aspects of 10 CFR Part 50, Appendix E is included within the associated planning standards review.

#### ***13.3.4.1 Assignment of Responsibility (Organizational Control)***

The regulation in 10 CFR 50.47(b)(1), as reflected in NUREG-0654 as Planning Standard A, requires that primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the EPZs have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis. In addition, 10 CFR Part 50, Appendix E, Section III requires that the emergency plans incorporate information about the emergency response roles of supporting organizations and offsite agencies, and that information shall be sufficient to provide assurance of coordination among the supporting groups and with the licensee. 10 CFR Part 50, Appendix E, Section IV.A requires, among other things, a description of the local offsite services to be provided in support of the licensee's emergency organization; the identification of, and assistance expected from, appropriate local, State, and Federal agencies with responsibilities for coping with emergencies, including hostile action at the site; identification of the State and

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<sup>6</sup> See Section 1.2.2 of this report for a discussion on the staff's review related to verification of the scope of information to be included within a COL application that references a design certification (DC).



local officials responsible for planning for, ordering, and controlling appropriate protective actions, including evacuations when necessary; and a detailed analysis demonstrating that on-shift personnel assigned emergency functions are not assigned responsibilities that would prevent timely performance of their assigned functions as specified in the WLS Emergency Plan.

The regulatory guidance provided in NUREG-0654 Evaluation Criterion II.A.3 states, in part, that each plan shall include written agreements referring to the concept of operations developed among Federal, State, and local agencies and other support organizations having an emergency response role within the EPZs. In addition, 10 CFR 52.79(a)(22)(i) states that the COLA must contain all emergency plan certifications that have been obtained from the State and local governmental agencies with emergency planning responsibilities. These certifications must state that (1) the proposed emergency plans are practicable; (2) these agencies are committed to participating in any further development of the plans, including any required field demonstrations; and (3) these agencies are committed to executing their responsibilities under the plans in the event of an emergency.

In the WLS Emergency Plan, Section II.A, "Assignment of Responsibility (Organizational Control)," the applicant described the primary responsibilities and organizational control of WLS, Federal, State, county and other emergency response organizations (EROs) within the 16-km (10-mi) EPZ and the 80-km (50-mi) EPZ. The staff reviewed this section, as well as other relevant portions of the application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the WLS Emergency Plan against NUREG-0654, Planning Standard A, "Assignment of Responsibility (Organization Control)." Planning Standard A provides the detailed evaluation criteria that the staff should consider in determining whether the WLS Emergency Plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(1).

WLS Emergency Plan, Section II.A, "Assignment of Responsibility (Organizational Control)," describes the relationships and concept of operations for the organizations and agencies that are a part of the overall ERO, and identifies the various Federal, State, county and local government agencies and organizations that are involved in a response to an emergency at WLS. WLS Emergency Plan, Figure II-1, "Emergency Response Organization Interrelationships," illustrates the interrelationships of organizations that will be participating in emergency response. WLS Emergency Plan, Appendix 7, "Certification Letters," contains certification letters signed by the supporting State and local agencies.

WLS Emergency Plan, Section II.A.1.b, "Assignment of Responsibility," footnote 4, states that in the event of a security related attack on the site by a hostile force, a brief notification (site name, emergency classification, if determined, and nature of threat) is provided to the NRC following notification of the designated State and local authorities and within approximately 15 minutes of the discovery of the event.

WLS Emergency Plan, Section II.A.1.d, "Individual in Charge of Emergency Response," identifies the individual in charge for coordinating the emergency response as the Operations Shift Manager, who will assume the role as Emergency Coordinator. The Operations Shift Manager is relieved as Emergency Coordinator when the Station Manager or a qualified alternate reports to the station, and he or she is updated as to the status of the unit, the emergency actions taken, and the current status of the emergency. Once the EOF is activated

the EOF director assumes responsibility for ensuring that the appropriate offsite interface activities are performed (e.g., notifications of emergency status to State and local governments and NRC; and recommending offsite protective measures to the State).

WLS Emergency Plan, Sections II.A.1.e, "24-Hour Emergency Response Capability," and II.A.4, "Continuous Operations," states, in part, that Duke Energy and WLS maintains a 24-hour emergency response capability, communication links are staffed, and multiple responders are trained for key emergency response positions, consistent with the training requirements established in WLS Emergency Plan, Section II.O, "Radiological Emergency Response Training." The Emergency Coordinator or EOF Director is identified as the individual from the principal organization in charge, and he or she has the responsibility for ensuring continuity of technical, administrative, and material resources during emergency operations. In addition, Section II.B.7, "Corporate Off-site Support for Plant Staff," of the WLS Emergency Plan states, "The EOF is capable of 24 hours/day operation for a protracted period."

WLS Emergency Plan, Section II.A.3, "Written Agreements," states that Appendix 7 includes initial certification letters established between Duke Energy, the State and local government agencies, and private sector organizations that will be supporting the emergency response effort. As previously described in Section 13.3.2, "Summary of Application," of this report, the applicant will develop updated letters of agreement (LOAs) in accordance with License Condition (13-6), which is evaluated in Section 13.3.4.3 of this report.

In RAI 25, Question 13.03-54(A), the staff requested that the applicant provide the title of the State and local officials who will be responsible for implementing offsite protective actions. In a December 23, 2008, response, the applicant provided additional information related to State and local officials who will be responsible for implementing offsite protective actions and provided proposed revisions to WLS Emergency Plan, Section II.A.1.b. The States of South Carolina and North Carolina, and counties of Cherokee, Cleveland, and York have emergency response plans that specify the responsibilities and functions for the major agencies, departments, and key individuals of their emergency response organizations. The governors for these states have the overall command authority for radiological and non-radiological aspects of a nuclear incident, and will provide for public protection through assignment of appropriate States' resources and agencies. Within the State of South Carolina, should a rapidly-developing emergency condition arise that requires implementation of protective actions before the State Emergency Operations Center can be activated, affected county managers may implement the facility-recommended protective actions without prior consultation with the Director of the Emergency Management Division or the governor. Within the State of North Carolina, should a rapidly-developing emergency condition arise that requires the implementation of protective actions before the State Emergency Operations Center can be activated, affected Chairmen of the Board of County Commissioners may implement the facility recommended protective actions without prior consultation with the State agencies or governor. Since the above referenced States and counties reside within the 16-km (10-mi) and 80-(km (50-mi) EPZs, the applicant included the respective emergency response plans as supplemental information to the WLS COLA pursuant to 10 CFR 50.33(g).

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria found in NUREG-0654.

The staff reviewed the information provided by the applicant and finds that the applicant adequately assigned primary responsibilities for emergency response, and has the necessary staffing to respond to and augment its initial response on a continuous basis. The staff notes that the applicant is capable of providing 24-hour-per-day emergency response and staffing of communication links, including continuous (24-hour) operations for a protracted period. In addition, the applicant identified the appropriate organizations that are intended to be part of the overall response organization, and established the emergency responsibilities of the various supporting organizations, including providing adequate written agreements. The applicant specified the concept of operations and its relationship to the total effort, illustrated the interrelationships in a block diagram, and has identified the individuals in charge of the emergency response and for ensuring continuity of resources.

In addition, the staff confirms that the applicant incorporated information about the emergency response roles of supporting organizations and offsite agencies into the WLS Emergency Plan, and finds that the information provided by the applicant and reviewed by the staff is sufficient to provide assurance of coordination among the supporting groups and with the licensee. Further, the applicant described the local offsite services to be provided in support of the licensee's emergency organization, and identified the assistance expected from appropriate local, State, and Federal agencies, including State and/or local officials responsible for planning for, ordering, and controlling appropriate protective actions.

The staff confirms that the certification letters in WLS Emergency Plan, Appendix 7 state that (1) the proposed emergency plans are practicable; (2) these agencies are committed to participating in any further development of the plans, including any required field demonstrations; and (3) these agencies are committed to executing their responsibilities under the plans in the event of an emergency. Therefore, the staff finds that the WLS COLA meets the requirements of 10 CFR 52.79(a)(22)(i).

The staff finds the additional information and clarifications provided by the applicant in the December 23, 2008, response to RAI 25, Question 13.03-54(A) acceptable because it conforms to the guidance in NUREG-0654. Accordingly, the staff considers these questions resolved.

## **Conclusion**

Subject to License Condition (13-6), the staff concludes that the information provided in the WLS COLA conforms to the evaluation criteria in NUREG-0654, Planning Standard A. Accordingly, the staff finds the information acceptable and meets the relevant requirements of 10 CFR 52.79(a)(22)(i), 10 CFR 50.47(b)(1) and 10 CFR Part 50, Appendix E, Sections III and IV.A, insofar as the information describes the primary responsibilities for emergency response by the applicant, State and local organizations within the EPZs, and various supporting organizations, and that each principal response organization has staff to respond to and augment its initial response on a continuous basis.

### **13.3.4.2      *Onsite Emergency Organization***

The regulation in 10 CFR 50.47(b)(2), as reflected in NUREG-0654 as Planning Standard B, "Onsite Emergency Organization," requires that on-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of

response capabilities is available, and interfaces among various onsite response activities and offsite support and response activities are specified. In addition, 10 CFR Part 50, Appendix E, Section IV.A requires a description of the organization for coping with radiological emergencies, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization, and the means for notification of such individuals in the event of an emergency. This discussion shall include a description of the normal plant operating organization, onsite emergency response organization, headquarters personnel who will augment the onsite emergency organization, and local offsite services to be provided in support of the licensee's emergency organization. The emergency plan shall identify persons within the licensee organization who will be responsible for making offsite dose projections, and other employees with special qualifications for coping with emergency conditions that may arise. Other persons with special qualifications, who are not licensee employees and who may be called upon for assistance, shall also be identified, including a description of the special qualifications. 10 CFR Part 50, Appendix E, Section IV.A.9 requires a detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions, as specified in the emergency plan.

In WLS Emergency Plan, Section II.B, "On-site Emergency Organization," the applicant described the ERO, its key positions and associated responsibilities, including outlining the staffing requirements that provide initial emergency response actions and provisions for timely augmentation of on-shift personnel. The staff reviewed this section, as well as other relevant portions of the application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard B, "Onsite Emergency Organization." Planning Standard B provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(2).

WLS COL FSAR Section 13.1, "Organizational Structure of Applicant," (referenced from the DCD) and WLS COL FSAR Table 13.1-201, "Generic Position/Site Specific Position Cross Reference," provides a description of the proposed operating plant staffing, including position titles and functions. The normal plant personnel complement is established with the Site Executive – Plant Management directly responsible for the management and direction of activities associated with the efficient, safe, and reliable operations of the station. The Site Executive is assisted in management and technical support activities by the Plant Manager. The Plant Manager is responsible for onsite activities necessary for safe operation and maintenance of the plant (e.g., Operations, Chemistry, and Outage Management). Additionally, the Plant Manager has overall responsibility for occupational and public radiation safety. The Functional Manager in charge of operations reports to the Plant Manager and has overall responsibility for the day-to-day operation of the plant with assistance from the Assistant Functional Manager - Operations. The manager in charge on-shift (Shift Manager) is a licensed senior reactor operator (SRO) responsible for the control room command function, and is the Plant Manager's direct management representative for the conduct of operations. As such, the manager in charge on-shift has the responsibility and authority to direct the activities and personnel onsite as required to do the following:

- Protect the health and safety of the public, the environment, and personnel on the plant site

- Protect the physical security of the plant
- Prevent damage to site equipment and structures
- Comply with the operating license

WLS Emergency Plan, Section II.B states that the Shift Manager position is staffed at all times. In an emergency, he or she will act as the Emergency Coordinator until relieved by a qualified member of management or termination of the emergency. The Emergency Coordinator is responsible for initiating required emergency response actions (e.g., activation of emergency personnel and facilities, and authorizing emergency exposure limits). Other Emergency Coordinator responsibilities include: emergency classification, authorizing notification to the NRC, State, and local authorities, and the decision to notify and recommend protective actions to authorities responsible for offsite emergency measures. These responsibilities are designated as non-delegable. The Emergency Coordinator may also request assistance from any organization deemed necessary to mitigate the emergency. Once the EOF is activated the EOF director assumes responsibility for ensuring that the appropriate offsite interface activities are performed (e.g., notifications of emergency status to State and local governments and NRC; and recommending offsite protective measures to the State). At any time during an emergency should the Shift Manager be rendered unable to fulfill the duties and responsibilities of the Emergency Coordinator due to illness or injury, the Unit Supervisor (present on shift at all times) will assume the Emergency Coordinator position until relieved by a qualified member of the management staff.

The plant also has personnel on-shift at all times that can provide an initial response to an emergency event. WLS Emergency Plan, Table II-2, "Plant Staff Emergency Functions," describes positions and major tasks to be performed by persons assigned to the functional areas of emergency activity. Upon declaration of an emergency, members of the plant staff assume positions in the ERO consistent with their training and management assignments, and provide for key functions of accident assessment, radiological monitoring and analysis, security, fire-fighting, first aid and rescue, and communication. On-shift staffing will be augmented with additional ERO personnel at an Alert and higher emergency classifications or earlier, as deemed necessary. WLS Emergency Plan, Section II.B states that the minimum staff required to conduct routine and immediate emergency operations is maintained at the station consistent with 10 CFR Part 50, Appendix E. In addition, minimum staffing was established based on the guidance provided in NUREG-0654, Table B-1, and provisions of other emergency plans from currently licensed Duke Energy facilities. The positions, titles and major tasks to be performed by station emergency responders are further described in emergency plan implementing procedures (EIPs). Additional personnel may be designated by station management or the EOF Director as emergency responders providing special expertise deemed beneficial, but not mandatory, to the planned response based on the technical requirements of the position. WLS Emergency Plan, Figure II-2, "Emergency Response Organization—Site Only," and WLS Emergency Plan, Figure II-3, "Offsite Emergency Response Organization," illustrate the high level organizations that will be located in respective emergency response facilities (ERFs), which are the TSC, the OSC, EOF and Joint Information Center (JIC). WLS Emergency Plan, Section II.B.6, "Interface Between Functional Areas," and WLS Emergency Plan, Figure II-1, "Emergency Response Organization Interrelationships," identify and illustrate the interfaces among functional areas of the station emergency response activity, Duke Energy's corporate support, and the affected State and local government response organizations. The applicant

proposed EP-ITAAC 10.1 to verify that the emergency plan implementing procedures provide minimum and augmented on-shift staffing levels consistent with WLS Emergency Plan, Table II-2.

In RAI 25, Question 13.03-55(A), the staff requested that the applicant provide additional information related to staffing of accountability, decontamination, and public information positions. In a December 23, 2008, response, the applicant stated that on-shift security personnel are responsible for accountability; decontamination activities are conducted by on-shift Radiation Protection Technicians initially, and public information is handled by the EOF.

In RAI 25, Questions 13.3-55(M), (P), (P.2), and (Q), the staff requested that the applicant provide additional information related to staffing of the on-shift dose assessment as a part of the continual assessment capability. In a December 23, 2008, response, the applicant stated that the position and function would be staffed and performed in the EOF. While evaluating WLS Emergency Plan, Table II-2, "Plant Staff Emergency Functions," the staff noted that Footnote 3 indicated that there will be personnel assigned to the shift, who are trained and qualified to perform dose assessment functions. Furthermore, in a supplement to the initial response to RAI 25, Questions 13.3-55(M), (P), (P.2), and (Q), the applicant stated that there will be an individual on-shift with the qualification to perform offsite dose projections until relieved by staff augmentation. This provides for the on-shift capability to perform dose assessment in the determination of emergency classification, onsite protective action, and offsite protective action recommendations.

WLS Emergency Plan, Section II.B.7, "Corporate Off-site Support for the Plant Staff," states that upon declaration of an Alert, Site Area Emergency, or General Emergency, the Emergency Coordinator directs the activation and notification of the onsite and offsite ERFs. Duke Energy management, technical, and administrative personnel staff the EOF and provide or coordinate augmented support for the plant staff. The Duke Energy corporate staff provides management, technical, and administrative support as needed to support the plant staff and to relieve the plant staff of external coordination responsibilities, including notification of and coordination with offsite authorities and release of information to the media. In addition to the activities identified in WLS Emergency Plan, Table II-2, Duke Energy corporate staff provides logistical support for plant personnel; technical support for planning and recovery operations; management-level interface with governmental authorities; and coordination with and the release of information to the news media.

WLS Emergency Plan, Section II.B.8, "Support from Contractor and Private Organizations," states that the Institute of Nuclear Power Operations (INPO), when notified of an emergency classification, will serve as a clearinghouse for industry-wide support and provide requested emergency response technical assistance, including emergency staffing and equipment. The applicant may request that the reactor vendor, Westinghouse, provide technical support for emergency response activities. If required at the time of the event, additional resources can be obtained from consultants and vendors through purchase agreements with the supporting institutions based on their expertise and plant needs. In addition, the applicant has established and will maintain agreements for emergency response support services, including firefighting, rescue squad, and medical and hospital services. WLS Emergency Plan, Section II.L describes the arrangements for medical support services, including hospital and ambulance support, and is addressed in Section 13.3.4.12 of this report. WLS Emergency Plan, Appendix 7 provides the

certification letters for organizations providing these services. (Emergency response support and resources are further described in Section 13.3.4.3 of this report.)

WLS Emergency Plan, Section II.B.9, "Local Emergency Response Support," describes the agreements between the applicant and local emergency response support services, including firefighting, rescue squad, medical and hospital services. The applicant's emergency plan implementing procedure, "Site Response to Security Events," provides information regarding measures to integrate offsite response resources and capabilities into the onsite response activities.

### *Fukushima Dai-ichi – NTTF Recommendation 9.3*

On March 12, 2012, the NRC requested information pursuant to the 10 CFR 50.54(f) process from all power reactor licensees and holders of construction permits, associated with the NRC Near-Term Task Force (NTTF) review of the accident at the Fukushima Dai-ichi nuclear facility. In NTTF Recommendation 9.3, the NTTF addressed staffing and communication provisions for enhancing emergency preparedness. On January 23, 2013, the NRC issued a follow-up letter, which identified eight generic technical issues that need to be addressed as part of NTTF Recommendation 9.3 for conducting the communication capability assessment.

In an April 25, 2012, letter, the NRC informed the existing licensees and COL applicants that the staff would issue an RAI concerning the implementation of the NTTF recommendations in SECY-12-0025. In RAI 105, Question 01.05-4, the staff requested that the applicant address Recommendation 9.3, "Provisions for Enhancing Emergency Preparedness." The NRC issued this information request regarding the power supplies for communication systems and staffing to determine if additional regulatory action is warranted. This request was based upon NTTF Recommendation 9.3, which proposed that facility emergency plans provide for a means to power communication equipment needed to communicate onsite and offsite during an extended loss of alternating current power and staffing to fill all necessary positions to respond to a multi-unit event. In a June 11, 2012, response to RAI 105, Question 01.05-4, the applicant proposed License Condition 12.C "Emergency Planning Actions" in Part 10 of the WLS COLA. With respect to staffing, the staff refers to the following as License Condition (13-10):

Proposed License Condition (13-10):

#### Staffing:

At least two (2) years before the latest date set forth in the schedule for completing the inspections, tests, and analyses in the ITAAC submitted in accordance with 10 CFR 52.99(a), the Licensee shall have performed assessments of the on-site and augmented staffing capability to satisfy the regulatory requirements for responding to a multi-unit event. The staffing assessments will be performed in accordance with NEI 12-01, Revision 0.

At least 180 days before the date scheduled for initial fuel loading set forth in the notification submitted in accordance with 10 CFR 52.103(a), the Licensee shall revise the Emergency Plan to include the following:

- Incorporation of corrective actions identified in the staffing assessments required by this condition, and

- Identification of how the augmented staff will be notified given degraded communications capabilities.

In WLS COLA Part 10, the applicant proposed License Condition 12.C, “Fukushima Actions – Emergency Planning Actions,” which addresses both the staffing and communication areas addressed in NTTF Recommendation 9.3. The staff reviewed License Condition (13-10) and finds it acceptable, except for the scheduling of the assessment, because it is consistent with NTTF Recommendation 9.3 and reflects the use of NEI technical report NEI 12-01, “Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities,” Revision 0, which the NRC has endorsed as an acceptable method for licensees to employ when addressing NTTF Recommendation 9.3.<sup>7</sup> To address the scheduling of completing the actions for staffing assessments from “2 years” to “18 months,” the staff identified License Condition (13-10) below. (Emergency communication and the other part of License Condition 12.C (referred to as License Condition (13-11)) are addressed in Section 13.3.4.6 of this report.)

License Condition (13-10):

- At least 18 months before the latest date set forth in the schedule submitted in accordance with 10 CFR 52.99(a) for completing the inspections, tests, and analyses in the ITAAC, the licensee shall have performed assessments of the onsite and augmented staffing capability for response to a multi-unit event. The staffing assessments will be performed in accordance with NEI 12-01, “Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities,” Revision 0.

At least 180 days before the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR 52.103(a), Duke Energy shall revise the WLS Emergency Plan to include the following:

- incorporation of corrective actions identified in the staffing assessments described above
- identification of how the augmented staff will be notified given degraded communication capabilities

As previously referenced, with the staff’s revisions incorporated above, the staff finds License Condition (13-10) and the response to RAI 01.05-acceptable.

### Enhancements to Emergency Preparedness Regulations

On November 23, 2011, the NRC published a Final Rule, “Enhancements to Emergency Preparedness Regulations” (hereinafter referred to as “Final Rule”), which included a new

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<sup>7</sup> See (1) NRC May 15, 2012, letter, ‘U.S. Nuclear Regulatory Commission Review of NEI 12-01, “Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities,” Revision 0, May 2012’ (ADAMS Accession No. ML12131A043); (2) NEI May 3, 2012, letter, ‘Transmittal of NEI 12-01, “Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities,” Revision 0, May 2012’ (ADAMS Accession No. ML12125A411); and (3) NEI Report No. 12-01, Revision 0, “Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities,” May 2012 (ADAMS Accession No. ML12125A412).



requirement in 10 CFR Part 50, Appendix E, Section IV.A associated with on-shift ERO personnel. Specifically, 10 CFR Part 50, Appendix E, Section IV.A.9 requires nuclear power reactor licensees conduct a detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in the emergency plan.

As part of the issuance of the Final Rule, the NRC issued associated guidance in ISG Nuclear Security and Incident Response (NSIR)/Division of Preparedness and Response (DPR)-ISG-01. In NSIR/DPR-ISG-01, Section IV.C, "On-Shift Staffing Analysis," the NRC endorsed NEI technical report NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0, June 2011 – stating, in part, that NEI 10-05 establishes a standard methodology for a licensee to perform the 10 CFR Part 50, Appendix E, Section IV.A.9 required staffing analysis, and that the NRC has reviewed NEI 10-05 and found it an acceptable methodology for this purpose.

In WLS COLA Part 10, as part of the applicant's proposed License Condition 4 "Emergency Planning Actions," which addresses the requirements in 10 CFR Part 50, Appendix E, Section IV.A.9 for a detailed on-shift staffing analysis associated with the emergency plan. The applicant proposed the following license condition, which the staff refers to as License Condition (13-5).

Proposed License Condition (13-5):

At least two (2) years prior to scheduled initial fuel load, Duke Energy shall have performed an assessment of emergency response staffing in accordance with NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0.

With the staff's revisions incorporated below, the staff finds License Condition (13-5) acceptable because it is consistent with the Final Rule and NSIR/DPR-ISG-01:

License Condition (13-5):

At least 18 months before the latest date set forth in the scheduled submitted in accordance with 10 CFR 52.99(a) for completing the inspections, tests, and analyses in the ITAAC, Duke Energy shall have performed a detailed staffing analysis, in accordance with NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0.

At least one hundred eighty (180) days before the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR 52.103(a), Duke Energy shall revise the WLS Emergency Plan to incorporate any changes identified in the staffing analysis that are needed to bring staff to the required levels.

The staff reviewed the information provided by the applicant and finds that the applicant adequately designated an individual as the Emergency Coordinator who has the authority and responsibility to initiate emergency actions, including recommending protective actions to the authorities responsible for implementing offsite emergency measures. The staff also finds that the applicant clearly specified which responsibilities may not be delegated to other elements of

the emergency organization, and has identified an adequate line of succession for the Emergency Coordinator position.

The staff reviewed WLS Emergency Plan, Table II-2, and other associated sections and figures as described above, and finds that the required minimum on-shift staff and augmentation staffing in support of WLS are acceptable because they are consistent with NUREG-0654, Table B-1 in and the guidance provided in Emergency Preparedness Position (EPPOS)-3<sup>8</sup>, "On Requirement For Onshift Dose Assessment Capability."

Subject to License Condition (13-5) and License Condition (13-10), the staff finds that the applicant explicitly defined its responsibilities for emergency response, has adequate staffing to provide and maintain at all times initial facility accident response in key functional areas, including response to a hostile action, and is capable of timely augmentation of the response capabilities. In addition, the staff finds that the applicant adequately specified the interfaces among various onsite and offsite support and response activities; described the organization for coping with radiological emergencies, including the authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization and the means for their notification in the event of an emergency; and described the normal plant operating organization, the onsite ERO, and the headquarters and local offsite personnel and services that will augment and support the onsite organization. Licensee employees that are responsible for making offsite dose projections, and licensee and other persons with special qualifications for coping with emergency conditions, are also identified.

The staff finds the additional information and clarifications provided by the applicant in the December 23, 2008, response to RAI 25, Question 13.03-55(A), (M), (P)(P.2), and (Q) acceptable because they conform to the guidance in NUREG-0654. Accordingly, the staff considers these questions resolved.

## **Conclusion**

Subject to License Condition (13-5) and License Condition (13-10), the staff concludes that the information provided in the WLS COLA conforms to the evaluation criteria in NUREG-0654, Planning Standard B. Therefore, the staff finds the information acceptable and meets the relevant requirements of 10 CFR 50.47(b)(2) and 10 CFR Part 50, Appendix E, Section IV.A, insofar as the information describes the applicant's on-shift responsibilities for emergency response, which are unambiguously defined; adequate staffing to provide initial facility accident response in key functional areas maintained at all times; timely augmentation of response capabilities; and interfaces among various onsite and offsite response support activities.

### ***13.3.4.3 Emergency Response Support and Resources***

As stated in NUREG-0654, Planning Standard C, "Emergency Response Support and Resources," 10 CFR 50.47(b)(3) requires that arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee EOF have been made, and other organizations capable of augmenting the planned response have been identified. In addition, 10 CFR Part 50, Appendix E, Section III requires

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<sup>8</sup> EPPOS 3 (1995) ADAMS Accession No. ML023040473

that the emergency plans incorporate information about the emergency response roles of supporting organizations and offsite agencies, and that the information shall be sufficient to provide assurance of coordination among the supporting groups and with the licensee. 10 CFR Part 50, Appendix E, Section IV.A.7 requires identification of, and a description of the assistance expected from, appropriate local, State, and Federal agencies with responsibilities for coping with emergencies, including hostile action at the site.

In WLS Emergency Plan, Section II.C, "Emergency Response Support and Resources," the applicant addressed the responsibilities and concepts of operations for the various organizations that would support the Lee Nuclear Station in an emergency. The staff reviewed this section, as well as other relevant portions of the application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard C, which provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(3).

WLS Emergency Plan, Section II.C.1 "Federal Response Capability," provides general information related to support expected from Federal Radiological Monitoring and Assessment Center (FRMAC), Department of Energy (DOE) Savannah River, DOE Oak Ridge and Radiation Emergency Assistance Center/Training Site (REAC/TS), and the NRC. WLS Emergency Plan, Section II.C.1.a, identifies that the EOF Director or Radiological Assessment Manager may request FRMAC assistance through the NRC for offsite radiological monitoring support. Additionally, DOE Savannah River may provide radiological monitoring assistance (DOE Radiological Assistance Program). DOE Oak Ridge may provide medical support from the REAC/TS. The FRMAC Advance Party could arrive at the Lee Nuclear Station within 3 to 4 hours following the order to deploy. Assistance from the NRC Region II office in Atlanta, Georgia, could arrive 7 to 8 hours following notification. The timeframe could be reduced if air travel were used.

WLS Emergency Plan, Section II.C.1.e states that facilities and resources needed to support the Federal response through the EOF will be provided. This includes office space and telephones. The applicant will also provide limited office space and telephone communication facilities for the NRC personnel in the TSC. In addition, WLS Emergency Plan, Section II.C.1.c, "Federal Response Capability," describes provisions for incorporating the Federal response capability into its operation plan, including specific licensee, State and local resources available to support the Federal response, (e.g., air fields, command posts, telephone lines, radio frequencies, and telecommunication centers).

WLS Emergency Plan, Section II.A.1.b, "Concept of Operations," provides general information related to assistance that will be provided from all Federal, State, and local agencies. WLS Emergency Plan, Section II.B.9, "Local Emergency Response Support," states that the applicant has established and maintains agreements with local emergency response support services. WLS Emergency Plan, Section II.E.1, "Notification of State and Local Authorities," provides an overview of the notification systems for prompt notification of State, local and Federal authorities. WLS Emergency Plan, Section II.L, "Medical and Public Health Support," discusses local hospital and medical support, including first aid and ambulance transport, and REAC/TS responsibilities during emergencies.

WLS Emergency Plan, Section II.C.2, "Off-site Organization Representation in the EOF," states that designated work areas have been provided in the EOF for the State and county Emergency Management Liaisons and State Radiation Protection Liaisons.

WLS Emergency Plan, Section II.C.3, "Radiological Laboratories," identifies radiological laboratories in South Carolina Departments of Health and Environmental Control, Bureau of Radiological Health; North Carolina Department of Environment and Natural Resources, Radiation Protection Section; and the DOE Radiological Assistance Team. Mobile monitoring and assessment capabilities in addition to fixed facilities for gross counting and spectral analysis are also identified. Other applicant facilities at the McGuire, Oconee, and Catawba Nuclear Stations are available to provide additional support within 1 to 4 hours, if needed. In RAI 25, Question 13.03-56(C), the staff requested that the applicant provide additional information related to the location of the station counting laboratory and when it will be used, the criterion that would be used to determine when the additional facilities would be needed, and the process for requesting additional support. In a December 23, 2008, response, the applicant stated that facilities used for health physics monitoring and assessment are discussed in AP1000 DCD Section 12.5, "Health Physics Facilities Design"; WLS COL FSAR Chapter 12, "Radiation Protection"; and WLS COL FSAR Section 13.1.1.2.4, "Chemistry." The Radiological Assessment Manager, working with the EOF Director, determines staffing needs and assigns resources in support of efforts to coordinate radiological aspects of an emergency. The Radiological Assessment Manager also has the authority to seek assistance from other organizations within the applicant's resources. Fixed radiological facilities at the Catawba, McGuire, and Oconee Nuclear Stations may also be used in an emergency.

WLS Emergency Plan, Section II.C.4, "Other Supporting Organizations," describes arrangements with State and local emergency management authorities that establish cooperation for fire, medical and local law enforcement in accordance with 10 CFR Part 50, Appendix E, Section IV.A.7. A statewide mutual aid agreement in the South Carolina Emergency Response Plan provides coordination with State law enforcement for additional resources in the event of hostile action against the site and evacuation of the public. WLS Emergency Plan, Section II.C.4 also identifies additional emergency response support from: INPO Fixed Nuclear Facility Voluntary Assistance Agreement signatories and REAC/TS. Certification letters are provided in WLS Emergency Plan, Appendix 7, "Certification Letters." LOAs for INPO or REAC/TS were not included. In RAI 25, Question 13.03-56(D), the staff requested that the applicant provide LOAs or other appropriate supporting documentation related to the emergency assistance provided by INPO and REAC/TS. In a December 23, 2008, response, the applicant stated LOAs with INPO and REAC/TS will be incorporated into WLS Emergency Plan, Appendix 7 in a future revision to the WLS Emergency Plan once they have been reached, or INPO and REAC/TS will be removed from WLS Emergency Plan, Section II.C.4, "Other Supporting Organizations." In WLS COLA Part 10, the applicant identified License Condition 4, which includes a license condition regarding the schedule to update LOA's. The staff identified this as License Condition (13-6). The staff has evaluated License Condition (13-6) in Section 13.3.4.16 of this report.

The staff finds the additional information and clarifications provided by the applicant in response to RAI 25, Question 13.03-56(C) and (D) acceptable because they conform to the guidance in NUREG-0654. Accordingly, the staff considers these questions resolved.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654.

The staff finds the information provided by the applicant and finds that the WLS Emergency Plan adequately describes the applicant's operational role, its concept of operations, and its relationship to the total effort. The staff finds this acceptable because it meets the applicable requirements in 10 CFR Part 50, Appendix E.

## **Conclusion**

Subject to License Condition (13-6), the staff concludes that the information provided in the WLS COLA conforms to the evaluation criteria in NUREG-0654, Planning Standard C. Therefore, the staff finds the information acceptable and because it meets the relevant requirements of 10 CFR 50.47(b)(3) and 10 CFR Part 50, Appendix E, Sections III and IV.A.7, insofar as the information describes the arrangements for requesting and effectively using assistance resources; arrangements to accommodate State and local staff at the applicant's Emergency Operations Facility; and identification of other organizations capable of augmenting the planned emergency response.

### **13.3.4.4      *Emergency Classification System***

As stated in NUREG-0654, Planning Standard D, "Emergency Classification System," 10 CFR 50.47(b)(4) requires that a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and that State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures. In addition, 10 CFR Part 50, Appendix E, Section IV.B requires a description of the means to be used for determining the magnitude, and for continually assessing the impact, of the release of radioactive materials, including emergency action levels (EALs) that are to be used as criteria for determining the need for offsite agency notifications and participation, and when and what types of protective measures should be considered. The EALs must include hostile actions that might adversely affect the nuclear power plant. The initial EALs shall be discussed and agreed upon by the applicant or licensee and State and local governmental authorities, and approved by the NRC. Thereafter, EALs shall be reviewed with State and local governmental authorities on an annual basis. 10 CFR Part 50, Appendix E, Section IV.C requires a description of EALs and emergency conditions that involve alerting or activating the total emergency organization, including communication steps to be taken under each emergency class. The emergency classes defined shall include (1) notification of unusual event, (2) alert, (3) site area emergency, and (4) general emergency. 10 CFR Part 50, Appendix E, Section IV.C.2 requires the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators, which positions are defined in NSIR/DPR-ISG-01, that an EAL threshold has been exceeded, and to promptly declare the emergency conditions as soon as possible after the identification of the appropriate emergency classification level.

In WLS Emergency Plan, Section II.D, "Emergency Classification System," the applicant described the emergency classification and action level scheme used to determine the minimum response to an abnormal event at the plant. The staff reviewed this section, as well as other relevant portions of the application, to determine whether the application conforms to the

applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard D, which provides detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(4).

In WLS Emergency Plan, Section II.D, "Emergency Classification System," the applicant described its capability to declare an emergency classification level within 15 minutes after the availability of the indications to trained and qualified staff that an emergency action level threshold has been exceeded are described in the emergency plan implementing procedures. The responsibilities for declaring emergencies at WLS are also included, as well as, the responsibility for terminating the emergency.

WLS Emergency Plan, Section II.D.1, "Classification System," includes a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters. The following emergency classes are identified: "Notification Of Unusual Event," "Alert," "Site Area Emergency," and "General Emergency." The applicant also proposed EP-ITAAC Acceptance Criterion 1.1.1, which states, "The specific parameters identified in the Emergency Action Thresholds in the emergency plan implementing procedure addressing 'Emergency Classification' have been retrieved and displayed in the control room, TSC, and EOF." In addition, the applicant also proposed EP-ITAAC Acceptance Criterion 1.1.2, which states, "The ranges available in the control room, TSC, and EOF encompassed the values for the specific parameters identified in the Emergency Action Level Thresholds in the emergency plan implementing procedure addressing 'Emergency Classification.'"

For a COL application, the requisite EAL information is limited and the applicant is required to address four critical elements: (1) An overview of the EAL scheme, including a definition of the four emergency classification levels and general list of licensee actions; (2) a commitment to develop the remainder of the EAL scheme using a specified NRC-endorsed guidance document; (3) a proposed license condition that addresses EAL completion, agreement with State and local officials (as appropriate), and submission of the fully developed EALs to the NRC; and (4) maintaining the EALs in a document subject to 10 CFR 50.54(q). The information associated with these critical elements provides a sufficient level of applicable detail to support the staff's reasonable assurance evaluation.

In RAI 83, Question 13.03-75, the staff requested that the applicant submit either an entire EAL scheme or a revised WLS Emergency Plan, Section D, "Emergency Classification System" to address the four critical elements of the EAL scheme. In a June 12, 2009, response, the applicant provided a revised WLS Emergency Plan, Section D, and proposed a license condition to submit a fully developed set of site-specific EALs in accordance with the NRC-endorsed version of NEI 07-01, Revision 0, with no deviations. In WLS COLA Part 10, the applicant committed to meet EP-ITAAC (Table 3.8-1) and has proposed License Condition 4 "Emergency Planning Actions" related to the development and schedule for EALs. The staff refers to this as License Condition (13-3):

Proposed License Condition (13-3):

The licensee shall submit a fully developed set of site-specific Emergency Action Levels (EALs) to the NRC in accordance with the NRC-endorsed version of NEI 07-01, Rev. 0, with no deviations. The EALs shall have been discussed and agreed upon with State

and local officials. These fully developed EALs shall be submitted to the NRC for confirmation not less than 180 days prior to the date scheduled for initial fuel load.

The staff finds the description of the EAL scheme is acceptable because it is consistent with 10 CFR Part 50, Appendix E, Section IV.C, and addresses critical element (1). The staff considers the applicant's incorporation of the fully developed site-specific EAL scheme into implementing procedures acceptable because it ensures that the EALs are maintained in a document subject to the required change control process in 10 CFR 50.54(q) (i.e., EPIPs) and, therefore, addresses critical element (4). With regard to critical elements (2) and (3), in WLS COLA Part 10, the applicant proposed License Condition (13-3) (EALs), which includes a commitment to develop an EAL scheme with fully developed site-specific EALs in accordance with NRC-endorsed guidance document NEI 07-01, Revision 0. In addition, License Condition (13-3) requires a discussion and agreement with State and local officials, and submission of the fully developed EALs to the NRC. The EAL scheme is also addressed in NRC Bulletin 2005-02, "Emergency Preparedness and Response Actions for Security Based Events," (BL 2005-02), which requested, in part, that all holders of operating licenses provide information regarding the identification of emergency classification levels and EALs for security-based events. In NEI 07-01, Revision 0, the emergency classification scheme for security events, including hostile actions, is addressed in Section 5.9, "Hazards or Other Conditions Affecting Plant Safety EALs."

The staff reviewed License Condition (13-3) and, with the exception of the timeframe for submission of the EALs, finds that it is acceptable because it is consistent with NEI 07-01, Revision 0. The staff proposes a similar timeframe for submission of the EALs to the NRC, which is based on the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR 52.103(a). Therefore, the staff identified License Condition (13-3), which includes the staff's proposed timeframe for submission of the EALs to the NRC.

License Condition (13-3):

No later than 180 days before the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR 52.103(a), Duke Energy shall submit a fully developed set of plant-specific emergency action levels (EALs) for WLS, Units 1 and 2, in accordance with NEI 07-01, "Methodology for Development of Emergency Action Levels – Advanced Passive Light Water Reactors," Revision 0, with no deviations. The EALs shall have been discussed and agreed upon with State and local officials.

The staff considers the proposed EAL scheme and License Condition (13-3) acceptable because they meet the requirements of 10 CFR Part 50, Appendix E and conform to the guidance provided in NUREG-0654.

Letters of Certification with State and local governments are included in WLS Emergency Plan, Appendix 7, "Certification Letters." These letters state that the signature on the letter indicates that the parties concurred with the emergency classification system, initiating conditions, and EALs for the Lee Nuclear Station. In RAI 83, Question 13.03-83, the staff requested that the applicant address when the initial EALs will be discussed and agreed upon with State and local governmental authorities. In a December 11, 2009, response, the applicant stated that in its proposed license condition, it would gain approval of the revised EAL scheme by local and State

officials prior to submitting it to the NRC. In addition, in RAI 83, Question 13.03-78, the staff requested that the applicant provide a confirmation that the EAL scheme would be coordinated with State and local offsite response organizations. In a December 11, 2009, response, the applicant stated this would be accomplished through a proposed license condition, which is discussed above.

The staff finds the additional information and clarifications provided by the applicant in response to RAI 83, Questions 13.03-75, 13.03-78, and 13.03-83 acceptable because they conform to the guidance in NUREG-0654. Accordingly, the staff considers these questions resolved.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654.

Subject to License Condition (13-3), the staff finds that the applicant established a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, which includes the four emergency classes identified above. The applicant described EALs and emergency conditions that involve ERO activation, including steps to be taken under each emergency class. The applicant also described the means to determine the magnitude of, and for continually assessing the impact of, the release of radioactive materials, and EALs (including those pertaining to hostile actions) that are used to determine the need for offsite notifications and protective measures. In addition, the applicant has the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an EAL threshold has been exceeded, and to promptly declare the emergency condition.

## **Conclusion**

Subject to License Condition (13-3), the staff concludes that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, Planning Standard D. Therefore, the staff finds the information acceptable and that it meets the relevant requirements of 10 CFR 50.47(b)(4) and 10 CFR Part 50, Appendix E, Sections IV.B and IV.C, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

### **13.3.4.5 Notification Methods and Procedures**

As stated in NUREG-0654, Planning Standard E, "Notification Methods and Procedures," 10 CFR 50.47(b)(5) requires that procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow-up messages to response organizations and the public has been established; and that the means to provide early notification and clear instruction to the populace within the 16-km (10-mi) plume exposure pathway EPZ have been established. In addition, 10 CFR Part 50, Appendix E, Section IV.A.4 requires a description of how offsite dose projections will be made and the results transmitted to State and local authorities, NRC, and other appropriate governmental entities. 10 CFR Part 50, Appendix E, Section IV.C requires a description of EALs and emergency conditions that involve alerting or activating the emergency organization, including communication steps to be taken under each class of emergency, and the existence of a message-authentication scheme. 10 CFR Part 50,



Appendix E, Section IV.D.1 requires a description of administrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures. The description shall include identification of the appropriate officials, by title and agency, of the State and local government agencies within the EPZs. 10 CFR Part 50, Appendix E, Section IV.D.3 requires the licensee to have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency. The licensee shall demonstrate that appropriate governmental authorities have the capability to make a public alerting and notification decision promptly on being informed by the licensee of an emergency condition, and that administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway EPZ. The alerting and notification capability shall include a backup method. Finally, 10 CFR 50.72(a)(3) requires NRC notification no later than 1 hour after declaring an emergency.

NRC notifications are further addressed in Commission Orders issued on February 25, 2002, as well as BL 2005-02, which requested in part that all holders of operating licenses provide information regarding the implementation of an NRC notification time period of approximately 15 minutes from discovery of a security-based event, as well as subsequent NRC guidance.

In WLS Emergency Plan, Section II.E, "Notification Methods and Procedures," the applicant described the specific methods and sequencing of notifications that will be covered in the appropriate implementing procedures for WLS in an emergency. The staff reviewed this section, as well as other relevant portions of the application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard E, which provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(5).

WLS Emergency Plan, Section II.E, "Notification Methods and Procedures," states that onsite emergencies are immediately reported to the Shift Manager on duty. Offsite response is the responsibility of local government officials in accordance with the State plans. Procedures for notification of State and local response organizations and licensee emergency responders reference the prepared messages in the State plans. Notification is initiated by the Emergency Coordinator within 15 minutes of emergency declaration based on EALs. All affected organizations (warning points) are listed. The NRC is notified following notification of State and local authorities and within 1 hour of declaration of an emergency. The notification system consists of a primary and a back-up system maintained through the use of commercial telephones (Section II.F.1, "Description of Communications Links"). In RAI 25, Question 13.03-58(B) and RAI 83, Question 13.03-79, the staff requested that the applicant specify the "officials" to be notified as described in 10 CFR Part 50, Appendix E, Section IV.D.1 and describe procedures and physical means for making notifications to offsite agencies. In a December 11, 2009, response, the applicant explained that North Carolina, South Carolina, and county warning point Cherokee County, York County and Cleveland County duty officers are notified via the Selective Signaling System within 15 minutes of a declared emergency at the site. The State and county warning point duty officers will then notify State and local officials according to their respective procedures. This process and the procedures have been cooperatively developed between the States of North and South Carolina and the counties of

Cherokee, York, and Cleveland. The applicant proposed EP-ITAAC 2.1 to test the emergency notification capabilities.

WLS Emergency Plan, Section II.E.1, "Notification of State and Local Authorities," states that systems and procedures needed to provide prompt notification of the NRC Operations Center following the declaration of any emergency condition are maintained. The NRC is notified as soon as is practical following the notification of State and local authorities and within 1 hour of the emergency declaration, including escalation or de-escalation of any emergency declaration. WLS Emergency Plan, Section II.A.1.b, "Assignment of Responsibility," footnote #4, states that in the event of a security-related attack on the site by a hostile force, a brief notification (site name, emergency classification, if determined, and nature of threat) is provided to the NRC following notification of the designated State and local authorities and within approximately 15 minutes of the discovery of the event.

WLS Emergency Plan, Section II.E.2, "Notification and Mobilization of Licensee Response Organizations," is directed by the Emergency Coordinator. WLS has an evacuation alarm and a Telephone/Page System. There is redundant notification through the paging system and an automated telephone system. A siren tone generator and public address system speakers can be activated from the control room in case of emergency (see AP1000 DCD Section 9.5.2.2, "Communications Systems-System Design"). ERO personnel are notified by alpha-numeric pagers following procedures in the EPIPs. The applicant proposed EP-ITAAC 2.2 to test the capabilities of the system used to notify licensee response personnel.

WLS Emergency Plan, Section II.E.3, "Message Content," states, "The content of the messages has been established in conjunction with the State and local governments and include the class of emergency, whether a release is in progress, and potentially affected areas and populations, and any recommended protective measures. Additional information is provided as it becomes available."

In RAI 25, Question 13.03-58(A), the staff requested that the applicant provide documentation detailing the notification process. In a December 23, 2008, response, the applicant stated the Emergency Coordinator provides emergency notification directly to the State and county governments through the Selective Signaling Telephone System discussed in WLS Emergency Plan, Section II.F. Emergency notification forms are transmitted to the 24-hour warning points in North Carolina and South Carolina as soon as they are online and hourly updates are provided throughout the emergency. Warning points implement their respective emergency plans and notify the appropriate State or local officials specified in their plans once notified. Commercial and satellite phones can be used as backup.

WLS Emergency Plan, Section II.E.4, "Follow-up Messages to Off-site Authorities," states that there are dedicated communicators for continuous communication allowing regular updates. Communication with designated authorities is to be continuous with the NRC, and provides updates approximately every 60 minutes to State and local authorities. Follow-up messages shall include all information listed in NUREG-0654, Evaluation Criterion E.4.a-n, (as appropriate). In RAI 25, Question 13.03-58(D), the staff requested that the applicant provide information identifying the communicators, where they will be located during an emergency, and how they will obtain the necessary information for the follow-up messages. In a December 23, 2008, response, the applicant stated that the Selective Signaling Telephone System is used for follow-up communication with State and local authorities as described in WLS Emergency Plan,

Section II.F.1.b and the response to RAI 25, Question 13.03-58(A). Communication support is provided for by communicators in the TSC or EOF. Follow-up communication during notification of an unusual event is provided by the Control Room (CR).

WLS Emergency Plan, Section II.E.6, "Instructions to the Public in the Plume Exposure EPZ (Emergency Planning Zone)," states that the Alert and Notification System (ANS) is used and that it includes an outdoor acoustic warning system designed to meet the acceptance criteria of NUREG-0654/FEMA-REP-1, Revision 1, as revised by Supplement 4 (October 2011) Appendix 3, "Means for Providing Prompt Alerting and Notification of Response Organizations and the Population," Section B, "Criteria for Acceptance," The physical description of the primary and backup systems is detailed in a FEMA-approved ANS design report. The design objective of the primary system is to have the capability to essentially complete the initial alerting and initiate notification of members of the public within the plume exposure pathway EPZ, including those in remote and low population areas within 15 minutes following a decision by cognizant offsite agencies to notify the public. The capability includes any transient populations in remote and rural areas, open water, rivers, hunting, recreational and low population areas that may require special alerting procedures. Furthermore, as a back-up, State and local plans maintain the alert mechanism via systems such as emergency vehicles, automated dialing systems, and Public Alerting (PA) systems to also alert the public to monitor commercial broadcasts for emergency information. The primary and back-up alert systems may include any combination of fixed sirens, tone alert radios, National Oceanographic and Atmospheric Agency (NOAA) weather radios or route alerting. The notification systems may consist of a combination of Emergency Alert System (EAS), NOAA weather radios or route alerting. Each county controls the activation of the sirens within its boundaries. Individuals by title that will initiate alarm are listed in the referenced State plans. The applicant proposed EP-ITAAC 2.3 and EP-ITAAC Acceptance Criteria 8.1.1.2.B.4 to confirm the means to notify and provide instructions to the populace in the plume exposure pathway EPZ.

WLS Emergency Plan, Section II.E.7, "Written Messages to the Public," states that written pre-scripted messages are released to the local media by the State Director of Emergency Management or local Director of Emergency Management. The messages give instruction to specific actions to be taken, the nature of the emergency and recommended protective actions, including sheltering, evacuation, and the use of potassium iodide, as appropriate. The WLS Emergency Plan also states that the applicant will assist with the development of the messages. In RAI 25, Question 13.03-58(E), the staff requested that the applicant provide details related to the applicant's support for written messages to the public. In a December 23, 2008, response, the applicant stated that the EOF News Manager manages the communication organization, which is responsible for coordinating plant status updates to State and local authorities and the media. The applicant provides detailed information regarding the emergency to support the preparation of the emergency messages. The applicant also provided Duke Energy's corporate procedure for emergency communication between corporate and the EOF as an example. This example was reviewed by the NRC staff and found acceptable. Actual procedures for WLS will be developed and submitted in accordance with License Condition (13-8). This License Condition is evaluated in Section 13.3.4.19 of this report.

NRC notifications are further addressed in BL 2005-02, which requested in part that all holders of operating licenses provide information regarding the implementation of an NRC notification time period of approximately 15 minutes from discovery of a security-based event.

WLS Emergency Plan, Section II.E.1, "Notification of State and Local Authorities," states that systems and procedures needed to provide prompt notification of the NRC Operations Center following the declaration of any emergency condition are maintained. The NRC is notified as soon as is practical following the notification of State and local authorities and within 1 hour of the emergency declaration, including escalation or de-escalation of any emergency declaration.

WLS Emergency Plan, Section II.A.1.b, "Assignment of Responsibility," footnote #4, states that in the event of a security-related attack on the site by a hostile force, a brief notification (site name, emergency classification, if determined, and nature of threat) is provided to the NRC following notification of the designated State and local authorities and within approximately 15 minutes of the discovery of the event.

WLS Emergency Plan, Section II.F, "Emergency Communications," states that dedicated communicators are available to maintain a continuous channel of communication with the NRC as requested and to provide regular updates to State and local officials approximately every 60 minutes, when conditions change, or as otherwise agreed.

The staff finds the additional information and clarifications provided by the applicant in response to RAI 25, Questions 13.03-58(A), (B), (D) and (E), and RAI 58, Question 13.03-79 acceptable because they conform to the guidance in NUREG-0654. Accordingly, the staff considers these questions resolved.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG 0654.

After reviewing information provided by the applicant, the staff finds that procedures for notification of State and local response organizations and emergency personnel by all organizations have been established, and the licensee has the capability to notify offsite officials and agencies, including State and local governmental agencies within 15 minutes, and NRC no later than 1 hour after declaring an emergency. The appropriate officials of the States and local government agencies within the EPZs have been identified. The licensee has described the entire spectrum of emergency conditions that involve alerting or activating the emergency organization, including EALs for offsite agency notification and communication steps to be taken under each class of emergency. Message authentication is described in the States' and local emergency plans. The applicant has also described how appropriate governmental authorities have the capability to make a public alerting and notification decision promptly following notification of an emergency by the licensee, and administrative and physical means have been established for alerting and providing prompt instruction to the public within the plume exposure pathway EPZ (including a backup methods to alert populations), and for public evacuation and other protective measures.

## **Conclusion**

The staff concludes that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, Planning Standard E. Therefore, the staff finds the information acceptable and that it meets the relevant requirements of 10 CFR 50.47(b)(5), 10 CFR 50.72(a)(3), and 10 CFR Part 50, Appendix E, Sections IV.A.4, IV.C, IV.D.1,

and IV.D.3, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

#### **13.3.4.6      *Emergency Communications***

As stated in NUREG-0654, Planning Standard F, "Emergency Communications," 10 CFR 50.47(b)(6) requires that provisions exist for prompt communication among principal response organizations, to emergency personnel, and to the public. In addition, 10 CFR Part 50, Appendix E, Section IV.E.9 requires onsite and offsite communication systems with backup power sources, including provisions for communication with State and local governments within the plume exposure pathway EPZ, and Federal emergency response organizations and the NRC. Also required are provisions for communication among the Control Room, TSC, EOF, principal State and local emergency operations centers (EOCs), and field assessment teams. Communication systems shall be tested at designated frequencies.

WLS Emergency Plan, Section II.F, "Emergency Communications," describes the station communication systems. The staff reviewed this section, as well as other relevant portions of the WLS COL application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard F, which provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(6).

WLS Emergency Plan, Section II.F, "Emergency Communications," states that the applicant maintains systems and procedures that provide for prompt communication between its ERFs and between the site and offsite ERFs. Dedicated communicators are available to maintain continuous communication with the NRC and to provide regular updates to State and local officials approximately every 60 minutes, when conditions change or as otherwise agreed.

The communication systems are designed to provide redundant means to communicate with essential areas of the station during normal operation and under accident conditions. Communication systems vital to operation and safety are designed so that failure of one component would not impair the reliability of the total communication systems. This is accomplished within the station by using diverse systems. The EIPs define the responsibilities of designated personnel for use of the communication systems.

The communication systems include those systems described in AP1000 DCD Section 9.5.2, "Communication System," and the following emergency communication systems:

- Wireless telephone system
- Telephone/page system
- Private automatic branch exchange (PABX) system
- Emergency offsite communication
- Security communication system

In the event of a natural disaster, WLS maintains a satellite phone system described in WLS COL FSAR Section 9.5.2.2.3.1.3.

WLS Emergency Plan, Section II.F, "Emergency Communications," states that responsibilities of designated personnel for the communication systems can be found in State and local plans and in the EPIPS. The station maintains capabilities for 24 hours per day emergency notification to the State and county emergency response network. All State and county warning points are staffed 24 hours per day.

WLS Emergency Plan, Section II.F.1.a, "Description of Communication Links," states that the applicant maintains capabilities for 24 hours per day emergency notification to the State and county emergency response network. In RAI 25, Question 13.03-59(D), the staff requested that the applicant discuss who is designated to use communication systems and what responsibilities they have for using those communication systems. In a December 23, 2008, response, the applicant stated that a communicator will be assigned by the Operations Shift Manager/Emergency Coordinator from the on shift staff. The position will be filled by a Control Room Operator or Non-Licensed Operator from the unaffected unit that has been trained to perform this function. Full-time communication positions in the ERO include the TSC Off-site Agency Communicator, the EOF Off-site Agency Communicator, and the NRC Communicator.

WLS Emergency Plan, Section II.F.1.b, "Description of Communications Links," identifies communication links (EOF to State and county warning points). The applicant proposed EP-ITAAC 3.1 to test that the means exist for communication among the CR, TSC, EOF, principal State and local EOCs, and radiological field assessment teams. The applicant proposed ITAAC 3.2 to test the communication capabilities from the control room, TSC, EOF to the NRC Headquarters Operation Center (HOC) and Region II EOC, which also addresses the establishment of the availability of an access port for ERDS and transfer of data from the units to the NRC HOC.

WLS Emergency Plan, Section II.F.1.c, "Description of Communications Links," identifies dedicated communication links with the NRC through Emergency Notification System (ENS), Health Physics Network (HPN), Reactor Safety Counterpart Link (RSCL), Protective Measures Counterpart Link (PMCL), ERDS, Management Counterpart Link (MCL), and Local Area Network (LAN) systems.

WLS Emergency Plan, Section II.F.1.d, "Description of Emergency Communications Links," states that the applicant provides capability for communication between CR or TSC and the EOF, county, and State EOCs. This section states that communication between the TSC, EOF and offsite monitoring teams is via radio. In RAI 25, Question 13.03-59(C), the staff requested that the applicant provide clarification regarding the testing frequency from the licensee to the NRC Headquarters and appropriate NRC Regional Office Operations Center. In a December 23, 2008, response, the applicant revised Section II.N.2.a to clarify communication systems testing between the facility, NRC Headquarters, and NRC Regional Operations will be performed monthly.

WLS Emergency Plan, Section II.F.1.e, "Description of Communications Links," refers back to WLS Emergency Plan, Section II.E.2, "Notification and Mobilization of Licensee Response Organizations," for notification, alerting, and activation of emergency response personnel in the TSC, OSC, and EOF.

WLS Emergency Plan, Section II.F.1.f describes that WLS communicates with the NRC Headquarters Operations Center by the Emergency Telecommunications System (ETS) located in the CR, TSC and EOF or by private telephone systems, and between the CR, TSC and EOF to the NRC regional office by the normal private telephone capability. The applicant maintains radio communication between the TSC, EOF and offsite radiological monitoring teams.

WLS Emergency Plan, Section II.F, "Emergency Communications," provides communication system descriptions but does not identify communication between the licensee and Federal EROs other than NRC. Additional information related to communication between the licensee and Federal EROs was requested in RAI 25, Question 13.03-59(B). In a December 23, 2008, response, the applicant stated that the Radiological Assessment Manager may contact the DOE-Savannah River and/or REAC/TS for radiological monitoring assistance as discussed in WLS Emergency Plan, Section II.C.1.b. The NRC is the primary interface for communication with other Federal agencies. WLS Emergency Plan, Section II.N.2.a, "Communications Drills," states that communication testing with NRC Headquarters' and Region's Operation Centers is tested monthly.

The applicant's communication plans have arrangements for emergencies, including titles and alternates for those in charge at both ends of the communication links and the primary and backup means of communication.

WLS Emergency Plan, Section II.F.2, "Communication with Fixed and Mobile Medical Support Facilities," states Duke Energy maintains radio and telephone communication systems that allow for communication between Lee Nuclear Station and fixed and mobile medical support facilities.

WLS Emergency Plan, Section II.F.3, "Communication System Reliability," discusses system reliability. WLS COL FSAR Section 9.5.2.2.3.1.1, "NRC Offsite Interfaces," states the design addresses the recommendations of NRC Bulletin 80-15, "Possible Loss of Emergency Notification System (ENS) with Loss of Offsite Power." WLS Emergency Plan, Section F, "Emergency Communications," states, "The communications systems include those systems described in Section 9.5.2 of the AP1000 DCD," and that a normal source power supply failure does not impact offsite communication systems since backup power sources are provided, in most cases. Furthermore, the section states that onsite communication systems are periodically tested and that dedicated telephone lines are checked according to specified schedules.

In RAI 25, Question 13.03-59(A), the staff requested that the applicant clarify the use of backup power. In a December 23, 2008, response, the applicant stated that systems are maintained to communicate within the station and offsite as discussed in WLS COL FSAR Section 9.5.2.2.3, "Private Automatic Branch Exchange System." The selective signaling system is used as the primary means of communication between the station and offsite agencies. The system has sufficient backup power sources with automatic transfer capability to maintain communication if power is lost. Commercial telephone company lines and the Duke Energy Radio network can be used as secondary means of communication.

WLS Emergency Plan, Section II.N.2.a, "Communications Drills," states that communication testing with State and local governments within the 16-km (10-mi) EPZ is performed monthly; communication testing with State and Federal EROs within the 80-km (50-mi) EPZ and outside

the 16-km (10-mi) EPZ is performed quarterly; and from WLS to NRC Headquarters Operations Center and to the Region Operations Center monthly. Additionally, Duke Energy conducts a communication drill annually. The drills' acceptance criteria are established for both operability of the systems and intelligibility of the messages. WLS Emergency Plan, Appendix 8, "Cross References to Regulations, Guidance, and State and Local Plans," provides a cross reference between the WLS Emergency Plan and the State and local plans.

In WLS COLA Part 10, the applicant proposed License Condition 12C, "Emergency Planning Actions," to address the NTTF Recommendation 9.3 for communication capabilities. With respect to communications, the staff refers to this as License Condition (13-11):

Proposed License Condition (13-11):

Communications –

At least two (2) years before the latest date set forth in the schedule for completing the inspections, tests, and analyses in the ITAAC submitted in accordance with 10 CFR 52.99(a), the Licensee shall have performed an assessment of on-site and off-site communications systems and equipment relied upon during an emergency event to ensure communications capabilities can be maintained during an extended loss of ac power. The communications capability assessment shall be performed in accordance with NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0.

At least one hundred eighty (180) days before the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR 52.103(a), the Licensee shall complete implementation of corrective actions identified in the communications capability assessment described above, including any related emergency plan and implementing procedure changes and associated training.

With the exception of the timeframes for completion and submission of the communication capability assessment, the staff finds the license condition acceptable because it is consistent with NTTF Recommendation 9.3 and reflects the use of (NEI technical report NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," which the NRC has endorsed as an acceptable method for licensees to employ when addressing NTTF Recommendation 9.3.<sup>9</sup>

The staff proposes a similar timeframe for completion of the communication capabilities assessment as for the staffing assessment in License Condition (13-10). Therefore, consistent with the applicant's proposed License Condition (13-11), the staff identified License Condition

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<sup>9</sup> See (1) NRC May 15, 2012, letter, 'U.S. Nuclear Regulatory Commission Review of NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0, May 2012' (ADAMS Accession No. ML12131A043); (2) NEI May 3, 2012, letter, 'Transmittal of NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0, dated May 2012' (ADAMS Accession No. ML12125A411); and (3) NEI Report No. 12-01, Revision 0, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," May 2012 (ADAMS Accession No. ML12125A412).



(13-11), which addresses enhanced communication capabilities and includes the timeframes for completion of the assessments and their submission to the NRC.

License Condition (13-11):

At least 18 months before the latest date set forth in the schedule submitted in accordance with 10 CFR § 52.99(a) for completing the inspections, tests, and analyses in the ITAAC, Duke Energy shall have performed an assessment of onsite and offsite communications systems and equipment relied upon during an emergency event to ensure communication capabilities can be maintained during an extended loss of alternating current power. The communications capability assessment shall be performed in accordance with NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0.

At least one hundred eighty (180) days before the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR § 52.103(a), Duke Energy shall complete implementation of corrective actions identified in the communications capability assessment described above, including any related emergency plan and implementing procedure changes and associated training.

The staff finds License Condition (13-11), as modified, acceptable because it meets the requirements of 10 CFR Part 50, Appendix E and conforms to the guidance provided in NUREG-0654/FEMA REP 1, Revision 1 and in NEI 12-01, Revision 0.

After review, the staff finds the additional information and clarifications provided by the applicant in the December 23, 2008, response to RAI 25, Question 13.03-59 (A through D) acceptable because it conforms to the guidance in NUREG-0654.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654.

Subject to License Condition (13-11) as modified, and after review of information provided by the applicant, the staff finds that provisions exist for prompt communication among principal response organizations, to emergency personnel, and to the public. Specifically, the applicant established a reliable primary and backup means of communication for alerting and activating the response organizations and personnel, including 24-hour staffing of communication links. Provisions also exist for communication among the Control Room, TSC, EOF, State and local governments within the EPZs, and field assessment teams. In addition, the applicant provided a coordinated communication link for fixed and mobile medical support facilities. Onsite and offsite communication systems have backup power sources and are tested at designated frequencies.

## **Conclusion**

Subject to License Condition (13-11), the staff concludes that the information provided in the COLA is consistent with the guidelines in NUREG-0654, Planning Standard F, and in NEI 12-01, Revision 0. Therefore, the staff finds the information acceptable and meets the relevant requirements of 10 CFR 50.47(b)(6) and 10 CFR Part 50, Appendix E, Section IV.E.9, insofar as

the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

#### **13.3.4.7 Public Education and Information**

As stated in NUREG-0654, Planning Standard G, "Public Education and Information," 10 CFR 50.47(b)(7) requires that information be made available periodically to the public concerning notification methods and initial actions the public should take in an emergency, for example, listening to a local broadcast station and remaining indoors, the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) be established in advance, and procedures for coordinating dissemination of information to the public be established. In addition, 10 CFR Part 50, Appendix E, Section IV.D.2 requires a description of provisions for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, such as methods for public notifications and protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency. Signs or other measures shall also be used to disseminate information to any transient population within the plume exposure pathway EPZ.

In WLS Emergency Plan, Section II.G, "Public Education and Information," the applicant described the public education and information program for the WLS, including the process for keeping the public within the 16-km (10-mi) EPZ informed in the event of an emergency. The staff reviewed this section, as well as other relevant portions of the application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard G, which provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(7). The applicant commits to coordinating with the State and local authorities to disseminate information to the public on responding to a radiological emergency at the WLS.

WLS Emergency Plan, Section II.G.1, "Public Information Program," states that information provided to the public includes educational information on radiation, point of contact for additional information, protective measures (evacuation routes, relocation centers, sheltering, respiratory protection, etc.) and information addressing special needs of the handicapped on an annual basis.

WLS Emergency Plan, Section II.G.2, "Distribution and Maintenance of Public Information," lists how written information may be provided to permanent residences and transient populations. WLS COL FSAR Section II.G.2 states that information for transient populations, which may be staying in hotels, motels and campgrounds, will be provided by public postings and publications, which will provide local information sources for emergencies. However, the WLS Emergency Plan does not address who will be responsible for creating the material and having the material disseminated. In RAI 25, Question 13.03-60(A), the staff requested that the applicant identify the individual responsible for coordinating and disseminating educational information for the general public with State and local authorities and discuss the process. In a December 23, 2008, response, the applicant stated that the Emergency Communications Manager is responsible for operation and maintenance of the JIC, and coordinating the creation and

distribution of public informational materials in cooperation with State and local authorities for the WLS. Educational material is distributed to commercial and residential addresses within the plume exposure pathway EPZ annually. The applicant provided examples of this material used at the Catawba site as examples of the types of public information material that would be developed and distributed for the WLS. Public education material for Duke Energy's operating nuclear plants is also available via the Duke Energy Nuclear Emergency Preparedness website. The applicant further stated that details regarding the creation and distribution of public information materials will be developed on a schedule that supports NRC inspection activities and execution of the emergency exercise required by 10 CFR Part 50, Appendix E, Section IV.F.2.

WLS Emergency Plan, Section II.G.3, "News Media Coordination states that the JIC is located in the Energy Center located in Charlotte, North Carolina. The section also indicates that the News Manager and Public Spokesperson are the primary contacts for the news media. The JIC, co-located with the EOF is where approved news releases will be provided to the media for dissemination to the public. The JIC is equipped with appropriate seating, lighting, and visual aids to allow for public announcements and briefings to be given to the news media. The JIC is activated at the declaration of an "Alert" or higher classification. Additionally, WLS Emergency Plan, Section II.G.3 states that an onsite media center can be promptly established and provide space for a limited number of media. The applicant has proposed EP-ITAAC 4.1 to ensure that the licensee has provided space that may be used for a limited number of the news media.

WLS Emergency Plan, Section II.B, "On-site Emergency Organization," Figure II-3, "Off-site Emergency Response Organization," shows the JIC organization as part of the EOF Director's span of control.

WLS Emergency Plan, Section II.G.4.a, "Information Exchange," indicates that the public spokesperson has access to all the required information related to the emergency and provides plant status information during news conferences and briefings. The Chief Nuclear Officer and his direct reports are the designated public spokespersons.

WLS Emergency Plan, Section II.G.4.b, "Information Exchange," states that liaisons coordinate with licensee and designated members of the State and local EROs on a periodic basis. WLS Emergency Plan, Appendix 9, "Justification for Common EOF," states that the applicant and state officials cooperate in releasing information to the media. In RAI 25, Question 13.03-60(B), the staff requested that the applicant provide details on how timely and accurate information is provided to the media during an emergency. In a December 23, 2008, response, the applicant stated that WLS Emergency Plan, Sections II.G.3, "News Media Coordination," and II.G.4, "Information Exchange," address arrangements for news media coordination and the exchange of information among designated spokespersons. The applicant has specified that Duke Energy has corporate procedures are in place, which describe the public information responsibilities of emergency response personnel. The Chief Nuclear Officer and his or her direct reports fill the position of public spokesperson to provide plant status and company information during news conferences and media briefings conducted on an hourly basis. The applicant committed to revise their corporate JIC Activation Procedure to incorporate the WLS on a schedule to support the requirements of 10 CFR Part 50, Appendix E. The applicant proposed EP-ITAAC 9.1 to verify that the emergency plan implementing procedures provide for 24-hour per day emergency response, continuous staffing of communication links and operations for a protracted period.

WLS Emergency Plan, Section II.G.4.c, "Information Exchange," states that contact between the designated spokespersons and by the activities of a licensee liaison in the JIC serves to control rumors. Customer inquiries are handled by Customer Contact Centers. Employees are updated through company intranet. Elected officials and regulatory agencies are updated through the Corporate Communications and Governmental Affairs Departments. Industry groups assist in disseminating information to other industry groups.

WLS Emergency Plan, Section II.G.5, "News Media Training," states that information regarding emergency plans and radiation hazards, and points of contact for release of public information is provided annually to media organizations.

The staff finds the additional information and clarifications provided by the applicant in the December 23, 2008, response to RAI 25, Question 13.03-60 (A) and (B) acceptable because they conform to the guidance in NUREG-0654.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654.

The staff finds that the applicant has provided for a coordinated and periodic dissemination of information to the public, including the permanent and transient population within the 16-km (10-mi) EPZ, regarding how they will be notified and what their actions should be in an emergency. The applicant has also established the principal points of contact with the news media for dissemination of information during an emergency, and procedures for coordinated dissemination of information to the public. In addition, the applicant has described the provisions for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, including the use of signs or other measures to disseminate information to any transient population within the plume exposure pathway EPZ.

## **Conclusion**

The staff concludes that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, Planning Standard G. Therefore, the staff finds the information acceptable and meets the relevant requirements of 10 CFR 50.47(b)(7) and 10 CFR Part 50, Appendix E, Section IV.D.2, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

### **13.3.4.8      *Emergency Facilities and Equipment***

As stated in NUREG-0654, Planning Standard H, "Emergency Facilities and Equipment," 10 CFR 50.47(b)(8) requires that adequate emergency facilities and equipment to support the emergency response be provided and maintained. In addition, 10 CFR Part 50, Appendix E, Section IV.E.8 requires that adequate provisions be made and described for emergency facilities and equipment, including a licensee's onsite OSC and TSC, as well as an EOF from which effective direction can be given and effective control can be exercised during an emergency. 10 CFR Part 50, Appendix E, Section IV.E.8.b addresses various requirements associated with EOF locations and required provisions, which are not applicable to an existing EOF pursuant to 10 CFR Part 50, Appendix E, Section IV.E.8.e. 10 CFR Part 50, Appendix E, Section IV.E.8.c requires various EOF capabilities, which include supporting response to

multiple reactors/sites and simultaneous events, as applicable. 10 CFR Part 50, Appendix E, Section IV.E.8.d requires an alternative facility (for use when onsite emergency facilities cannot be safely accessed during hostile actions) that would be accessible and could function as a staging area for augmentation of emergency response staff. 10 CFR Part 50, Appendix E, Section IV.G requires a description of provisions to be employed to ensure that the emergency plan, its implementing procedures, and emergency equipment and supplies are maintained up to date. 10 CFR Part 50, Appendix E, Section VI.1 requires an ERDS data link between the licensee's onsite computer system and the NRC Operations Center, through which a limited data set of selected parameters can be automatically transmitted.

In WLS Emergency Plan, Section II.H, "Emergency Facilities and Equipment," Appendix 10, "Technical Support Center Description," and Appendix 9, "Justification for Common EOF," the applicant described the ERFs and the equipment that will be used to assess an accident and monitor functions following the declaration of an emergency. The staff reviewed the section and appendices in the WLS Emergency Plan, as well as other relevant portions of the application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard H; NUREG-0696; NUREG-0737; and NSIR/DPR-ISG-01, which provide the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(8) and Appendix E to 10 CFR Part 50.

#### Technical Support Center

WLS Emergency Plan, Section II.H, "On-site Emergency Response Facilities," provides a discussion about the TSC and the OSC, and it states the facilities were designed to meet the intent of the guidance in NUREG-0696 and the clarification in NUREG-0737, Supplement 1. In RAI 25, Question 13.03-61(I), the staff requested that the applicant provide additional information regarding how the facilities will meet the guidance in NUREG-0696 and the clarification in NUREG-0737, Supplement 1. In a December 23, 2008, response, the applicant stated that a design description addressing the criteria provided in NUREG-0696, Sections 2.1 through 2.10 is included as WLS Emergency Plan, Appendix 10, "Technical Support Center Description," of the WLS Emergency Plan. The applicant also stated that the design satisfies the criteria established in the AP1000 DCD with the exception of being within a 2-minute walk of the CR.

The TSC is common to WLS Units 1 and 2 and is not located in the nuclear island CSA as described in the AP1000 DCD, rather, it is located in the Maintenance Support Building to provide centralized response management oversight for the site. Consequently, the applicant proposed departure WLS DEP 18.8-1 in WLS COLA Section 10, "Departures and Exemption Requests," to address the location for the TSC. In WLS COLA Part 7, the applicant evaluated WLS DEP 18.8-1 pursuant to 10 CFR Part 52, Appendix D, Section VIII.B.5.b, and found that the departure has no safety significance. Specifically, the departure is for a non-safety-related system, the location of the TSC meets applicable requirements, and relocating the TSC does not adversely affect its function. The staff agrees with the applicant's evaluation, for the reasons described below.

WLS Emergency Plan, Section II.H.1, "On-site Emergency Response Facilities," in part, describes the mission of the TSC and the purpose of the TSC. During an emergency, the TSC

will provide a workspace and resources for the site personnel to support the CR by relieving the operators from tasks that are not directly related to reactor plant control manipulations. The TSC will provide communication, radiological, and engineering support. Command and control of the emergency response will transfer from the CR to the TSC. To provide technical support the TSC is equipped with the safety parameter display system (SPDS) that provides plant parameters. The TSC is provided radiological protection similar to the CR. WLS Emergency Plan, Section II.H.1, states in the event that all offsite alternating current (ac) power is unavailable, the TSC could be evacuated and function transferred to an unaffected location. A description of the procedure and locations to be considered was not provided. Therefore, in RAI 25, Question 13.03-61(A), the staff requested that the applicant provide information related to this procedure. In a December 23, 2008, response, the applicant stated that procedures for relocating the WLS TSC will be similar to those used at other Duke Energy nuclear plants. However, the applicant stated that alternate locations for the TSC and OSC have not been determined. The applicant proposed EP-ITAAC 5.1 to validate the location for the TSC and EP-ITAAC 5.1.3 Acceptance Criterion to verify back-up power was available to the TSC. The applicant also provided Catawba Nuclear Station procedures for activation of the TSC and OSC as Attachments 1 and 2 in the response to RAI 25, Question 13.03-55 as examples for future WLS procedures. WLS Emergency Plan, Appendix 10, "Technical Support Center Description" provides additional information on the TSC.

WLS Emergency Plan, Appendix 10 also states the TSC provides working space for the personnel assigned to the TSC at the maximum level of occupancy. The working space is sized for a minimum of 25 persons. Minimum size of working space is approximately 75 square feet per person. The applicant proposed EP-ITAAC 5.1 to inspect the as-built TSC and OSC. The applicant also proposed EP-ITAAC Acceptance Criterion 5.1.1 to confirm that the TSC has been located in the Maintenance Building. Also, additional ITAAC for the as-built TSC and OSC are addressed in AP1000 Design Control Document Tier 1, Revision 19, Table 3.1-1.

Due to the proposed TSC location, WLS Emergency Plan, Appendix 10 states that the TSC may not be within a 2-minute walk of either unit's CR as identified in NUREG-0696. The applicant also states that the capability to retrieve and display plant data and use the communication systems, listed below, reduce the need for face-to-face meetings between the TSC and CR personnel. The communication systems consist of the following:

- a. selective signaling telephone system
- b. private telephone capability to the county and State warning points/EOCs
- c. satellite telephone capability available in the TSC and EOF and via portable units
- d. dedicated radio networks to the county and State warning points and EOCs
- e. separate telephone lines are dedicated for communication with the NRC
- f. separate radio system that provides for communication capabilities between the CR, TSC and EOF to the radiological monitoring teams in the field

The communication facilities include the means for reliable primary and backup communication. In addition, AP1000 DCD Tier 1, Revision 19, ITAAC Table 3.1-1, Item 2 will confirm that

communication equipment is installed, and voice transmission and reception are accomplished for the TSC.

WLS Emergency Plan, Section II.H.1 states that plant data that is available in the TSC via the SPDS is described in AP1000 DCD Section 18.8.2, "Safety Parameter Display System (SPDS)." AP1000 DCD Tier 2, Chapter 1.9, "Compliance with Regulatory Criteria," Section 1.9, "Three Mile Island Issues," Section (2)(iv), "Safety Parameter Display System," states the purpose of the plant safety parameter display console (or SPDS) is to display important plant variables in the CR in order to assist in rapidly and reliably determining the safety status of the plant. In addition, displays are available at the operator workstations, the remote shutdown workstation, and at the TSC.

In RAI 25, Question 13.03-61(I), the staff requested that the applicant provide additional information regarding how the facilities meet the intent of the guidance in NUREG-0696 and the clarification in NUREG-0737, Supplement 1. In a December 23, 2008, response, the applicant stated that a design description addressing the criteria provided in NUREG-0696, Sections 2.1 through 2.10 is included in WLS Emergency Plan, Appendix 10. The applicant also stated that the design satisfies the criteria established in the AP1000 DCD with the exception of being within a 2-minute walk of the CR. AP1000 DCD Tier 1, Revision 19, EP-ITAAC Table 3.1-1, Item 3 will confirm that the plant parameters listed in AP1000 DCD Tier 1, Revision 19, Table 2.5.4-1, minimum inventory table, with a "Yes" in the "Display" column, can be retrieved in the TSC.

In RAI 25, Question 13.03-61(I)(b), the staff requested that the applicant address management plans, facility staffing, and task assignments of TSC personnel. In a December 23, 2008, response, the applicant stated that management, staffing, and assignments of TSC personnel are addressed in EIPs. These procedures will be similar to Catawba Nuclear Stations TSC activation procedure, which was included as Attachment 1 to the response to RAI 25, Question 13.03-55. This Attachment 1 was reviewed by the NRC staff and found to be an acceptable example. Actual procedures for WLS will be developed and submitted in accordance with License Condition (13-8). This License Condition is discussed in Section 13.3.4.19 of this report.

In RAI 25, Question 13.03-61(I)(c), the staff requested that the applicant provide a detail staffing plan for the TSC to address the overall management of licensee resources and the continuous evaluation and coordination of licensee activities during and after an accident. In a December 23, 2008, response, the applicant stated that WLS Emergency Plan, Section II.A.4, "Continuous Operation," outlines the capability for continuous operations through training of multiple responders for key emergency response positions allowing for multiple shifts for extended response operations. Additional information on staffing of the TSC is provided in the response to RAI 25, Question 13.03-55. The staff reviewed this information and finds it acceptable.

In RAI 25, Question 13.03-61(I)(d), the staff requested that the applicant provide the TSC staff assignments to address that TSC management of licensee onsite and offsite radiological monitoring, to perform radiological evaluations, and to interface with offsite officials. The staff also requested that the applicant address whether the personnel assigned to the TSC varies according to the emergency class. In a December 2008, response, the applicant stated that TSC staff assignments will be similar to that in use at other Duke Energy nuclear stations. In

accordance with procedures, Radiation Protection personnel are responsible for activating and dispatching field monitoring teams. TSC offsite agency communicators ensure that communicators in the EOF are aware of information affecting offsite agencies. Staffing levels are not varied based on the emergency classification. Procedures will contain provisions for emergency response managers to request additional support from other organizations to assess and mitigate the emergency condition. The Catawba Nuclear Station procedure for activation of the TSC was included as Attachment 1 in the response to RAI 25, Question 13.03-55 as an example. This Attachment 1 was reviewed by the staff and found to be an acceptable example. Actual procedures for WLS will be developed and submitted in accordance with License Condition (13-8). This License Condition is discussed in Section 13.3.4.19 of this report.

In RAI 25, Question 13.03-61(I)(e), the staff requested that the applicant address procedures for and training of personnel to use the data systems and instrumentation and include limitations of instrumentation. In a December 23, 2008, response, the applicant stated that information regarding the Emergency Response Training program is discussed in the response to RAI 25, Question 13.03-61(I)(a) and the training program description within the WLS Emergency Plan, Section II.O.4. The training program requires TSC staff to receive an overview of the site emergency plan and training on facility operations, technical assessment function, and task-specifics consistent with assigned duties. This task-specific training includes, for example, use of data systems and instrumentation, including the limitation of instrumentation for assigned personnel.

In RAI 25, Question 13.03-61(I)(f), the staff requested that the applicant address how the TSC staff maintain proficiency (participation in drills). In a December 23, 2008, response, the applicant stated that the exercise and drill program is discussed in WLS Emergency Plan, Sections II.N.1.a, "Exercise Scope and Frequency"; II.N.1.b, "Exercise Scenarios and Participation"; and II.N.2, "Drills." The applicant also provided additional information related to the goals and primary objectives of drills and exercises. The applicant further stated that TSC staffs participate in these exercises and drills to maintain their proficiency.

In RAI 25, Question 13.03-61(I)(g), the staff requested that the applicant address whether there are means for facsimile transmission capability between the EOF, TSC, and NRC Operations Center. In a December 23, 2008, response, the applicant stated that facsimile transmission between the EOF, TSC, and NRC Operations Center will be supported at the TSC. New advancements in technology will be considered before incorporating transmission systems into the facilities. An EP-ITAAC regarding this capability was proposed in AP1000 DCD Tier 1, Table 3.1-1 and WLS COLA Part 10, Table 3.8.1.

WLS Emergency Plan, Appendix 10 states that the TSC is designed in accordance with the Uniform Building Code (UBC) to withstand earthquakes and high winds. Support facilities are located within the TSC to support long term operation of the TSC. WLS Emergency Plan, Appendix 10 further states that the TSC is provided with reliable power and backup power supplies. Lighting is powered by the normal and backup electrical supply system. An emergency battery operated lighting system is installed. Power for vital information systems is provided by reliable power supplies including a battery backed uninterruptible power supply (UPS) system.

WLS Emergency Plan, Appendix 10 states that the TSC is environmentally controlled to provide room air temperature, humidity, and cleanliness appropriate for personnel and equipment. The



ventilation system includes high efficiency particulate air (HEPA) filters and charcoal filters. The ventilation system is designed to maintain exposures at or below 0.05 Sievert (Sv) (5 roentgen equivalent man (rem)) TEDE as defined in 10 CFR 50.2, "Definitions," for the duration of an accident. The TSC structure, shielding, and ventilation system are also designed to protect the TSC personnel from radiological hazards. The ventilation system is operated in accordance with approved procedures and is manually controlled from the TSC. In RAI 25, Question 13.03-61(J), the staff requested that the applicant provide details pertaining to ventilation design such as air inlet flow rates, recirculation flow rates, unfiltered air inleakage, and other factors necessary to complete a radiological assessment. In December 2008 and March 16, 2015, responses, the applicant provided a TSC Design Description Document and a detailed radiological assessment. The TSC Design Description Document stated that the TSC heating, ventilation, and air-conditioning (HVAC) system functions to provide normal environmental control for personnel and equipment operational requirements; and provides environmental control for habitability through filtration of potentially radioactive particulates and adsorption of iodine during emergency conditions. The applicant also stated that the TSC is designed to comparable levels of habitability, such as humidity and temperature, as described in the AP1000 DCD, as well as the same radiological habitability as the CR, under accident conditions. A design description for the location of the TSC is provided in WLS Emergency Plan, Appendix 10 of the application, which addresses criteria in NUREG-0737, Supplement 1, Section 8.2.1.

Furthermore, in TSC Design Description Document the applicant stated that radiation monitoring systems are available to personnel in the TSC. These monitoring systems may be composed of installed monitors or portable monitoring equipment. These systems continuously indicate radiation dose rates and airborne radioactivity concentrations inside the TSC while it is in use during an emergency. These monitoring systems include local alarms with trip levels set to provide early warning to TSC personnel of adverse conditions that may affect the habitability of the TSC. These detectors are able to distinguish the presence or absence of radioiodines at concentrations as low as  $10^{-7}$  microcuries per cc. In addition, Appendix 10 states that portable radiation monitors are available to personnel in the TSC. EP-ITAAC Acceptance Criterion 5.1.2 has been proposed to confirm that the TSC includes radiation monitors and a ventilation system with a HEPA and charcoal filter.

Equipment and supplies are provided in accordance with WLS Emergency Plan, Appendix 6, "Emergency Equipment and Supplies." WLS Emergency Plan, Appendix 6 provides a general list of equipment located in the ERFs, including the TSC.

WLS Emergency Plan, Appendix 10 describes the technical and operational data and information that is available for each Lee Nuclear Station unit within the TSC. The TSC is equipped with a computer system, which provides source term and meteorological data and technical data displays to allow TSC personnel to perform detailed analysis and diagnosis of abnormal plant conditions, including assessment of any significant release of radioactivity to the environment. EP-ITAAC 6.4 has been proposed to verify the capability to perform an inspection of the TSC to verify the availability of the meteorological data is available in the TSC. Also, HFE is incorporated into the design of the TSC related to the display and availability of plant data.

WLS Emergency Plan, Appendix 10 states that the TSC has ready access to plant records and provides a list of specific documents, procedures, reports, and drawings that will be maintained in the TSC.

WLS Emergency Plan, Section II-H.4, "Activation and Staffing of Emergency Response Facilities," states that all WLS ERFs will activate at an Alert or higher classification. Following notification, emergency response personnel report to their assigned ERF and undertake activities necessary to make the ERF fully functional. Additionally, should security or other conditions make activating the onsite ERFs impracticable or hazardous, the Emergency Coordinator will implement alternate plans as described in the EIPs, which may direct the ERO to alternate offsite ERFs to assemble and await instructions until favorable conditions exist to activate the onsite ERFs.

The staff finds that the common TSC provides an area that meets the applicable regulatory guidance in NUREG-0696 and NUREG-0737, Supplement 1 and, as such, will adequately support its intended emergency response functions. Therefore, the staff concludes that WLS DEP 18.8-1 is acceptable with respect to the TSC location.

#### Operations Support Center

WLS Emergency Plan, Section II.H.1, "On-site Emergency Response Facilities," describes the primary function of the OSC staff is to dispatch assessment, corrective action, and rescue personnel to locations in the plant as directed by the TSC and CR. Each unit has a separate OSC, and provides a centralized area and the necessary supporting resources during emergency conditions. Designated plant support personnel, as indicated in WLS Emergency Plan, Section II.B, "Onsite Emergency Organization," assemble in the designated OSC to provide support to both the CR and TSC. WLS Emergency Plan, Section II.B.6, "Plant Emergency Response Staff," states that WLS Emergency Plan, Figure II-2, "WLS Emergency Response Organization-TSC/OSC Only," illustrates the plant staff emergency organization. The figure identifies an OSC Director as directing the OSC staff and reporting to the Site Emergency Director. WLS Emergency Plan, Section II.B.5, "Plant Emergency Response Staff," describes the OSC Director as the one who directs repair teams, performs damage assessment, and coordinates OSC teams to provide proper briefings and accompaniment by radiation protection personnel as applicable.

WLS DEP 18.8-1 states that the OSC location will be described in the WLS Emergency Plan. WLS Emergency Plan, Section II.H states that the OSCs are located in the space formerly designated in the AP1000 DCD for the TSC. In WLS COLA Part 7, the applicant evaluated WLS DEP 18.8-1 pursuant to 10 CFR Part 52, Appendix D, Section VIII.B.5.b and found that the departure is for a non-safety-related system, that the location of the OSC meets applicable requirements, and that relocating the OSC does not adversely affect its function. The staff agrees with the applicant's evaluation for the reasons described below.

WLS Emergency Plan, Section II.H.1 statement: "Implementing procedures make provisions for the relocation of the OSC as needed..." Additional information on the operation of the OSC and TSC can be found in AP1000 DCD Section 18.8.3.5, "Technical Support Center Mission and Major Tasks." AP1000 DCD Tier 1, Section 3.1, "Emergency Response Facilities," contains a description of the facility and its EP-ITAAC acceptance criteria. In RAI 25, Question 13.03-61(H), the staff requested that the applicant provide additional information related to the design of the OSC. In a December 23, 2008, response to RAI 25, Question 13.03-61(H), the applicant stated that site layout drawings are not included in emergency plans or implementing procedures. This information will be included in training and orientation of OSC personnel. The applicant also stated AP1000 DCD Figures 1.2-17

through 1.2-20 are designated as security-related information and properly withheld from public disclosure pursuant to NRC regulations and guidance. WLS COLA Figure 1.2-201, (which replaces AP1000 DCD Figure 1.2-18) is similarly withheld and included in WLS COLA Part 9, "Withheld." The applicant also stated that this information is available for review through processes and procedures established by the NRC for such material. The applicant proposed EP-ITAAC Acceptance Criterion 5.1 to test that the applicant has established a TSC and OSC. The introductory information in WLS Emergency Plan, Section H, "Emergency Facilities and Equipment," states that the OSCs are designed to meet the intent of Supplement 1 to NUREG-0737. The applicant proposed EP-ITAAC Acceptance Criterion 5.1.4 to confirm that the OSC is in a location separate from the CR.

WLS Emergency Plan, Section II.H.1 describes OSC resources for communicating with the CR and the TSC. Also, WLS Emergency Plan, Section II.F, "Emergency Communications," describes a radio system as the back-up communication capability. The communication capabilities permit personnel reporting to the OSC to be assigned to duties in support of emergency operations. AP1000 DCD Tier 1, Revision 19, EP-ITAAC, Table 3.1-1, Item 4 ensures that communication equipment is installed, and voice transmission and reception are accomplished for the OSC. Communication systems are covered in WLS Emergency Plan, Sections II.E, "Notification Methods and Procedures," and II.F, "Emergency Communications." In RAI 25, Question 13.03-61(F), the staff requested that the applicant provide additional information regarding communication systems available in the OSC. In a December 23, 2008, response, the applicant stated that WLS Emergency Plan, Section II.H.1 describes functionality and habitability of the ERFs in compliance with NUREG-0696, Criteria 3.1 and 3.2. WLS Emergency Plan, Section II.F discusses the use of a wireless telephone system for communication between the facilities. The telephone-page and Private Branch Exchange (PBX) telephone communication systems serve as backups to this system.

The OSC is not designed to remain habitable under all projected emergency conditions. However, implementing procedures make provisions for relocating the OSC as needed, based on ongoing assessments of plant conditions and facility habitability. The Site Emergency Director directs relocation of the OSC if required.

WLS Emergency Plan, Section II.H.1 states that protective clothing and respirators are discussed in WLS Emergency Plan, Section II.J.6, "Protective Measures." WLS Emergency Plan, Appendix 6, "Emergency Equipment and Supplies," provides a list of supplies and equipment for all ERFs and states that detailed equipment and supplies will be addressed in implementing procedures.

The staff finds that the relocation of the units' OSCs to the space formerly designated in the AP1000 DCD for the TSCs is acceptable because the OSCs provide an area that meet the applicable guidance in NUREG-0696 and NUREG-0737; Supplement 1 and, as such, will allow the OSC to adequately support its intended emergency response functions. From a support and functional standpoint, the staff finds the applicant's proposed OSCs locations acceptable, subject to a demonstration of adequacy during the full participation exercise (addressed in ITAAC 8.1). Therefore, the staff concludes that WLS DEP 18.8-1 is acceptable.

### Emergency Operations Facility

WLS Emergency Plan, Section II.H.2, "Off-site Emergency Response Facilities," states that the purpose of the EOF and associated EOF staff is to provide the facilities and staffing for evaluating, coordinating, and directing the overall activities involved in coping with a radiological emergency. During an emergency, the EOF Director and his staff review the response to the emergency by the Duke Energy and the appropriate State and local agencies to facilitate execution of an effective and cooperative effort. The EOF Director is responsible for providing the Duke Energy's recommended protective actions to the appropriate State and local officials. The EOF staff coordinates with other Duke Energy emergency centers to facilitate an effective Duke Energy effort in response to an emergency situation. The EOF staff also provides an accurate description of the emergency situation for Duke Energy management and public information. In addition, the EOF coordinates with offsite Federal agencies, such as the NRC and DOE, to provide availability of additional outside resources to Duke Energy.

Duke Energy has filed for an exception to have the EOF located in the Charlotte General Office in the Energy Center at 526 South Church Street, Charlotte, North Carolina. Justification of this exception can be found in WLS Emergency Plan, Appendix 9, "Justification for Common EOF." WLS Emergency Plan, Appendix 9 states that because the EOF is more than 16 km (10 mi) from any of the Duke Energy nuclear stations, no radiological monitoring equipment is required. The applicant has proposed that the Charlotte, North Carolina, EOF currently used for Duke Energy's existing nuclear stations at McGuire Nuclear Station (MNS), Catawba Nuclear Station (CNS), and Oconee Nuclear Station (ONS) be used for the WLS as well. The applicant stated that the centralized EOF has proven to be an effective facility for implementing the nuclear station emergency plans. MNS and CNS have used a common EOF since August 1987. The existing facility has been in use since October 2005 and was used in the Catawba 2006 biennial exercise. In 2006, the applicant received NRC approval to use the EOF for ONS. Communication systems, data links, and staffing have been incorporated and tested. Using the centralized EOF for WLS would allow the applicant to apply its corporate emergency response structure and experience to the WLS Emergency Plan. The applicant has discussed this proposal with South Carolina Emergency Management, North Carolina Emergency Management, South Carolina Department of Health and Environmental Control, North Carolina Department of Environmental Health and Natural Resources, Cherokee County, South Carolina Emergency Management, York County, South Carolina Emergency Management, and Cleveland County, North Carolina Emergency Management. North and South Carolina are familiar with the EOF because it is the current facility used for responding to an event at MNS, CNS, and ONS. Acknowledgement of their support for use of the EOF location is included in their respective letters certifying their agreement with the WLS Emergency Plan. The NRC will have access to plant data through the Duke Energy satellite display system (SDS) and ERDS. The NRC also has telephones on the ETS in Charlotte, North Carolina. Equipment exists in the EOF for the acquisition, display, and evaluation of radiological, meteorological, and plant system data used to determine offsite protective measures. Release information is provided by the field monitoring teams and is used to determine appropriate PARs. Plant and effluent data would be provided on as timely a basis at an EOF in Charlotte as it would be at a near-site location. Various plant parameters are available to the EOF staff via a connection through Duke's Wide Area Network (WAN). Data available at the EOF provides a snapshot of data from each unit's integrated set of plant data as described in AP1000 DCD Chapter 18, "Human Factors Engineering." Plant data can be displayed at the EOF. These data sets are sufficient to perform accident assessment and evaluate the potential onsite and offsite environmental

consequences of an emergency at Lee Nuclear Station. The computers in the Dose Assessment Area are capable of running the dose projection computer programs (Raddose-V) and accessing SDS data. A Duke Energy staff meteorologist in the EOF provides meteorological information to the EOF staff, in support of offsite dose projections. In addition, the applicant proposed EP-ITAAC 6.4 to perform an inspection of the EOF to verify the availability of the meteorological data.

WLS Emergency Plan, Appendix 9 describes the building construction, radiological protection, installed equipment to support the response, security measures, up-to-date plant reference information, and communication systems. The EOF is constructed so that it is capable of withstanding wind loads and live loads equal to or greater than those specified in the current North Carolina State Building Code (2000 International Building Code). The current Building Code specifies a basic design wind speed of 145 kilometers per hour (90 miles per hour (mph))-3 second gust and a total minimum floor live load of 342 kilograms per square meter (70 pounds per square foot (psf)). This evaluation is based on a review of original structural drawings and comparison to requirements of the current North Carolina State Building Code. The EOF includes space for South and North Carolina liaisons reporting to the EOF, as well as workspace for the NRC that is co-located with decision-makers, radiological assessment, and accident assessment personnel. The EOF draws its primary power from commercial sources. A loss of commercial power should not impact any of the voice or data communication equipment located in the EOF. Common Duke Energy telecommunication infrastructure that supports EOF functions, including, but not limited to, fiber optic transmission equipment, telephone switching equipment and data network routers, is configured to operate from at least one and usually multiple backup power sources in the event of a loss of commercial power. These backup sources include generator, dc battery, and UPS systems. EP-ITAAC Acceptance Criterion 5.2.1 will confirm that the EOF has at least 243 square meters (2625 square feet).

Since the EOF is located outside of the 16-km (10-mi) EPZ, it is not required to have any additional radiation protection factor.

The communication systems at the EOF are designed to provide for the reliable, timely flow of information between all parties having an emergency response role. The single facility results in commonality of communication and interface with offsite officials and liaisons. The Selective Signaling System continues to be the primary means of communicating changes in event classification and PARs to the States and counties. The Selective Signaling System, as well as the Decision Line, operate on a combination of the Duke Energy Telecommunications network and leased circuits. The offsite communication network is used to communicate with Federal, State, and other supporting agencies. Access to these agencies is provided through several redundant, diverse routes. This diversity provides offsite routing through more than one type of facility. These facilities include, but are not limited to, commercial facilities such as central office trunks, tie-lines and digital services, plus privately owned and maintained microwave and fiber-optic systems. The offsite telecommunication networks are designed to facilitate traffic in the most fail-safe manner to the EROs. ENS, HPN and commercial telephones provide communication from each site TSC, CR, and the EOF to the NRC Headquarters and regional offices. These telephones are tested on a periodic basis consistent with the WLS Emergency Plan. A control station with a remote connection to the EOF allows the EOF to communicate with the WLS Field Monitoring Teams. Additional radio capability for communication with counties within the WLS plume exposure pathway EPZ will include South Carolina Local Government Radio for Cherokee and York Counties, and North Carolina Satellite Radio for

Cleveland County. Existing commercial telephone service will serve as the designated backup means of communication in the event of a Selective Signaling System or Decision Line failure. Duke Energy has telecommunication capabilities that can provide access to long distance networks without having to go through a local telephone company switch. Long distance calls from the EOF are routed through Duke Energy's corporate PBX in Charlotte, NC, directly to either a primary or backup long distance carrier. Telephones are provided for the respective Federal and State representatives, including lines for faxes and modems. Facsimile machines are available in the EOF to support the transmission of information between the ERFs and with State, local, and Federal authorities.

The applicant proposed ITAAC Acceptance Criteria 5.2.2 and 5.2.3, which will verify the EOF's capability to communicate with the TSC by voice and the use of the Selective Signaling Telephone system with the local and State Warning Points.

Hard copies of key reference materials are maintained in the Nuclear General Office facilities in Charlotte, and are brought to the EOF upon activation. In addition, station design documentation, plant drawings, WLS COL FSAR, procedures, etc., are available via local area network (LAN) connection from the Nuclear Electronic Document Library. The following information is available for WLS at the EOF: plant technical specifications, plant operating procedures, emergency operating procedures, WLS COL FSAR, up-to-date license, State and local emergency response plans, offsite population distribution data, and evacuation plans.

The EOF is provided with normal industrial security, and processes are already established to upgrade security during activation.

Section 18.2.1 of this report discusses the implementation and verification of applicable EOF displays in accordance with the AP1000 HFE program.

WLS Emergency Plan, Section II.E.2, "Notification and Mobilization of Licensee Response Organizations," describes staffing of the EOF. The EOF can be activated within about 75 minutes of the declaration of an "alert" or higher level emergency. The EOF staff has demonstrated their ability to staff the EOF within 75 minutes of emergency declaration during annual augmentation drills for McGuire and Catawba Nuclear Stations. The EOF staff will include personnel to manage overall licensee emergency response, coordinate radiological and environmental assessment, determine recommended public protective actions, and interface with offsite officials. WLS Emergency Plan, Section II.F, "Emergency Communications," provides a description of the communication capabilities provided in the EOF. The EOF is staffed and activated in accordance with EIPs. WLS COL FSAR Table 13.4-201, "Operational Programs Required by NRC Regulations," states detailed implementing procedures will be submitted at least 180 days prior to fuel loading. The EOF is declared activated following an assessment of staffing levels, habitability, operability of installed systems, sufficiency of supplies and equipment, and communication interfaces. Alternate plans can be initiated in a time of adverse conditions. In RAI 25, Question 13.03-73(B), the staff requested that the applicant provide clarification between the concepts of "activation" and "staffing." In a December 23, 2008, response, the applicant stated that within the WLS Emergency Plan, the concept of "activation" as used in NUREG-1793 and the AP1000 DCD includes the activities of notifying the appropriate emergency response personnel, staffing the ERFs, establishing the required communication interfaces, and declaring the facility to be operational.

The staff focused its review on the extension of the existing centralized Duke Energy EOF to the WLS, and concluded that the EOF is applicable to the proposed reactor, the information provided in the application was adequate to support a combined use facility, and that WLS will be addressed in the EOF procedures as part of the implementation milestones and requirements related to emergency planning in WLS COL FSAR Table 13.4-301, "Operational Programs Required by NRC Regulations," Item 14. In accordance with the Staff Requirements Memorandum (SRM) to SECY 10-0078, "Centralized Emergency Operations Facilities and Combined License Applications," the Commission granted the authority for the staff to review any applicant proposals for centralized EOFs and to determine their respective acceptability as part of the 10 CFR Part 52 COL application process. Therefore, the staff finds that the WLS Emergency Plan adequately describes a combined EOF from which evaluation and coordination of all licensee activities related to an emergency is to be carried out. In addition, the EOF provides information to Federal, State and local authorities responding to radiological emergencies. The considers this acceptable because it meets the applicable guidance in NUREG-0737, Supplement 1 and the applicable regulatory requirements of 10 CFR 50.34(f)(2)(xxv).

In WLS COLA Part 10, the applicant proposed License Condition 4 "Emergency Planning Actions," to demonstrate the integrated capability and functionality of the EOF. The staff refers to this as License Condition (13-7).

#### License Condition (13-7):

Prior to fuel load, Duke Energy will demonstrate the integrated capability and functionality of the EOF for activation and operation of the facility to respond to emergency events at both the WLS and one additional nuclear facility that is supported by the EOF. Integrated communication and data capability and functionality will include the Technical Support Centers for WLS and one additional nuclear facility, and other Federal, State, and local coordination centers as appropriate.

The staff evaluated the proposed license condition and finds License Condition (13-7) acceptable because it is consistent with the Final Rule and NSIR/DPR-ISG-01.

#### Other Emergency Facilities and Equipment

WLS Emergency Plan, Section II.H.1 designates and describes two alternate facilities that would be used for an assembly and staging location if the onsite emergency facilities were not available, including during a hostile action event. The WLS Training building, which will be located within the owner-controlled area outside of the protected area, and the Kings Mountain Generation Support Facility, which is located approximately 25 kilometers (km) (15.5 mi) from the site support a rapid site response. Both locations have communication links with the EOF, control room and security; the capability to provide timely notification to offsite response organizations for changes in classification levels or protective action recommendations; the capability for engineering assessment, damage control planning and preparations; and computer links to the site's plant data.

WLS Emergency Plan, Section II.H.5, "Onsite Monitoring Systems," contains a description of the various monitoring systems necessary for initiating emergency measures and performing

accident assessment. This includes monitoring systems for geophysical phenomena, radiological conditions, plant procedures, and fire hazards as follows:

- Personnel monitoring equipment is described in the AP1000 DCD, Revision 19, and the WLS COL FSAR corresponding section.
- Geophysical phenomena are described in AP1000 DCD, Revision 18, Section 3.7.4, "Supporting Media for Seismic Category I Structures" and the WLS COL FSAR corresponding section.
- Radiological monitoring systems can be found in AP1000 DCD, Revision 19, Sections 11.5, "Radiation Monitoring," and 12.3, "Radiation Protection Design Features," and the WLS COL FSAR corresponding sections. A supply of portable radiation monitoring and sampling equipment and emergency response equipment is addressed in WLS Emergency Plan, Section II.H, "Emergency Facilities and Equipment," and WLS Emergency Plan, Appendix 6, "Emergency Equipment and Supplies."
- Plant process monitoring systems are described in AP1000 DCD, Revision 19, Section 11.5 and the WLS COL FSAR corresponding section.
- Plant fire monitoring systems are described AP1000 DCD, Revision 19, Section 9.5.1, "Fire Protection Systems" and the WLS COL FSAR corresponding section.
- An emergency plan implementing procedure will describe the bases for the selection of the designated instruments as indicators of emergency conditions.

WLS Emergency Plan, Section II.H.7, "Off-site Radiological Monitoring Equipment," states that WLS provides offsite radiological monitoring equipment suitable for assessment of offsite radiological consequences of facility incidents. WLS Emergency Plan, Appendix 6, "Emergency Equipment and Supplies," lists the general types of equipment that would be available for offsite measurements. This equipment includes: radiation survey instruments; surface contamination control and survey supplies; air sampling equipment and media; and scalers or other appropriate radio analytical counting instruments. Further, WLS Emergency Plan, Section II.I.9, "Measuring Radioiodine Concentrations," states that the field equipment is capable of detecting radioiodine concentrations of  $10E-7$  microcuries per milliliter under field conditions. Furthermore, WLS has an Offsite Dose Calculation Manual (ODCM) that describes the monitoring systems. The plant also has equipment and radiological laboratory facilities available on site. Environmental monitoring equipment includes multiple radioiodine and particulate monitors and thermo luminescent dosimeters (TLDs). The TLDs are posted and collected in accordance with Branch Technical Position (BTP), Revision 1, Table 1 included with GL 79-65, "Environmental Monitoring for Direct Radiation." Locations of TLDs and air sampler postings are listed in the ODCM. In RAI 25, Question 13.03-61(E), the staff requested that the applicant provide additional information on monitoring systems and the locations of dosimeters and air samplers that is available in the ODCM. In a December 23, 2008, response, the applicant stated that the ODCM is discussed in Environmental Report (ER), Section 6.2, "Radiological Monitoring." WLS COL FSAR Section 11.5.7, "Combined License Information," states that a description of the ODCM program will be finalized prior to fuel load. Milestones for implementation of the ODCM program are provided in WLS COL FSAR Table 13.4-201. Station monitoring and sampling locations are identified in WLS COL FSAR Table 6.2-2, and WLS COL



FSAR Figures 6.2-1, "Near Field Radiological Sampling and Monitoring Locations," and 6.2-2, "Far Field Radiological Sampling and Monitoring Locations." The program is based on guidance in BTP Revision 1 included with GL 79-65. The applicant identified a license condition for implementing ODCM and Radiological Environmental Monitoring Program, which is addressed in WLS COLA Part 10, "Proposed Licensed Conditions (including EP-ITAAC)." The staff notes this is consistent with 10 CFR Part 50, Appendix E, Section V and the allowances provided in SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria." Arrangements for backup support and analysis are described in WLS Emergency Plan, Section II.A, "Assignment of Responsibility (Organizational Control)," and arrangements with other organizations are documented with certification letters in WLS Emergency Plan, Appendix 7, "Certification Letters." Descriptions of laboratory facilities both fixed and mobile are in WLS Emergency Plan, Section II.C.3, "Radiological Laboratories."

WLS Emergency Plan, Section II.H.8, "Meteorological Instrumentation and Procedures," discusses the onsite meteorological data collection system. The meteorological data is acquired from an onsite meteorological tower. The tower measures wind speeds, ambient temperatures, atmospheric stability, dew point, and precipitation. The meteorological monitoring program and climatology are described in WLS COL FSAR Section 2.3, "Meteorology." All measured data from onsite meteorological tower is available to the plant and ERF display systems. Meteorological data can also be obtained from the CNS and the NWS in Greer, South Carolina. In RAI 25, Question 13.03-61(E)(1), the staff requested that the applicant provide additional information regarding the procedures related to meteorological data. In a December 23, 2008, response, the applicant stated that alternate meteorological data sources are located within 80 km (50 mi) of the WLS site and have been found to be representative of the WLS location. The applicant's meteorologist is responsible to interpret data received and to determine representativeness of the data when onsite meteorological systems cannot be used. The applicant also provided Duke Energy's corporate procedure for obtaining data from an alternate source as Attachment 1 to the response to RAI 25, Question 13.03-62. Furthermore, flooding data is available from NOAA Hydro Meteorological Reports, and the backup seismic data is available from the U.S. Geological Survey (USGS). All of the data is shared with local, State, and Federal organizations. (See WLS Emergency Plan, Section II.F, "Emergency Communications," for a description.)

WLS Emergency Plan, Section II.H.10, "Emergency Equipment and Supplies," states that the applicant performs inspections and operational test of emergency equipment once each calendar quarter. Reserves are maintained to replace instruments removed for calibration or repair. The scope and responsibilities for performing these tests are provided in administrative procedures. A description of the equipment is in WLS Emergency Plan, Appendix 6, "Emergency Equipment and Supplies." In RAI 25, Question 13.03-61(B), the staff requested that the applicant provide additional information on the procedures to inspect and test dedicated emergency equipment. In a December 23, 2008, response, the applicant stated that the procedure for verifying availability and readiness of emergency response equipment will be similar to that in use at other Duke Energy nuclear plants. The applicant provided CNS's Procedure and a Duke Energy corporate procedure as examples of this process. The staff notes that a license condition has been proposed in WLS COLA Part 10 addressing the submittal schedule for operational programs, including EIPs, which is consistent with 10 CFR Part 50, Appendix E, Section V and the allowances provided in SECY-05-0197.

WLS Emergency Plan, Appendix 6, "Emergency Equipment and Supplies," states there will be emergency equipment and provided a general list of its contents. In RAI 25, Question 13.03-61(G), the staff requested that the applicant provide additional information on the contents of the emergency kits. In a December 23, 2008, response the applicant stated that information regarding emergency kits will be similar to that in use at other Duke Energy nuclear plants. The applicant provided a CNS's procedure and a Duke Energy corporate procedure as examples of this process. A license condition addressing the submittal schedule for implementation of EPIPs, is addressed in WLS COLA Part 10, "Proposed Licensed Conditions (including EP-ITAAC)," which is consistent with 10 CFR Part 50, Appendix E, Section V and the allowances provided in SECY-05-0197.

WLS Emergency Plan, Section II.H.12, "Receipt of Field Monitoring Data," states that Radiological Assessment personnel in the EOF are the central point for the receipt of offsite monitoring data results and sample media analysis. The Radiological Assessment personnel will evaluate the information and make recommendations. The equipment in the lab can be used to determine activity of samples. Instruments are routinely calibrated to ensure availability. Field monitoring equipment is maintained at Lee Nuclear Station.

Onsite first aid capability is discussed in WLS Emergency Plan, Section II.L.2, "On-site First Aid Capability," and a generic list of supplies can be found in WLS Emergency Plan, Appendix 6, "Emergency Equipment and Supplies."

Procedures to review, audit, and update the emergency plan are covered in WLS Emergency Plan, Section II.P.4, "Plan Reviews and Updates." The WLS Emergency Plan is to be reviewed and updated on an annual basis. Implementing procedures are discussed in WLS Emergency Plan, Section II.P.7, "Implementing Procedures," and WLS Emergency Plan, Appendix 5, "Implementing Procedures." WLS Emergency Plan, Section II.H.10, "Emergency Equipment and Supplies," states that the applicant performs inspections and operational tests of emergency equipment once each calendar quarter.

#### Emergency Response Data System (ERDS)

WLS Emergency Plan, Section II.F.1.g, "Description of Communications Links," states that the ERDS is activated within 1 hour after declaring an "Alert," or higher emergency classification. WLS Emergency Plan, Section II.N.2.a states that testing of the communication systems between the WLS and the NRC Headquarters and the Regional Operations Center will be performed monthly. Additional information is provided in WLS COL FSAR Section 9.5.2.2.3.2.1, "NRC Communication Interfaces." AP1000 DCD Tier 2, Section 7.7, "Control and Instrumentation Systems," discusses system parameters. Meteorological data parameters are discussed in WLS COL FSAR Chapter 2, "Site Characteristics," and WLS COL FSAR Section 2.3.3, "Onsite Meteorological Measurement Programs." and WLS Emergency Plan, Section II.H.8, "Meteorological Instrumentation and Procedures." Radiation monitoring is discussed in the AP1000 DCD Tier 2, Section 11.5, "Radiation Monitoring," and AP1000 DCD Section 11.1.2, "Plant Monitoring Systems." Containment parameter monitoring is discussed in AP1000 DCD Chapter 7, "Instrumentation and Controls." In RAI 25, Question 13.03-61(C), the staff requested that the applicant provide the following information regarding the data points transmitted for selected plant conditions: (1) verify that data points can be transmitted for reactor core and coolant system conditions; reactor containment conditions; radioactivity release rates; and plant meteorological tower data; (2) verify that a separate data feed will be

provided for each reactor unit; (3) if the ERDS is to communicate with a safety system, verify that appropriate isolation devices will exist at these interfaces. The staff also requested additional information regarding the ERDS in RAI 25, Questions 13.03-61(D)(1 through 4). In a December 23, 2008, response, the applicant stated that data points for reactor and core coolant system conditions; reactor containment conditions; radioactivity release rates; and plant meteorological tower data will be available for transmittal, and a separate data feed for each reactor unit is to be provided. Data transmission design will include isolation devices as part of the Cyber Security Program being developed. The process and hardware used to transmit data has not been identified but will be specific to AP1000 design features and based on regulatory guidance. The applicant also stated that the ERDS for WLS will be developed on a schedule in compliance with the milestones provided in WLS COLA, Part 10.

In RAI 25, Question 13.03-61(D)(1), the staff requested that the applicant verify that the system is capable of transmitting ERDS parameters in not more than 60 seconds or no less than 15 seconds. In a December 23, 2008, response, the applicant stated that ERDS parameters can be transmitted in no more than 60 seconds or no less than 15 seconds.

In RAI 25, Question 13.03-61(D)(2), the staff requested that the applicant verify that the link control and data transmission is established in a compatible format with NRC receiving equipment. In a December 23, 2008, response, the applicant stated that link control and data transmission is in a compatible format with the NRC receiving equipment.

In RAI 25, Question 13.03-61(D)(3), the staff requested that the applicant verify that any hardware or software changes that affect the transmitted data points identified in the ERDS Data Point Library will be submitted to the NRC within 30 days after the changes are completed. The staff also requested that the applicant verify that hardware and software changes that could affect the transmission format and computer communication protocol to the ERDS will be provided to the NRC at least 30 days prior to the modification. In a December 23, 2008, response, the applicant stated that hardware or software changes that affect the transmitted data points identified in the ERDS Data Point Library will be submitted to the NRC within 30 days after the changes are completed. The applicant also stated that hardware and software changes that could affect the transmission format and computer communication protocol to the ERDS will be provided to the NRC at least 30 days prior to the modification. The applicant proposed EP-ITAAC Acceptance Criterion 3.2.2 that confirms ERDS data was provided from the plant computer system to NRC Headquarters and Region II EOC.

In RAI 25, Question 13.03-61(D)(4), the staff requested that the applicant verify that an ERDS implementation program plan has or will be submitted to the NRC. In a December 23, 2008, response, the applicant stated that an ERDS implementation program plan will be submitted to the NRC. The applicant also stated that some of the details regarding this information are specific to the design features of the AP1000 and will be based on applicable regulatory guidance. Other details are applicable to the emergency planning program implementation. The ERDS and implementation procedures for WLS will be developed on a schedule in compliance with the milestones provided in WLS COLA, Part 10, Tier 1, Table 2.3-1, "ITAAC for Emergency Planning."

In WLS COLA Part 10, the applicant proposed License Condition 6e to address the implementation of ERDS. This proposed License Condition is evaluated in Section 13.3.4.19 of this report and the staff refers to this as License Condition (13-9).

In RAI 94, Question 13.03-88(A), the staff requested that the applicant provide additional information to address alternate ERO facilities to be used during security based events. In an April 25, 2011, response, the applicant stated that in the event of hostile actions directed at WLS; the Security Training Area, Nuclear Station Training Building and the Visitor's Center are designated as alternate locations for the assembly of relocated, evacuated and responding personnel. In addition to the identified near site locations, two additional sites available for staging of personnel were discussed in the applicant's December 22, 2008, response to RAI 13.3-80. The York Operations Center is located approximately 24 km (15 mi) East South East of WLS and the new Duke Energy In-Processing Facility is located approximately 24 km (15 mi) North North East of WLS as described in WLS Emergency Plan, Section II.J.2. The York Operations Center and Duke Energy In-Processing Centers have telecommunication capabilities consistent with their emergency function as a designated relocation center. If necessary, technical support activities can be established in the Duke Energy EOF to support onsite and offsite communication and to coordinate the entry of damage control and engineering teams when safe conditions are established at the site.

The assessment of other nearby hazards that could potentially affect the safety of the Lee Nuclear Station was not addressed in the WLS Emergency Plan. In RAI 94, Question 13.03-88(B), the staff requested that the applicant provide additional information concerning other nearby hazards that could cause a security-based event. In an April 25, 2011, response, the applicant stated that no additional modification is needed for the WLS Emergency Plan based on the analysis of nearby hazards provided in WLS COL FSAR Section 2.2 identifying no hazards that pose a significant risk.

The staff finds the additional information and clarifications provided by the applicant in response to RAI 25, Questions 13.03-61, 13.03-62, 13.03-73(B); RAI 83, Question 13.03-80; and RAI 94, Question 13.03-88(A and B) acceptable because they conform to the guidance in NUREG-0654, NUREG-0696, or NUREG-0737.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654.

Subject to License Condition (13-7) and License Condition (13-9), the staff finds that the applicant has described, provided, and maintains adequate emergency facilities and equipment to support the emergency response, including a licensee onsite OSC and TSC, and an EOF from which effective direction can be given and effective control can be exercised during an emergency. This includes onsite and offsite radiological and meteorological monitoring systems. The applicant also described provisions to be employed to ensure that the emergency plan, its implementing procedures, and emergency equipment and supplies are kept up-to-date. In addition, the applicant provided for an ERDS data link between the onsite computer system and the NRC Operations Center. The potential effect has been determined on the plant, onsite staffing and augmentation, and onsite evacuation strategies from damage to nearby hazardous facilities, dams, and other nearby sites, in consideration of a security based event.

The staff further finds that WLS DEP 18.8-1, which addresses the new locations of the TSC and OSC, provides for adequate emergency facilities and equipment to support the emergency response. The new locations conform to the guidance in NUREG-0654 except for being within two minutes of the control room. The locations' installation of various and redundant

communication systems supports the need for immediate communication between the control room and TSC and provides for adequate communication capability between the control room and TSC.

## **Conclusion**

Subject to License Condition (13-7) and License Condition (13-9), the staff concludes that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, Planning Standard H and the guidance in NUREG-0696, NUREG-0737, and NSIR/DPR-ISG-01. Therefore, the staff finds the information acceptable and meets the relevant requirements of 10 CFR 50.47(b)(8) and 10 CFR Part 50, Appendix E, Sections IV.E.8, IV.G, VI.1 and VI, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

### **13.3.4.9 Accident Assessment**

As stated in NUREG-0654, Planning Standard I, "Accident Assessment," 10 CFR 50.47(b)(9) requires the use of adequate methods, systems, and equipment for assessing and monitoring the actual or potential offsite consequences of a radiological emergency condition. In addition, 10 CFR Part 50, Appendix E, Section IV.A.4 requires the identification of persons within the licensee organization who will be responsible for making offsite dose projections, and a description of how these projections will be made and the results transmitted to State and local authorities, the NRC, and other appropriate governmental entities. 10 CFR Part 50, Appendix E, Section IV.B requires a description of the means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials. 10 CFR Part 50, Appendix E, Section IV.E.2 requires that adequate provisions shall be made and described for emergency facilities and equipment, including equipment for determining the magnitude of, and for continuously assessing the impact of, the release of radioactive materials to the environment.

In WLS Emergency Plan, Section II.I, "Accident Assessment," the applicant described the methods, systems, and equipment available for assessing and monitoring actual or potential consequences of a radiological emergency. The staff reviewed this section, as well as other relevant portions of the application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard I, which provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(9).

WLS Emergency Plan, Section II.I, "Accident Assessment," briefly describes measuring, monitoring, readout and continuous sampling systems. WLS COL FSAR Section 7.5, "Safety-Related Display Information," states this section of the referenced AP1000 DCD is incorporated by reference with no departures or supplements. In RAI 25, Question 13.03-62(A), the staff requested that the applicant provide additional information regarding the emergency preparedness-related instrumentation found in the CR that is available for use in emergency classification and dose assessment. In a December 23, 2009, response, the applicant stated that the selection of monitored variables, based on guidance provided in RG 1.97, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants," is discussed in AP1000 DCD

Tier 2, Section 7.5 and incorporated by reference in the WLS COL FSAR. Instrument design criteria are described in AP1000 DCD Sections 7.5.2, "Variable Classifications and Requirements," and 7.5.3, "Description of Variables." AP1000 DCD Section 7.5.4, "Processing and Display Equipment," discusses the equipment that processes the safety-related display information and make it available to the operator. The applicant stated WLS Emergency Plan, Appendix 2, "Radiological Assessment and Monitoring," provides information regarding atmospheric transport and diffusion assessment. Plant vent and turbine island vent effluent monitors are discussed in AP1000 DCD, Revision 19, Section 11.5.3, "Effluent Monitoring and Sampling." The applicant proposed EP-ITAAC 6.1 to test that the means exists to provide initial and continuing radiological assessment throughout the course of an accident.

WLS Emergency Plan, Section II.I.1, "Parameters Indicative of Emergency Conditions," states that an EPIP, "Emergency Classification," includes the various indications that correspond to the emergency initiating conditions. Plant procedures specify the instruments used to indicate emergency conditions. In RAI 83, Question 13.03-75, the staff requested that the applicant submit a revised EAL scheme based on an approved and endorsed NEI 07-01 document. In a June 12, 2009, response, the applicant stated that a license condition to provide a revised EAL scheme will be developed and submitted to the NRC for approval in accordance with the ITAAC and license condition. (See Section 13.3.4.4, "Emergency Classification System," of this report for additional information.

WLS Emergency Plan, Section II.I.2, "Plant Monitoring Systems," describes the methods of making initial and continuing assessments of plant conditions through the course of an event. This section incorporates AP1000 DCD Section 9.3.3, "Primary Sampling System," dealing with the primary sampling system by reference. The primary sampling system includes a post-accident sampling capability, but it does not include a post-accident sampling system specifically. WLS Emergency Plan, Section II.I.2 also incorporates AP1000 DCD Tier 2, Section 11.5, "Radiation Monitoring." WLS COL FSAR Section 11.5, "Radiation Monitoring," supplements this information and lists departures from the AP1000 DCD.

WLS Emergency Plan, Section II.H.5, "On-site Monitoring Systems," contains a description of the various monitoring systems necessary for initiating emergency measures and performing accident assessment. A supply of portable radiation monitoring and sampling equipment and emergency response equipment (WLS Emergency Plan, Section II.H, "Emergency Facilities and Equipment," and Appendix 6, "Emergency Equipment and Supplies") are available. Plant process monitoring systems are described in AP1000 DCD Section 11.5, "Radiation Monitoring," and the corresponding section of the WLS COL FSAR. Additional information related to accident assessment can be found in WLS Emergency Plan Appendix 2, "Radiological Assessment and Monitoring."

WLS Emergency Plan, Section II.I.3, "Determination of Source Term and Radiological Conditions," refers to WLS Emergency Plan, Appendix 2, "Radiological Assessment and Monitoring," for descriptions of the means for relating various measured parameters, including containment radiation monitor reading, to the source term available for release within plant systems and effluent monitor readings to the magnitude of the release of radioactive materials. WLS Emergency Plan, Appendix 2, Section 3.0, "Conceptual Design Description: Atmospheric Transport and Diffusion Assessment," lists five basic release types. Four of the release types have fixed radionuclide composition; the user can specify the composition for the fifth types.

The fixed release types are reactor coolant, gap, core damage, and core melt. The source term may also be specified as noble gas or isotope Iodine-131 release rate. Tabulated release mixes are used if either of these options is used. The applicant has proposed EP-ITAAC 6.2 to evaluate the EIPs to determine that the means exist to identify the source term of releases of radioactive material within plant systems and the magnitude of a release of radioactive materials using plant system parameters and effluent monitors.

In RAI 25, Question 13.03-62(D), the staff requested that the applicant provide additional information on the process used to estimate accident source terms. In a December 23, 2008, response, the applicant stated that WLS Emergency Plan, Appendix 2, "Radiological Assessment and Monitoring," provides a description of the Raddose-V dose assessment model, which is used to analyze offsite doses at Duke Energy facilities. This model provides results that are compatible and consistent with the NRC dose assessment models evaluated during successful emergency plan exercises. The code is maintained current with respect to the facility's physical and operational characteristics and the assumptions and criteria used in the dose consequence analysis performed as part of the regulatory required accident analyses described in WLS COL FSAR Chapter 15, "Accident Analysis." The applicant further stated that Raddose-V does not currently include modeling for WLS, but anticipate modifying the code to include data for WLS or using more advanced assessment capabilities that may be available. The applicant proposed EP-ITAAC 6.2 to analyze the emergency plan implementing procedures for a methodology to determine the source term of the releases within plant systems.

In RAI 25, Question 13.03-62(D)(1), the staff requested that the applicant provide a list of procedures that cover the estimation of accident source terms (radionuclides and activities) and describe the contents of each procedure. In a December 23, 2008, response, the applicant stated that instruction to dose assessors for determining source term and calculating the projected offsite dose to the public using Raddose-V and guidance for completion of Emergency Notification Forms is provided in Duke Energy's corporate procedure for making offsite dose projections.

In RAI 25, Question 13.03-62(D)(2), the staff requested that the applicant identify the person responsible for making source term estimates at various stages of the event. In a December 23, 2008, response, the applicant stated that Dose Assessors in the EOF, under the direction of the Radiological Assessment Manager, are responsible for evaluating source terms until the event is terminated.

In RAI 25, Question 13.03-62(D)(3), the staff requested that the applicant clarify assumptions related to the pathway from the reactor to the environment. In a December 23, 2008, response, the applicant stated that AP1000 DCD Section 15.6, "Decrease in Reactor Coolant Inventory," identifies the following pathways to the environment: (1) a steam generator tube rupture where the pathways may involve the unit vent and main steam isolation valves; (2) a loss of coolant accident inside containment where the pathway involves a loss of containment or design basis leakage with significant increase in reactor coolant activity (unit vent); (3) a loss of coolant accident outside of containment (unit vent); and (4) a fuel handling accident (unit vent).

In RAI 25, Question 13.03-62(D)(4), the staff requested that the applicant discuss whether the assumptions include reduction of the source term to account for filters, sprays, or other safety [features]. In a December 23, 2008, response, the applicant stated that the code used in Raddose-V includes provisions for features that provide for source term reduction specific to the

as-built plant. The applicant further stated that features of the Lee Nuclear Station have not yet been added to the code as specified in response to RAI 25, Question 13.3-62(D).

In RAI 25, Question 13.03-62(D)(5), the staff requested that the applicant clarify whether the source term estimates will be modified during the course of the event to account for changes in the release pathway. In a December 23, 2008, response, the applicant stated that the source term available for release is modified within the Raddose-V program to account for processes that reduce or increase the release based on the pathway or release rates. The applicant further stated that features of the Lee Nuclear Station have not yet been added to the code as specified in response to RAI 25, Question 13.03-62(D).

In RAI 25, Question 13.03-62(D)(6), the staff requested that the applicant clarify how long it takes to obtain source term estimates. In a December 23, 2008, response, the applicant stated that 15-minute averages of effluent or accident monitors may be needed to obtain source term estimates for the model, which is currently used for other Duke Energy's operating facilities.

In RAI 25, Question 13.03-62(D)(7), the staff requested that the applicant explain how source term estimates are obtained in the event that the computer-based methods are not available. In a December 23, 2008, response, the applicant stated that laptop computers are available for onsite evaluations if the primary computers are not functional. The applicant further stated that the program can also be run at other Duke Energy facilities if necessary. Source term estimates can be obtained by inserting data provided by the affected site or using default values in the program code for the facility.

WLS Emergency Plan, Section II.I.4, "Relationship Between Effluent Monitor Reading and Exposure and Contamination Levels," introduces the dose assessment capability. WLS Emergency Plan, Appendix 2, Section 3.0, "Conceptual Design Description: Atmospheric Transport and Diffusion Assessment," describes the dose assessment programs. WLS Emergency Plan, Sections 3.3, "Data Acquisition"; 3.4, "Modeling"; and 3.5, "Data Output," of Emergency Plan, Appendix 2, "Radiological Assessment and Monitoring," describe the method of estimating offsite exposures and contamination from monitoring readings and meteorological data using the Raddose-V computer code. In RAI 25, Question 13.03-62(E)(1-6), the staff requested that the applicant provide additional information regarding the dose assessment program. In December 23, 2008, response, the applicant stated that WLS specific procedures have not yet been developed but they will be similar to those in use at CNS. Dispatch of onsite survey teams is discussed in procedure HP/0/B/1009/009, "Guidelines for Accident and Emergency Response," Enclosure 5.1. The dispatch of teams to monitor the particulate and iodine levels present during an emergency is discussed in procedure HP/0/B/1009/007, "In-Plant Particulate and Iodine Monitoring Under Accident Conditions." These procedures were provided as Attachments 2 and 3 to the applicant's response.

In RAI 25, Question 13.03-62(E)(2), the staff requested that the applicant identify the person responsible for making estimates of onsite exposures and contamination. In a December 23, 2008, response, the applicant stated that WLS specific procedures have not yet been developed but they will be similar to those in use at CNS. On-shift staff is responsible for initial emergency response actions as discussed in HP/0/B/1009/009 Section 4.1. This procedure is provided as Attachment 2 to the applicant's response.



In RAI 25, Question 13.03-62(E)(3), the staff requested that the applicant provide a list of procedures that cover the estimation [of] offsite exposures and contamination and summarize the contents of each procedure. In a December 23, 2008, response, the applicant stated that the WLS-specific procedures have not yet been developed but they will be similar to those in use at other Duke Energy facilities. The procedure contains guidance for utilizing the automatic mode for data input, which uses a number of defaults to speed the initial dose assessment process. Dose assessment is performed by the ERO dose assessors in the EOF. The applicant also stated that Raddose-V will be updated with actual plant data to improve the dose estimates. Duke Energy's corporate procedure for making offsite dose projections will be modified to include the Lee Nuclear Station. This procedure is provided as Attachment 1 to the applicant's response.

In RAI 25, Question 13.03-62(E)(4), the staff requested that the applicant identify the person responsible for making estimates of offsite exposures and contamination. In a December 23, 2008, response, the applicant stated that dose assessment will be provided by EOF Dose Assessment personnel reporting to the EOF Director.

In RAI 25, Question 13.03-62(E)(5), the staff requested that the applicant identify how exposure and contamination estimates would be made in the event that the computer method is unavailable. In a December 23, 2008, response, the applicant refers to information provided in response to RAI 25, Question 13.03-62(D)(7).

In RAI 25, Question 13.03-62(E)(6), the staff requested that the applicant describe how exposure and contamination estimated would be adjusted in the event that onsite meteorological data are not available. In a December 23, 2008, response, the applicant refers to information provided in response to RAI 25, Question 13.03-62(C) regarding meteorological data.

WLS Emergency Plan, Section II.D, "Emergency Classification System," discusses WLS standard emergency classification scheme, based on system and effluent parameters, on which affected State and local response organizations may rely for determining initial offsite response measures. WLS Emergency Plan, Section II.H, "Emergency Facilities and Equipment," describes the capability of WLS to assess the magnitude and consequences of releases.

The applicant proposed EP-ITAAC 6.3 to analyze the emergency plan implementing procedures to identify the relationship between effluent monitor readings and the onsite and offsite exposures using various meteorological conditions.

WLS Emergency Plan, Section II.H.6.a, "Access to Data from Monitoring Systems," WLS Emergency Plan, Section II.H.8, "Meteorological Instrumentation and Procedures," and WLS Emergency Plan, Appendix 2, "Radiological Assessment and Monitoring," of the WLS Emergency Plan briefly discuss meteorological data acquisition and evaluation. There is a more detailed discussion in WLS COL FSAR Section 2.3.3, "Onsite Meteorological Measurement Programs." In RAI 25, Question 13.03-62(F), the staff requested that the applicant provide additional information on the acquisition and distribution of the representative meteorological information. In a December 23, 2008, response, the applicant referred to information provided in the response to RAI 25, Questions 13.03-62(B) and 13.03-62(C) regarding distribution of meteorological information to the CR, TSC, and EOF and processes used in the event the primary meteorological data system is unavailable. The applicant proposed EP-ITAAC 6.4 to

conduct an inspection to verify that 10-meter and 60-meter wind speeds, wind directions and temperatures are available in the control room, TSC and EOF. WLS Emergency Plan, Section II.I.6, "Determination of Release Rates and Projected Doses When Installed Instruments are Inoperable or Off-Scale," states that plant implementing procedures establish processes for estimating release rates and doses when instrumentation used for assessments is not available. In addition, two considerations are mentioned by the applicant: field monitoring data and surrogate instrumentation as methods for estimating fuel damage. In RAI 25, Question 13.03-62(G), the staff requested that the applicant provide additional information on surrogate monitoring and estimating fuel damage.

In RAI 25, Question 13.03-62(G)(1), the staff requested that the applicant describe methods to determine release rates and doses when instrumentation used for assessments is inoperable or readings are off-scale, and summarize the contents of each procedure. In a December 23, 2008, response, the applicant stated that release rates can be estimated by using default source term inventories or back calculations from field data both provided in the Raddose-V model.

In RAI 25, Question 13.03-62(G)(2), the staff requested that the applicant identify the person who makes the decision to use alternative methods to estimate release rates and doses. In a December 23, 2008, response, the applicant stated that the Radiation Protection Manager in the TSC or the Radiological Assessment Manager in the EOF would make the decision to use alternative methods for estimating release rates and doses.

In RAI 25, Question 13.03-62(G)(3), the staff requested that the applicant identify the person who estimates release rates in these cases. In a December 23, 2008, response, the applicant stated that the ERO Dose Assessors under guidance of the Radiological Assessment Manager will estimate the release rates, in all cases.

In RAI 25, Question 13.03-62(G)(4), the staff requested that the applicant explain what compensatory measures are taken in the assessment. In a December 23, 2008, response, the applicant stated that necessary or appropriate compensatory measures not already considered in the existing dose assessment procedures and Raddose-V code that are specific to WLS operation will be addressed in the procedures implemented for or to include the WLS when developed.

In RAI 25, Question 13.03-62(G)(5), the staff requested that the applicant describe how release rates are estimated from field monitoring data. In a December 23, 2008, response, the applicant stated that the Raddose-V code uses field data, meteorology, and accident assumptions to back-calculate source term required to result in measured field dose. That source term could then be used to generate a complete dose projection.

In RAI 25, Question 13.03-62(G)(6), the staff requested that the applicant explain what assumptions are made in the process. In a December 23, 2008, response, the applicant stated that any assumptions beyond those provided in WLS COL FSAR Chapter 15 that are specific to the WLS will be determined during the modifications made to Raddose-V or within the development of alternative software.

In RAI 25, Question 13.03-62(G)(7), the staff requested that the applicant explain what the sensitivity of the release rate estimates is to the assumptions. In a December 23, 2008,

response, the applicant stated that sensitivities of the release rates will be determined and evaluated based on the site-specific modification to the software determined for the WLS.

WLS Emergency Plan, Section II.I.7, "Field Monitoring Capability," briefly describes the field monitoring capability. Implementing procedures provide guidance for field monitoring teams' performance of monitoring activities. Instrumentation typically available for field deployment is listed in WLS Emergency Plan, Appendix 6, "Emergency Equipment and Supplies," and WLS Emergency Plan, Section II.B, "Onsite Emergency Organization," WLS Emergency Plan, Table II-2, "Plant Staff Emergency Functions," indicates that four individuals comprise two teams. Each field monitoring team has a driver and a qualified radiation protection (RP) technician, and the teams should be available for offsite field monitoring within 75 minutes. Field monitoring teams are directed by RP personnel in the TSC.

WLS Emergency Plan, Section II.I.8, "Assessing Hazards Through Liquid or Gaseous Release Pathways," states that actual or potential magnitude and locations of radiological hazards are assessed by field teams consistent with WLS Emergency Plan, Section II.I.7, "Field Monitoring Capability." Implementing procedures provide guidance for field monitoring teams' performance of monitoring activities. Notification and activation of field team personnel described in WLS Emergency Plan, Section II.E, "Notification Methods and Procedures." Mobilization times are described in WLS Emergency Plan, Section II.B, "Onsite Emergency Organization." The applicant proposed EP-ITAAC 6.5 to analyze the emergency plan implementing procedures to determine that the means exist to make rapid assessments of actual or potential magnitude of and locations of any radiological hazards through liquid or gaseous release pathways.

WLS Emergency Plan, Section II.I.9, "Measuring Radioiodine Concentrations," states that equipment typically available to field teams is listed in WLS Emergency Plan, Appendix 6, "Emergency Equipment and Supplies." This list includes air samplers, appropriate sample media, and analysis equipment, stated to be capable of detecting radioiodine concentrations at or below  $10^{-7}$  microcuries per milliliter under field conditions. The applicant proposed EP-ITAAC 6.6 to verify the capability exists to detect and measure radioiodine concentrations in air in the plume exposure pathway EPZ, as low as  $10E-7$   $\mu\text{Ci/cc}$  under field conditions.

WLS Emergency Plan, Section II.I.10, "Relating Measured Parameters to Dose Rates," states that WLS Emergency Plan, Appendix 2 describes the methods to relate the measured activity levels to dose rates for the key isotopes listed in NUREG-0654, Table 3 and the provisions to estimate the projected dose based on the actual dose rates. Radiation Protection personnel are responsible for directing implementation of these procedures under emergency conditions. Therefore, in RAI 25, Question 13.03-62(H), the staff requested that the applicant provide additional information on relating measured parameter to dose rates. In a December 23, 2008, response, the applicant provided Duke Energy's corporate procedure to activate the EOF, which provides instructions for preparing protective action recommendations (PARs) to appropriate State authorities. The procedure includes Offsite Protective Action Flowcharts used by Duke Energy at its operating nuclear plants. The flowcharts include radiological dose considerations. The applicant stated that the dose assessment procedures used for the WLS will be similar to those in use at other Duke Energy nuclear plants. The procedure is included as Attachment 1 in the response to RAI 252, Question 13.03-55. The applicant also stated that implementing procedures and programs will be modified to include WLS on a schedule that supports NRC inspection activities and execution of the emergency exercise required by 10 CFR Part 50, Appendix E, Section IV.F.2. The applicant proposed EP-ITAAC 6.7 to test that the means exist

to estimate integrated dose and for comparing these estimates with the EPA protective action guides (PAGs).

The staff finds the additional information and clarifications provided by the applicant in response to RAI 25, Question 13.03-55 and all the questions in RAI 25, Question 13.03-62 acceptable because the responses conform to the guidance in NUREG-0654. Accordingly, the staff considers RAI 25, Question 13.03-5 resolved.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654.

The staff finds that the applicant has described and provided adequate facilities, systems, equipment, and means for assessing and monitoring the actual or potential offsite consequences of a radiological emergency condition, including determining the magnitude of, and continually assessing the impact of, the release of radioactive materials. The applicant also described the capability and resources for field monitoring within the 16-km (10-mi) plume exposure pathway EPZ, and has the methods, equipment, and expertise to rapidly assess actual or potential radiological hazards. This includes the capability to detect and measure radioiodine airborne concentrations within the plume exposure pathway EPZ as low as  $1 \times 10^{-7}$   $\mu\text{Ci/cc}$  under field conditions, and to relate the various measured parameters to dose rates for key isotopes and gross radioactivity measurements. In addition, the applicant identified, by position and function to be performed, persons within the licensee organization who will be responsible for making offsite dose projections, and has described how these projections will be made and the results transmitted to State and local authorities, the NRC, and other appropriate governmental entities.

## **Conclusion**

The staff concludes that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, Planning Standard I. Therefore, the staff finds the information acceptable and meets the relevant requirements of 10 CFR 50.47(b)(9) and 10 CFR Part 50, Appendix E, Sections IV.A.4, IV.B, and IV.E.2, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

### **13.3.4.10 Protective Response**

As stated in NUREG-0654, Planning Standard J, "Protective Response," 10 CFR 50.47(b)(10) requires that a range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, the applicant considered evacuation, sheltering, and as a supplement to these, the prophylactic use of potassium iodide (KI). ETEs have been developed by the applicant. Guidelines for the choice of protective actions during an emergency are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed. In addition, 10 CFR 50.47(c)(2) and 10 CFR Part 50, Appendix E, Section I require that the size and configuration of the EPZs be determined in relation to local emergency response needs and capabilities, as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. 10 CFR Part 50, Appendix E, Section IV.I requires the development of a range of protective actions to protect onsite

personnel during hostile action to ensure the continued ability of the licensee to safely shut down the reactor and perform the functions of the emergency plan.

In WLS Emergency Plan, Section II.J, "Protective Response," the applicant described the protective response measures that have been developed to limit radiation exposure of plant personnel and the public following an accident at the WLS. The staff reviewed this section, as well as other relevant portions of the application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard J, which provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(10).

WLS Emergency Plan, Section II.J.1, "Onsite Notification," describes that individuals within the protected area are notified by the plant public address system and audible warning systems. In high noise areas, other measures may be used. Individuals located outside of the protected area are notified by audible warnings, by Security Force actions, and, if needed, by local law enforcement personnel. Information on the warning systems and response actions are provided through plant training programs, visitor orientation, escort instructions, posted instructions, or within the audible messages. The applicant stated that it has the ability to notify all individuals within the owner controlled area within about 15 minutes of the declaration of an emergency requiring individual responses, such as evacuation and accountability. Additionally, the applicant states that there are methods to notify and alert onsite personnel in a timely manner during a hostile action. The actions are coordinated with Security and maintained in the EIPs.

In RAI 25, Question 13.03-63(A), the staff requested that the applicant: (1) clarify other measures to be used for notification of individuals in high noise areas; and (2) provide information on timing to notify the people outside the protected area. In a December 23, 2008, response, the applicant stated audibility problems encountered on evacuation of personnel from high-noise areas for its fleet were addressed in previous Duke Energy responses to IE Bulletin No. 79-18, "Audibility Problems Encountered on Evacuation of Personnel from High-Noise Areas." A consistent process will be used for the WLS, in that the plant alarm system will use the telephone page system amplifiers and speakers that will be assessed in the as-built plant to determine if additional measures or equipment is necessary. The accountability process has been proven at other Duke Energy facilities. The CNS's procedure for site assembly and evacuation was provided as Attachment 1 to the response to RAI 25, Question 13.03-63(A). The applicant stated that the site alarm system along, with surveillances of the owner controlled area, will be adequate to assemble and evacuate nonessential personnel. The applicant proposed EP-ITAAC 7.1 to test that the means exist to warn and provide instructions to onsite individuals of an emergency, including those in areas controlled by the operator, including: (a) employees not having emergency assignments; (b) visitors; (c) contractor and construction personnel; and (d) other persons who may be in the public access areas, on or passing through the site, or within the owner controlled area using the plant public announcement system within the protected area or an audible warning system for those who may be outside the protected area and within the owner controlled area.

WLS Emergency Plan, Section II.J.2, "Evacuation Routes and Transportation," states that evacuation routes are determined by the Shift Manager or Emergency Coordinator using available information on conditions. Provisions for evacuation of onsite individuals include

evacuation by private automobile. WLS Emergency Plan, Section II.J.2, also states that the Security Forces will arrange transportation for those individuals without cars. The designated relocation site will have decontamination and contamination control capability and equipment. In adverse conditions, affected individuals will be directed to a safe onsite area (as determined by the Emergency Coordinator). Relocation centers were not identified in the WLS Emergency Plan. Therefore, in RAI 25, Question 13.03-63(B), the staff requested that the applicant: (1) explain why prearranged routes, coordinated with the State and local governments did not exist; and (2) provide information on the type of transportation the Security Force will have available to transport people without cars. In RAI 25, Question 13.03-80, the staff requested that the applicant identify where the relocation center will be established. Additionally, if the relocation center is not within the control of Duke Energy, when will the letters of agreement (LOAs) be available? In a December 23, 2008, response to RAI 25, Question 13.03-63(B), the applicant provided additional information regarding the role of the Security Force in site evacuation, stating that if an individual does not have access to personal transportation, either the affected individual or the Security Force will make arrangements for transportation (ride-share) with another affected individual. In a December 11, 2009, response to RAI 25, Question 13.03-80, the applicant identified the York County Operations Center and a planned Duke Energy In-Processing Facility as designated locations for relocated site personnel. Both locations will have personnel decontamination capabilities and both are controlled by Duke Energy. The locations of reception centers and shelter areas are not finalized.

In Part 10 of the WLS COL application, the applicant proposed License Condition 4 "Emergency Planning Actions," which states that reception centers and relocation sites will be identified and LOAs will be obtained prior to the full participation exercise. The staff refers to this as License Condition (13-4). WLS Emergency Plan, Appendix 4 contains maps that include proposed reception centers, relocation site, and pre-selected radiological sampling and monitoring locations.

License Condition (13-4):

Prior to the full participation exercise to be conducted in accordance with the requirements of 10 CFR Part 50, Appendix E, Duke Energy shall identify the specific locations of the reception centers and relocation sites and shall obtain Letters of Agreement for locations not under the Duke Energy's control.

The staff evaluated the proposed license condition and finds it is acceptable because it is consistent with the guidance in NUREG-0654, Planning Standard J and the requirements in 10 CFR Part 50.47(b)(10) and 10 CFR Part 50, Section IV.I, Appendix E.

WLS Emergency Plan, Section II.J.3, "Personnel Monitoring and Decontamination," states that the Emergency Coordinator directs contamination monitoring of personnel, vehicles, and personal property arriving at relocation sites. The procedures and criteria for monitoring are not addressed in the plan. Therefore, in RAI 25, Question 13.03-63(C), the staff requested that the applicant: (1) provide a summary of the decontamination capabilities and equipment; and (2) provide information to identify the criteria for monitoring. In a December 23, 2008, response, the applicant stated procedures for personnel and vehicle monitoring at relocation sites will be consistent with that in use at other Duke Energy facilities. The applicant provided CNS procedures for personnel/vehicle monitoring and equipment inspection and inventory as examples.

WLS Emergency Plan, Section II.J.4, "Non-Essential Personnel Evacuation and Decontamination," states that non-essential personnel will be evacuated in accordance with WLS Emergency Plan, Section II.J.2, "Evacuation Routes and Transportation," and that the appropriate equipment and supplies will be moved from WLS to the decontamination site. All public visitors will be evacuated whenever the possibility exists that a visitor may be exposed to levels exceeding 2 millirem per hour or 1 times the derived air concentration (DAC) for an unrestricted area.

WLS Emergency Plan, Section II.J.5, "Personnel Accountability," states that the WLS maintains the capability for all individuals within the protected area to be accounted and missing individuals identified within 30 minutes following initiation of evacuation and accountability processes and to maintain continuous accountability for any individual within the protected area consistent with the requirements of the WLS Security Plan.

Furthermore, WLS Emergency Plan, Section II.J.5 addresses protective measures in the event of a hostile attack against the site. The section states that in the event of a hostile attack against the site, conditions may dictate initiation of protective measures other than personnel assembly, accountability, and evacuation. The Emergency Coordinator will make decisions regarding appropriate protective measures based on evaluation of site conditions, including input from the security force. If, based on the judgment of the Emergency Coordinator, personnel assembly, accountability, and evacuation may result in undue hazards to site personnel, the Emergency Coordinator may direct other protective measures, including:

- evacuation of personnel from areas and buildings perceived as high value targets
- site evacuation by opening, while continuing to defend, security gates
- dispersal of key personnel
- onsite sheltering
- staging of ERO personnel in alternate locations pending restoration of safe conditions
- implementation of accountability measures following restoration of safe conditions

WLS Emergency Plan, Section II.J.6, "Protective Measures," describes the provisions for respiratory protection, ventilation systems, use of protective clothing, and individual thyroid protection. The plan states that measures are taken to minimize ingestion and or inhalation of radionuclides to minimize exposure below limits specified in 10 CFR Part 20, "Standards for Protection against Radiation," WLS Emergency Plan, Appendix B, "Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage." However, the protective measures used are not identified. WLS Emergency Plan, Section II.J.6, "Protective Measures," states that self-contained breathing apparatus (SCBA) are used in locations where there is low oxygen or fires. Other respiratory protection is available and issued by Radiation Protection personnel or Safety and Health staff. The plan does not address training for use of SCBAs or other respiratory protection equipment, the number of respirators available, or the maintenance of the equipment. The criteria for use of protective clothing are given; however, the location of the equipment and inventory is not addressed to ensure that the protective clothing is available

when needed. The use of radioprotective drugs (potassium iodide [KI]) is also mentioned, and there are no criteria for issuance, how and where it is stored and inventoried, and who makes the decision on issuance. Therefore, in RAI 25, Question 13.03-63(D), the staff requested that the applicant provide additional information related to: (1) measures used to minimize ingestion and inhalation of radionuclides; (2) training in the use of respiratory equipment as well as the inventory and maintenance of the respiratory equipment; (3) storage and inventory of the protective clothing; and (4) storage and use of radioprotective drugs. In a December 23, 2008, response, the applicant stated that radiation protection personnel will be responsible for monitoring the safety of personnel during a site assembly or site evacuation, which includes contamination monitoring at site exits, and monitoring of work locations for personnel remaining on site. A description of their monitoring process was provided. Respiratory protection will be prescribed for workers that are trained, qualified, and fit tested in accordance with the respiratory protection program discussed in WLS COL FSAR Chapter 12, "Radiation Protection." Details related to procedures and quantity or locations of respiratory equipment are not available. The applicant expects procedures will be similar to CNS's procedure for inspection and inventory of emergency equipment provided in response to RAI 25, Question 13.03-61. Procedures will be completed in accordance with 10 CFR Part 50, Appendix E, Section IV.F.2. With regard to protective clothing, the applicant stated that they are maintained in the change rooms inside the Radiation Control Area (RCA) and inventoried each quarter. A discussion related to the issuance of protective clothing was included. Additional information related to protective clothing was also provided in the response to RAI 25, Question 13.03-61. With regard to the distribution of KI, the applicant stated Duke Energy's corporate procedure for distribution of KI provides information related to distribution, storage, and supply of KI tablets. The WLS Radiation Protection Manager shall evaluate the distribution of KI. The KI is distributed only to prevent a significant uptake that would result in a committed dose equivalent (CDE) of 5 rem or more to the thyroid.

WLS Emergency Plan, Section II.J.7, "Protective Action Recommendations and Bases," describes the process in which WLS develops protective action recommendations (PARs) and issues them to the affected State and local governments. General public PARs are based on plant conditions (EALs), dose projection results or both. Plant and dose based PARs are developed from the guidance contained in NUREG-0654, Supplement 3, "Criteria for Protective Action Recommendations for Severe Accidents." The process includes EALs corresponding to projected dose to the general public and with the recommendations set forth in EPA-520/1-75-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents." The dose projection results are compared to PAGs shown in WLS Emergency Plan, Table II-3. The PAGs are derived from EPA-400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents." Based on the comparison, PARs are developed by the Radiological Assessment Manager. If the recommendations suggest sheltering or evacuation of the public around the plant, The Radiological Assessment Manager informs the Emergency Coordinator or EOF Director so that he or she notifies the affected States and counties. The Emergency Coordinator or EOF Director is responsible for recommending offsite protective actions to the affected States and counties. WLS is required to issue PARs within 15 minutes of declaring a General Emergency to the affected States and local governments. The State and local governments are responsible for notification of the public and implementation of protective measures. (Emergency Action Levels are discussed in Section 13.3.4.3 of this report. Emergency Notification is discussed in Section 13.3.4.5 of this report, and Accident Assessment is discussed in Section 13.3.4.9 of this report.)



WLS Emergency Plan, Section II.J.8, "Evacuation Time Estimates," of the WLS Emergency Plan states that the ETE Report is included in the COLA as supplemental information to the WLS Emergency Plan, and the updated population distribution and ETEs are summarized in WLS Emergency Plan Appendix 4, which includes the updated ETE's Executive Summary. ETEs are a factor considered in the development of offsite PARs, and are provided to the States and local governmental authorities for use in developing offsite protective action strategies. The ETE Report provides maps of the plume exposure pathway EPZ, which illustrate the population distribution around the WLS, evacuation areas and routes, and locations of assembly areas. A summary of the staff's detailed review of the ETE Report is included in Section 13.3.4.17 of this report.

WLS Emergency Plan, Section II.J.10.a, "Protective Measure Implementation," states that maps of evacuation routes, evacuation areas, and general locations of shelter areas and relocation sites are provided in WLS Emergency Plan, Appendix 4, "Evacuation Time Estimate." In RAI 25, Question 13.03-63(E), the staff requested that the applicant provide the specific location of the shelter areas and relocation sites and the pre-identified monitoring locations or provide an EP-ITAAC for when those locations would be identified. In a December 23, 2008, response to RAI 83, Question 13.03-80, the applicant identified the York County Operations Center and a planned Duke Energy In-Processing Facility as designated locations for relocated site personnel and provided wording for WLS Emergency Plan, Section II.J.2.a that will be included in a future revision of the WLS Emergency Plan. Additional information related to reception centers can be found in the evaluation of Section II.J.2, above.

WLS Emergency Plan, Section II.J.10.b, "Protective Measures Implementation," states that maps of the EPZ population distribution around the facility by evacuation area and in a sector format can be found in WLS Emergency Plan, Appendix 4.

WLS Emergency Plan, Section II.J.10.c. "Protective Measures Implementation," states that the Alert and Notification System will be used to warn the public within the 16-km (10-mi) EPZ and that this is the responsibility of State and local officials. The Alert and Notification System is described in Section 13.3.4.5 of this report.

WLS Emergency Plan, Section II.J.10.c. "Protective Measures Implementation," n states that recommended protective actions are based on the guidance provided in NUREG-0654, Supplement 3 4, WLS Emergency Plan, Section II.J.8, and WLS Emergency Plan, Appendix 4.

The staff finds the additional information and clarifications provided by the applicant in response to RAI 25, Questions 13.03-61 and 13.03-63 and RAI 83, Question 13.03-80 acceptable because they conform to the guidance in NUREG-0654. Accordingly, the staff considers RAI 25, Questions 13.03-61 and 13.03-63 and RAI 83, Question 13.03-80 resolved.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654.

Subject to License Condition (13-4), the staff finds that the applicant developed a range of protective actions for the 16-km (10-mi) plume exposure pathway EPZ for emergency workers and the public, including consideration of evacuation, sheltering, and the prophylactic use of KI. The staff finds that the applicant has developed guidelines for the choice of protective actions

during an emergency that are consistent with Federal guidance, including protective actions for the 80-km (50-mi) ingestion exposure pathway EPZ that are appropriate to the locale. The size and configuration of the EPZs have been determined in relation to local emergency response needs and capabilities, as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. In addition, the staff finds that the applicant has developed a range of protective actions to protect onsite personnel during hostile action. Development of ETEs is addressed in Section 13.3.4.17 of this report.

## **Conclusion**

Subject to License Condition (13-4), the staff concludes that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, Planning Standard J. Therefore, the staff finds the information acceptable and meets the relevant requirements of 10 CFR 50.47(b)(10), 10 CFR 50.47(c)(2), and 10 CFR Part 50, Appendix E, Sections I and IV.I, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

### ***13.3.4.11 Radiological Exposure Control***

As stated in NUREG-0654, Planning Standard K, "Radiological Exposure Control," 10 CFR 50.47(b)(11) requires that the means for controlling radiological exposures in an emergency be established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," EPA 400-R-92-001, May 1992. In addition, 10 CFR Part 50, Appendix E, Section IV.E.3 requires that adequate provisions shall be made and described for emergency facilities and equipment, including facilities and supplies at the site for decontamination of onsite individuals.

In WLS Emergency Plan, Section II.K, "Radiological Exposure Control," the applicant described the emergency exposure limits for emergency workers, including decisions and efforts made to minimize exposures. The staff reviewed this section, as well as other relevant portions of the application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard K, which provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(11).

WLS Emergency Plan, Section II.K.1, "On-site Exposure Guidelines and Authorizations," discusses implementation of guidelines from EPA-400-R-92-001, Table 2.2, "Guidance on Dose Limits for Workers Performing Emergency Services," and are listed in Table II-4, "Emergency Worker Exposure Guidelines." In consultation with senior radiological protection personnel, the Emergency Coordinator is responsible for authorizing onsite emergency exposures that would result in doses in excess of occupational dose limits in 10 CFR Part 20. Exposures in excess of 10 CFR Part 20 limits are limited to individuals who are properly trained and knowledgeable of the tasks to be performed and the risks associated with the exposures. Selection criteria for volunteer emergency workers are outlined. In the absence of extenuating circumstances listed in WLS Emergency Plan, Table II-4, routine dose limits are applied to activities including those listed above.

WLS Emergency Plan, Section II.K.2, "Radiation Protection Program (RPP)," of the WLS Emergency Plan refers to WLS COL FSAR Chapter 12, "Radiation Protection," for a description of the WLS Radiation Protection Program (RPP), which is stated to be consistent with 10 CFR Part 20. WLS Emergency Plan, Section II.K.1, "On-site Exposure Guidelines and Authorizations," describes the provisions made for implementation of emergency exposure guidelines. The RPP in the WLS COL FSAR incorporates by reference material from the AP1000 DCD and NEI 07-08, "Generic FSAR Template Guidance for Ensuring that Occupational Radiation Exposures Are As Low As Is Reasonably Achievable (ALARA)," to support ALARA principles for exposure criteria, and NEI 07-03, "Generic FSAR Template Guidance for Radiation Protection Program Description," Appendix 12AA, to develop RPP. In RAI 25, Questions 13.03-64(A) and 13.03-64(B), the staff requested that the applicant provide a summary of the occupational RPPs outlined in the WLS COL FSAR, the AP1000 DCD, NEI 07-08, and NEI 07-03. In response to RAI 13.03-64(A), the applicant provided a description of their procedure for requesting exposures in excess of occupational dose limits. The applicant also provided CNS's procedure for emergency worker dose extension as an example. The applicant expects that a similar process will be established for the WLS via implementing procedures that are to be developed on a schedule that supports NRC inspection activities and execution of the emergency exercise required by 10 CFR Part 50, Appendix E, Section IV.F.2. In a December 23, 2008, response to RAI 25, Question 13.03-64(B), the applicant stated that a summary of the WLS RPP is provided in WLS COL FSAR Appendix 12AA, "Radiation Protection Program Description." Milestones for the development of the RPP are provided in WLS COL FSAR Table 13.4-201. Procedures are discussed in WLS COL FSAR Section 13.5.2.2.1, "Plant Radiation Protection Procedures." The processes for authorizing and implementing emergency dose constraints consistent with EPA guidance are discussed in WLS Emergency Plan, Section II.K. The applicant also stated that compliance with the RPP is maintained under emergency conditions. Procedures are discussed in more detail in the response to RAI 25, Question 13.03-64(A). The applicant further stated that variations from routine radiation protection practices may be implemented on a case-by-case basis, consistent with ERO management direction and the provisions of 10 CFR 20.1001(b).

WLS Emergency Plan, Section II.K.3, "Dosimetry and Dose Assessment," states that self-reading and cumulative type dosimeters are provided to all personnel involved in emergency onsite response. Dose records are maintained and checked throughout the emergency. A personnel radiation dosimetry program with capability to determine both external and internal doses consistent 10 CFR Part 20 is maintained. The external dosimetry program includes provisions and requirements for use of both permanent record and self-reading dosimeters. EIPs establish requirements for distributing dosimeters to emergency responders, including individuals from offsite locations. Internal doses are estimated with whole body counting and/or in-vitro sampling and analysis routines. Dose assessment capabilities are available on a 24-hour per day basis. Procedures related to external and internal dosimetry are mentioned. WLS Emergency Plan, Section II.H.5, "On-site Monitoring Systems," states that an adequate supply of portable radiation monitoring equipment is maintained at the site including dedicated emergency response equipment. A generic description of this equipment is provided in WLS Emergency Plan, Appendix 6, "Emergency Equipment and Supplies."

Furthermore, of the WLS Emergency Plan, Section II.K.3, "Dosimetry and Dose Assessment," states, "Station procedures establish guidance for wearers to periodically read their self-reading dosimeters...." and, "Duke Energy maintains individual dose records in accordance with the requirements of 10 CFR Part 20 and the radiation protection program and its supporting

procedures.” In RAI 25, Question 13.03-64(C), the staff requested that the applicant provide a list and summary of applicable implementing procedures. In a December 23, 2008, response, the applicant stated that WLS provides and distributes self-reading and cumulative type dosimeters to personnel involved in emergency onsite response regardless of their affiliation. Dosimetry is available at the single point access in the operating facilities. Distribution of dosimetry to TSC and OSC personnel is discussed in the facility activation procedures. Dosimetry is also available for NRC personnel if needed. Radiation protection personnel are assigned to locations to assist and support this effort. Requirements for determining internal and external doses are established by the RPP. When instrument failure or an inadvertent contamination event occurs that requires dose analysis, support can be provided by unaffected Duke Energy facilities. Duke currently maintains procedure SH/0/B/2001/001, which determines dose received while working at a Duke Energy facility that will also be used at WLS. In RAI 25, Question 13.03-63(D), the staff requested that the applicant provide a description or summary of contingency plans for dosimetry services (including recordkeeping), loss of power, instrument failure, inadvertent contamination, etc. In a December 23, 2008, response to RAI 13.03-64(D), the applicant stated that the Dose Records Coordinator Supervisor in the OSC is responsible for maintaining the emergency dose records in accordance with the OSC Activation Procedure. The applicant included applicable portions of the CNS procedure as Attachment 2 to the response. The applicant anticipates that a similar procedure will be developed for the WLS. The applicant further stated that immediate approximations of external dose may be derived from self-indicating dosimeters during an emergency. Records of dosimeter readings may be maintained on log sheets or other record form. Individual dose records are maintained on plant computer systems. If the records are not available during an emergency, the OSC activation procedures requires that copies of the Daily Dose Report be gathered for the TSC and OSC upon activation. The WLS COL FSAR addresses radiation protection procedures as discussed in the response to RAI 25, Question 13.03-64(A).

WLS Emergency Plan, Section II.K.5.a, “Decontamination Action Levels,” states that the applicant implements procedures and has supplies. WLS Emergency Plan, Section II.K.5.a does not state what the decontamination levels are, who decides how and when to decontaminate, etc. Therefore, in RAI 25, Question 13.03-64(C), the staff requested that the applicant provide a list and summary of applicable implementing procedures. The WLS Emergency Plan does not reference the RPP in this area or describe any procedures related to decontamination. Therefore, in RAI 25, Question 13.03-64(A), the staff requested that the applicant provide a summary of the occupational RPPs outlined in the WLS COL FSAR, the AP1000 DCD, NEI 07-08, and NEI 07-03. Additional information received in a December 23, 2008, response to RAI 25, Questions 13.03-64(A) and 13.03-64(C) and are summarized in the evaluations of Section K.2 and Section K.3.b, of this report.

WLS Emergency Plan, Section II.K.5, “Decontamination Action Levels,” states that the applicant implements procedures to decontaminate onsite emergency personnel wounds, etc., and refers to the general list of decontamination supplies found in WLS Emergency Plan, Appendix 6, “Emergency Equipment and Supplies.” In RAI 25, Question 13.03-64(E), the staff requested that the applicant provide a list and summary of applicable implementing procedures related to responsibilities for maintenance, inventories, waste disposal, and locations of decontamination supplies and decontamination of wounds. In a December 23, 2008, response, the applicant provided a definition for contaminated based on their procedures and also procedures for surveying equipment or items and personnel, decontamination of equipment and the return of equipment to normal use. The applicant also stated that the applicant follows Electric Power

Research Institute (EPRI), "Guidelines for Industry Response to Personnel Contaminants." Levels used at WLS will be consistent with those used at other Duke Energy nuclear stations. Decontamination methods are established in radiation protection procedures and are implemented under the direction of trained radiation protection personnel. The WLS COL FSAR addresses the RPP and procedures with respect to decontamination as discussed in the response to RAI 25, Question 13.03-64(B). In RAI 25, Question 13.03-64(F), the staff requested that the applicant provide a summary of the occupational RPPs outlined in the WLS COL FSAR, the AP1000 DCD, NEI 07-08, and NEI 07-03. In a December 23, 2008, response, the applicant stated that the WLS COL FSAR addresses the RPP as discussed in the response to RAI 25, Question 13.03-64(B). A description of personnel and equipment decontamination facilities and the means for handling radioactive waste is provided in AP1000 DCD Section 1.2, "Definitions." The applicant expects that the bulk of the emergency equipment and supplies will be stored in the established ERFs. Additional supplies may be stored at locations convenient for use by emergency response personnel, for example, within the radiological control area, access areas, and decontamination areas. The applicant will determine initial storage locations based on an assessment of plant layout and their experience operating nuclear power plants. Locations may be changed based on assessments of plant emergency operations, drills, and exercises. WLS Emergency Plan, Section II.K.5.b, "Decontamination Action Levels," states that WLS implements procedures for decontamination of onsite emergency personnel. In a December 23, 2008, response to RAI 25, Question 13.03-63, the applicant stated the hot machine shop (Room 40358) will contain decontamination equipment.

WLS Emergency Plan, Section II.K.6.a, "Contamination Control Measures," discusses access control in the event of an emergency by stating that requirement for site access control is established in the WLS COL FSAR and Security Plan. State and local agencies will control access to the owner-controlled area consistent with State and local plans. In addition, the Station Security Force will control entry to the protected area in the event of an emergency. In RAI 25, Question 13.03-64(G), the staff requested that the applicant provide a list and summary of applicable implementing procedures. In a December 23, 2008, response, the applicant stated that access to the protected area is maintained by the Security Force. The security plans and associated procedures are discussed in WLS COLA Part 8, "Safeguards." Milestones associated with the implementation of the security program are presented in WLS COL FSAR Table 13.4-201. WLS COL FSAR Chapter 12, "Radiation Protection," describes the RPP, applicable to contamination control measures, consistent with the requirements of 10 CFR Part 20. WLS COL FSAR Appendix 12AA provides a summary of the WLS RPP; WLS COL FSAR Table 13.4-201 addresses milestones associated with the development of the RPP; and WLS COL FSAR Section 13.5.2.2.1 provides a discussion of radiation protection procedures. In RAI 83, Question 13.03-81, the staff requested that the applicant address the control of access to contaminated areas in the WLS Emergency Plan. In a December 23, 2008, response, the applicant stated that the OSC radiation protection staff, when activated, controls access to RCAs, assesses onsite radiological conditions, and initiates contamination control for the protected area. In addition, the OSC monitors radiological status and provides for radiological monitoring inside the protected area; and, based on survey results identifies travel routes and assigns personnel protective and monitoring equipment that limits or controls access to contaminated areas. The applicant updated the WLS Emergency Plan in the response to RAI 83, Question 13.03-81.

WLS Emergency Plan, Section II.K.6.b, "Contamination Control Measures," states that Nuclear Supply Chain Personnel will make arrangements for transport of non-contaminated offsite

supplies in event of contamination. In RAI 25, Question 13.03-64(H), the staff requested that the applicant provide a list and summary of applicable implementing procedures. In a December 23, 2008, response, the applicant stated that procurement support located in the EOF is responsible for ensuring adequate supplies of food and water are available to the ERO. Food and water would be made available onsite through acquisition of supplies under the applicant's commercial arrangements and subsequent transportation of supplies to the site, using either vendor or the applicant-supplied transport. The applicant expects that distribution of food and water under emergency conditions would be made on an ad-hoc basis. The applicant also stated that procedures are likely to be limited to the existing Duke Energy corporate procedure, assigning responsibility to the procurement support assigned to the EOF. The applicant will modify Duke Energy's corporate procedure describing EOF procurement support to incorporate WLS on a schedule that supports execution of the emergency exercise required by 10 CFR Part 50, Appendix E, Section IV.F.2.

WLS Emergency Plan, Section II.K.6.c, "Contamination Control Measures," states that areas and items are permitted to return to normal use following conduct of appropriate surveys and verification that the contamination levels meet criteria specified in the RPP or its supporting procedures. In RAI 25, Question 13.03-64(I), the staff requested that the applicant provide additional information related to radiological surveys and to summarize the RPP criteria for decontamination. In a December 23, 2008, response, the applicant stated that contamination levels and decontamination are discussed in the response to RAI 25, Question 13.03-64(E). The applicant also stated that the WLS will use the same radiological guidance followed at all existing Duke Energy nuclear stations. The list of procedures in use at Duke Energy's existing nuclear stations to address decontamination and the release of previously contaminated areas and items to normal was provided. The applicant expects that similar procedures will be developed or corporate procedures expanded to account for WLS.

WLS Emergency Plan, Section II.K.7, "Decontamination of Relocated Lee Nuclear Station Personnel," states that WLS makes provisions for protective clothing, contamination monitoring, and decontamination at the designated relocation site. A general description of the equipment and supplies that are typically available is included in WLS Emergency Plan, Appendix 6. In RAI 25, 13.03-64(J), the staff requested that the applicant provide additional information requesting how WLS would use decontamination equipment and facilities, personnel and vehicle monitoring. In a December 23, 2008, response, the applicant stated that the WLS would use procedures similar to those in use at other Duke Energy facilities. Procedures for CNS were provided as examples. Procedures will be available in accordance with 10 CFR Part 50, Appendix E, Section IV.F.2. The applicant proposed License Condition (13-4), which states that reception centers and relocation sites will be identified and LOAs will be obtained prior to the full participation exercise. The license condition is evaluated in Section 13.3.4.10 of this report,

The staff finds the additional information and clarifications provided by the applicant in response to RAI 25, Question 13.03-64 and RAI 83, Question 13.03-81 acceptable because they conform to the guidance in NUREG-0654. Accordingly, the staff considers RAI 25, Question 13.03-64 and RAI 83, Question 13.03-81 resolved.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654.

The staff finds that the applicant has established the means to control radiological exposures for emergency workers in a way consistent with the exposure guidelines in EPA 400-R-92-001. In addition, the applicant made and described adequate provisions for emergency facilities and equipment, including facilities and supplies for monitoring and decontamination of onsite and relocated personnel, vehicles, and other affected materials, and has established appropriate contamination control measures.

## **Conclusion**

The staff concludes that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, Planning Standard K. Therefore, the staff finds the information acceptable and meets the relevant requirements of 10 CFR 50.47(b)(11) and 10 CFR Part 50, Appendix E, Section IV.E.3, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

### ***13.3.4.12 Medical and Public Health Support***

As reflected in NUREG-0654, Planning Standard L, "Medical and Public Health Support," 10 CFR 50.47(b)(12) requires that arrangements be made for medical services for contaminated injured individuals. In addition, 10 CFR Part 50, Appendix E, Section IV.E requires facilities and medical supplies at the site for appropriate emergency first aid treatment, and arrangements for medical service providers qualified to handle radiation emergencies onsite. Arrangements are also required for transportation of contaminated injured individuals from the site to specifically identified treatment facilities outside the site boundary.

In WLS Emergency Plan, Section II.L, "Medical and Public Health Support," the applicant described the arrangements for medical services for contaminated injured personnel at the WLS. The staff reviewed this section, as well as other relevant portions of the WLS COLA to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. In this evaluation, the staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard L. Planning Standard L provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(12).

WLS Emergency Plan, Section II.L.1, "Hospital and Medical Support," states that an agreement has been established with Piedmont Medical Center (PMC) to provide medical services for injured personnel. Radiation monitoring equipment, dosimeters, and protective clothing are available at PMC. The PMC has the capability to evaluate and handle contaminated victims due to training courses supported by Duke Energy. Radiation protection personnel may accompany victims to support the radiological aspects of the treatment. Periodic drills, exercises, and material support are provided consistent with agreements developed with medical support providers addressed in Section II.N, "Exercise and Drills," and certification letters in WLS Emergency Plan, Appendix 7, "Certification Letters." In RAI 25, Question 13.03-65, the staff requested that the applicant discuss when the agreements will be finalized between Duke Energy and the medical support providers. In a December 23, 2008, response, the applicant proposed License Condition (13-4) and stated LOAs will be established and incorporated into the WLS Emergency Plan prior to receipt of nuclear fuel at the site. The license condition is evaluated in Section 13.3.4.10 of this report

WLS Emergency Plan, Section II.L.2, "On-site First Aid Capability," states that a trained Medical Emergency Response Team (MERT) is maintained at the site to provide 24-hour first aid support. The MERT personnel are Department of Transportation (DOT) first responder trained. Medical services are also available from Upstate Carolina Medical Center (ambulance) and Draytonville-McKown Mountain-Wilkinsville Volunteer Fire Department. Duke Energy provides for First Aid Team readiness through training consistent with WLS Emergency Plan, Section II.O, "Radiological Emergency Response Training," and drills and exercises consistent with WLS Emergency Plan, Section II.N. WLS Emergency Plan, Appendix 6, "Emergency Equipment and Supplies," provides a brief description of first aid supplies and equipment.

WLS Emergency Plan, Section II.L.4, "Medical Emergency Transportation," states that initial offsite support for medical emergencies is provided by the Draytonville-McKown Mountain-Wilkinsville Volunteer Fire Department, and Upstate Carolina Center Emergency Medical Services (UCCEMS) provides transport for non-contaminated injured personnel. However, WLS Emergency Plan, Appendix 7 contains a letter of agreement with UCCEMS to suggest that that they will provide ambulance services to transport contaminated injured personnel.

WLS Emergency Plan, Section II.L.4 also states that PMC provides ambulance services for transport of contaminated personnel to PMC. Contaminated injured personnel are suitably clothed or prepared to prevent the spread of contamination in the transporting vehicle. Communication can be maintained from the station to the site ambulance or to the ambulance through the dispatching station. Response team members receive training concerning transportation of contaminated injured individuals. The approximate time to transport a patient to PMC is 60 minutes. The estimated time for local rescue squads to arrive at the station is 30 minutes.

The staff finds the additional information and clarifications provided by the applicant in the response to RAI 25, Question 13.03-65 acceptable because the information and clarifications conform to the guidance in NUREG-0654. Accordingly, the staff considers RAI 25, Question 13.03-65 resolved.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654.

The staff reviewed the certification letter for the medical service providers described above and the additional information provided in WLS Emergency Plan, Section II.L. The staff finds that the applicant has made arrangements for hospital and medical service providers that have the capability to evaluate radiation exposure and uptake, and persons providing these services are adequately prepared to handle contaminated individuals. In addition, the applicant provided for appropriate emergency first aid treatment at the site, including qualified medical personnel to handle radiation emergencies, and arrangements for transporting victims of radiological accidents (i.e., contaminated injured individuals) to offsite medical support facilities.

## **Conclusion**

The staff concludes that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, Planning Standard L. Therefore, the staff finds the information



acceptable and meets the relevant requirements of 10 CFR 50.47(b)(12) and 10 CFR Part 50, Appendix E, Section IV.E, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

#### **13.3.4.13 Recovery and Reentry Planning and Post-accident Operations**

As reflected in NUREG-0654, Planning Standard M, "Recovery and Reentry Planning and Post-Accident Operations," 10 CFR 50.47(b)(13), requires that general plans for recovery and reentry be developed. In addition, 10 CFR Part 50, Appendix E, Section IV.H requires a description of criteria to be used to determine when, following an accident, reentry of the facility would be appropriate or when operation could be resumed.

In WLS Emergency Plan, Section II.M, "Recovery and Re-entry," the applicant provides a general framework for the contents of recovery plans and procedures to address a range of recovery and re-entry activities including recovery organization and its concepts of operation. The staff reviewed this section, as well as other relevant portions, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard M. NUREG-0654, Planning Standard M provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(13).

WLS Emergency Plan, Section II.M states that the applicant implements plans and procedures for recovery and re-entry that provide guidance on: the recovery/re-entry organization; responsibilities for decision-making activities, including decisions for relaxing protective measures based on existing or potential hazardous conditions; the means for informing ERO members about organizational structure changes and the start of recovery operations; and the methods for periodically updating estimates of total population exposure. WLS Emergency Plan, Appendix 5 includes an EPIP titled, "Recovery and Re-entry," which implements WLS Emergency Plan, Section II.M.2.

WLS Emergency Plan, Section II.M.2, "Recovery Organization," states that the applicant establishes a recovery organization consistent with existing conditions and continuing organizational needs that may be modified to address the given situation. The applicant does not expect this to be necessary following a Notification of Unusual Event or an Alert emergency classification level. Primary positions for the Recovery Organization are identified by title and responsibilities, including the Emergency Coordinator who acts as site liaison with the Recovery Organization and the EOF Director who assumes control and direction of the recovery operation with the authority and responsibilities as described in the EIPs, including the coordination with Federal, State, and local governments. Other key Recovery Organization personnel include the Work Control, Radiological Assessment, Engineering Support, Public Information, and EOF Services managers who support the EOF Director and site recovery and re-entry efforts. The Recovery Organization may perform its activities from one or more designated ERFs or from other locations as specified by the responsible recovery organization managers. The applicant's response to RAI 25, Question 13.03-66(A) provided additional insight into the applicant's intent to model the WLS recovery organization to align with Catawba, Maguire, and Oconee nuclear stations. The applicant's corporate procedure for recovery and re-entry was provided as an example of this structure. Although no revision to the WLS Emergency Plan was proposed in response to this RAI, the staff considers the additional clarification provided by the

applicant regarding its Recovery Organization structure acceptable since it conformed to the guidance in NUREG-0654.

WLS Emergency Plan, Section II.M.2 also includes provisions for relaxing protective measures when reentry of the facility would be appropriate or when operation could be resumed: station parameters no longer indicate a potential or actual emergency exists; the release of radioactivity is controllable, does not exceed permissible levels, and does not present a credible danger to the public; and the station is capable of sustaining itself in a long term shutdown condition.

WLS Emergency Plan, Section II.M.3, "Changes in Organizational Structure," states that the recovery process is implemented when the ERO managers, with concurrence from State and Federal agencies, have determined the station is in a stable and controlled condition. Upon this determination, the EOF Director notifies the NRC Operations Center, and the State and local EOCs, to inform them that the emergency condition has been terminated and any required recovery has commenced.

WLS Emergency Plan, Section II.M.4, "Updating Total Population Exposure During Recovery Operations," states that the Radiological Assessment Manager will work with South Carolina and North Carolina officials to periodically update estimates of total population exposure using population distribution data. In a December 23, 2008, response to RAI 25, Question 13.03-66(C), the applicant provided additional information to indicate that the Radiological Assessment Manager will communicate with South Carolina Department of Health and Environmental Control and the North Carolina Department of Environment and Natural Resources/Radiation Protection section via liaison personnel that are assigned within the EOF to periodically update estimates of total population exposure using population distribution data. Although no revision to the WLS Emergency Plan was proposed in response to this RAI, the staff finds the additional clarification provided by the applicant acceptable since it conformed to the guidance in NUREG-0654. Accordingly, the staff considers this question resolved.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654.

The staff finds that the applicant has developed general plans for recovery and reentry, including describing criteria to be used to determine when, following an accident, reentry of the facility is appropriate or operation can be resumed. In addition, the applicant designated the individuals who will fill key positions in the facility recovery organization. The staff finds that the plans adequately specify the means for informing members of the response organizations that a recovery operation is to be initiated, describe how decisions to relax protective measures are made, and include a method for periodically estimating total population exposure.

## **Conclusion**

The staff concludes that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, Planning Standard M. Therefore, the staff finds the information acceptable and meets the relevant requirements of 10 CFR 50.47(b)(13) and 10 CFR Part 50, Appendix E, Section IV.H, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

#### **13.3.4.14 Exercises and Drills**

As stated in NUREG-0654, Planning Standard N, "Exercises and Drills," 10 CFR 50.47(b)(14) requires that periodic exercises be conducted to evaluate major portions of emergency response capabilities, periodic drills be conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills be corrected. In addition, 10 CFR Part 50, Appendix E, Section IV.F requires a description of the program that provides for training of employees, exercising by periodic drills, and participation by other assisting persons. The exercises, including hostile action exercises of the onsite and offsite emergency plans, shall test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communication networks, test the public alert and notification system, and ensure that emergency organization personnel are familiar with their duties. 10 CFR Part 50, Appendix E, Section IV.F describes the full participation exercise, including timing of the exercise, correction of any deficiencies identified during the exercise, the use of remedial exercises, developing exercise scenarios, and an eight-year exercise cycle.

In WLS Emergency Plan, Section II.N, "Exercises and Drills," the applicant described the conduct and frequency of emergency exercises and drills, including coordination between WLS and offsite organizations. The staff reviewed this section, as well as other relevant portions of the application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard N, which provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(14).

WLS Emergency Plan, Section II.N.1, "Exercises and Drills," states that exercises are conducted on a biennial basis in a manner that tests the major elements of the plans and emergency response capabilities. Exercises test adequacy of timing and content of implementing procedures; test emergency equipment and communication networks, and public notification systems; evaluate emergency organization personnel's familiarity with their duties; and identify deficiencies.

WLS Emergency Plan, Section II.N.2, "Drills," states that upon request, the applicant allows affected State and local governments located within the plume exposure pathway EPZ to participate in drills. Drills are conducted between biennial exercises to maintain adequate emergency response capabilities, and the drills are controlled and observed by individuals qualified to conduct and evaluate the drill. The drills are used to implement accident management strategies, provide supervised instruction, allow the operating staff to resolve problems and focus on internal training objectives. One or more drills may be included as portions of an exercise. WLS Emergency Plan, Section II.A.1, "Emergency Organization," identifies participating organizations. The section describes communication, fire, medical emergency and radiation protection drills.

As described in WLS Emergency Plan, Section II.N.2.a, "Communication Drills," communication drills are performed monthly to test the notification capabilities with State and local governments within the plume exposure pathway EPZ. The capability to notify NRC Headquarters and the Regional Operations Center is also tested monthly. The capability to notify the NRC region and Federal EROs from the EOF is tested quarterly along with the functionality of computer and communication equipment. All communication systems discussed in WLS Emergency Plan,

Section II.F, "Emergency Communications," are tested annually. The drills include provisions to ensure that all participants are able to understand the content of the messages. Communication between the nuclear facility, State and local EOCs, and field assessment teams will be tested annually.

WLS Emergency Plan, Section II.N.2.b, "Fire Drills," describes that fire drills are conducted as required by WLS COL FSAR Section 9.5.1, "Other Auxiliary Systems." WLS COL FSAR Section 9.5.1, "Fire Brigade Training," states that training is conducted by qualified individuals and consists of classroom instruction supplemented with periodic classroom retraining, practice in firefighting, and fire drills. WLS COL FSAR Table 13.4-201 (Sheet 2 of 7), "Operational Programs Required by NRC Regulations," identifies the Fire Protection Program implementation milestones to be completed prior to receipt of fuel onsite and prior to initial fuel load.

WLS Emergency Plan, Section II.N.2.c, "Medical Emergency Drills," states that medical emergency drills that include a simulated contaminated injured individual, transportation to offsite facilities, and participation by the local medical support agencies are performed annually. The WLS Emergency Plan also states that the offsite portions of the medical drill may be performed as part of the required biennial exercise.

WLS Emergency Plan, Section II.N.2.d, "Radiological Monitoring Drills," states that radiological monitoring drills, involving both onsite and offsite radiological monitoring activities are conducted at least once each calendar year. Radiological monitoring drills include the use of appropriate procedures for collecting and analyzing samples and recording results; collection and analysis of the sample media for which the facility is responsible; communication with monitoring teams and recordkeeping activities. Drills may be coordinated with State and local organizations or conducted separately.

WLS Emergency Plan, Section II.N.2.e, "Radiation Protection Drills," states that onsite radiation protection drills that include response to, and analysis of, simulated elevated airborne and liquid activity levels and elevated area radiation levels in the environment are conducted at least semi-annually.

WLS Emergency Plan, Section II.N.3 "Conduct of Drills and Exercises," states that basic performance objectives, the participants, observers, coordination of offsite resources, casualties, simulated events, a timeline, a narrative summary of the events and plant conditions, and evaluation criteria are included in scenario materials. The WLS Emergency Plan states that exercises and drills will be carried out to allow free play for decision-making and to meet the drill objectives.

WLS Emergency Plan, Section II.N.4, "Exercise and Drill Evaluation," states that one or more qualified instructors or evaluators supervises and evaluates drills and exercises. A qualified individual must have been evaluated by an Emergency Planning Manager. Areas to be observed by the evaluators are defined in a critique sheet.

WLS Emergency Plan, Section II.N.5, "Drill and Exercise Critiques," states that the applicant records input from the critique participants, evaluates the need for changes to the plan, procedures, equipment, facilities, and other components of the program and develops an action plan to address the identified substantive issues. Identified substantive issues are written up as corrective actions and are tracked to completion following the corrective action program. WLS

Emergency Plan, Section II.O.4, "Emergency Response Training and Qualification," states that training programs may include practical drills consistent with WLS Emergency Plan, Section II.N, "Exercises and Drills." Instructors or evaluators immediately correct any erroneous action and if appropriate, demonstrate performance consistent with procedures.

WLS Emergency Plan, Section II.N, "Exercises and Drills," does not contain a statement related to conducting remedial exercises if the emergency plan is not satisfactorily tested during the biennial exercise. Therefore, in RAI 25, Question 13.03-67, the staff requested that the applicant provide additional information related to remedial exercises. In a December 18, 2008, response, the applicant revised WLS Emergency Plan, Section II.N.1.c, "Remedial Exercises," to include a discussion on remedial exercises. The staff finds the additional information and clarifications provided by the applicant in response to RAI 25, Question 13.03-67 acceptable because they conform to the guidance in NUREG-0654. Accordingly, the staff considers RAI 25, Question 13.03-67 resolved.

The applicant proposed EP-ITAAC 8.1 to test that the licensee conducts a full participation exercise within the specified time periods of 10 CFR Part 50, Appendix E prior to fuel load to evaluate major portions of emergency response capabilities, including participation by each State and local agency within the plume exposure pathway EPZ, and each State within the ingestion pathway EPZ.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654. In addition, FEMA stated that the adequacy of the WLS Emergency Plan review is also dependent on satisfactory demonstration of plan implementation during a joint exercise with the licensee and State and local governments, and utilizing WLS facilities. EP-ITAAC Acceptance Criterion 8.1.3.1 establishes the standards that the exercise is completed per 10 CFR Part 50, Appendix E, the offsite objectives are met, and there is no uncorrected offsite deficiencies or a license condition requiring that offsite deficiencies to be corrected prior to any operation above 5 percent rated thermal power.

The staff finds that the applicant has described provisions for conducting periodic exercises and drills to evaluate major portions of emergency response capabilities and to develop and maintain key skills. The exercises will test the adequacy of implementing procedures, emergency equipment and communication networks, and the public notification system, and will ensure that the ERO personnel are familiar with their duties. In addition, the applicant described the full participation exercise, participation by offsite authorities, and how exercise and drill deficiencies will be identified and corrected. The staff notes that EP-ITAAC Acceptance Criterion 8.1.3.1 conforms to EP-ITAAC Acceptance Criterion 14.1.3 from NUREG-0800, Chapter 14.3.10, Table 14.3.10-1. The staff finds the WLS Emergency Plan adequately describes the security based drill and exercise program.

## **Conclusion**

The staff concludes that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, Planning Standard N. Therefore, the staff finds the information acceptable and meets the relevant requirements of 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E, Section IV.F, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

### **13.3.4.15 Radiological Emergency Training**

As stated in NUREG-0654, Planning Standard O, "Radiological Emergency Response Training," 10 CFR 50.47(b)(15) requires that radiological emergency response training be provided to those who may be called on to assist in an emergency. In addition, 10 CFR Part 50, Appendix E, Section IV.F.1 requires a description of the program that provides for training of employees, exercising by periodic drills, and participation by other assisting persons.

In WLS Emergency Plan, Section II.O, "Radiological Emergency Response Training," the applicant described the training that will be conducted for both onsite and offsite response organizations in support of an emergency at the WLS. The staff reviewed this section, as well as other relevant portions of the application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan against NUREG-0654, Planning Standard O, which provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(15).

WLS Emergency Plan, Section II.O.1, "General," states that the WLS training program provides for initial training and retraining for individuals who have been assigned emergency response duties. WLS Emergency Plan, Sections II.O.1.a, "Off-site Emergency Response Training," and "Mutual Aid Agreements," describe training of offsite personnel likely to provide assistance during an emergency. The training addresses: scope of the WLS Emergency Plan; emergency classification, notification methods, basic radiation protection, individuals in response organizations who direct onsite activities, definition of support roles, and station access procedures. In RAI 25, Question 13.03-68, the staff requested that the applicant provide additional information on training of media representatives. In a December 17, 2008, response, the applicant stated this information is provided in WLS Emergency Plan, Section II.G.5, "News Media Training," and states that, "Annually, Duke Energy provides to affected media organizations information regarding the emergency plans, information regarding radiation hazards, and points of contact for release of public information during an emergency." Training is performed prior to assignment to a position, which includes practical drills consistent with WLS Emergency Plan, Section II.N, "Exercises and Drills."

WLS Emergency Plan, Section II.O.2, "On-site Emergency Response Training," states that the emergency response training program includes Duke Energy personnel who may be called upon to respond to an emergency. The training program includes classroom training and practical drills in which each individual demonstrates ability to perform his/her assigned emergency function. Training is complete prior to assignment to a position in the ERO. The training program includes practical drills addressed in WLS Emergency Plan, Section II.N, "Exercises and Drills," during which each individual demonstrates the ability to discharge the assigned emergency response function. Any erroneous performance is immediately noted during these practical drills, and proper performance may be demonstrated consistent with procedures and standards by an instructor or evaluator. Training is provided to the following categories of responders:

- a. Directors or coordinators of the plant emergency organization
- b. Personnel responsible for accident assessment, including CR shift personnel

- c. Radiological monitoring teams
- d. Fire control teams (fire brigades)
- e. Repair and damage control teams
- f. First aid and rescue teams
- g. Medical support personnel
- h. Licensee's headquarters support personnel
- i. Security personnel

WLS Emergency Plan, Section II.O.4, "Emergency Response Training and Qualification," states that the applicant implements a program to provide position-specific training for positions covered in WLS Emergency Plan, Sections II.O.4.a through II.O.4.j, including offsite local support personnel. Content of the training program is appropriate for the duties and responsibilities of the assigned position.

WLS Emergency Plan, Section II.O.5, "Retraining," states that failure to successfully complete training in a timely manner as specified in plant training program requirements results in the individual's removal from the ERO pending completion of the required training.

The staff finds the additional information and clarifications provided by the applicant in response to RAI 25, Question 13.03-68 acceptable because they conform to the guidance in NUREG-0654. Accordingly, the staff considers RAI 25, Question 13.03-68 resolved.

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654.

The staff finds that the applicant has provided for radiological emergency response training to those who may be called on to assist in an emergency. In addition, the applicant described the program that trains employees to ensure they are familiar with their specific emergency response duties, including exercising with periodic drills. The applicant also described the participation in training and drills by other persons whose assistance might be needed, including specialized initial training and periodic retraining.

### **Conclusion**

The staff concludes that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, Planning Standard O. Therefore, the staff finds the information is acceptable and meets the relevant requirements of 10 CFR 50.47(b)(15) and 10 CFR Part 50, Appendix E, Section IV.F.1, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

#### **13.3.4.16 Responsibility for the Planning Effort**

As reflected in NUREG-0654, Planning Standard P, "Responsibility for the Planning Effort – Development, Periodic Review, and Distribution of Emergency Plans," 10 CFR 50.47(b)(16), as reflected in the Planning Standard P, requires that responsibilities for plan development and review and for distribution of emergency plans are established and that planners are properly trained. In addition, 10 CFR Part 50, Appendix E, Section IV.G requires a description of provisions to be employed to ensure that the emergency plan, its implementing procedures, and emergency equipment and supplies are maintained up to date.

In WLS Emergency Plan, Section II.P, "Responsibility for the Planning Effort," the applicant described the responsibilities associated with maintaining the emergency preparedness program, including the development, review, and distribution of the emergency plan. The staff reviewed this section, as well as other relevant portions of the application, to determine whether the application conforms to the applicable guidance and complies with the pertinent regulatory requirements. The staff's primary focus was to evaluate the emergency plan compared to NUREG-0654, Planning Standard P, "Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans." Planning Standard P provides the detailed evaluation criteria that the staff should consider to determine whether the emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(16).

WLS Emergency Plan, Section II.P.1, "Training," describes the process used to provide training for the Emergency Planning Manager and support staff to facilitate effective implementation of the emergency planning effort, consistent with applicable regulatory requirements and guidance, license conditions, other commitments, and accepted good practices. Training may include formal education, professional seminars, plant-specific training, industry meetings, and other activities and forums that provide for an exchange of pertinent information.

WLS Emergency Plan, Section II.P.2, "Responsibility for Radiological Emergency Response Planning," describes the responsibility of plan development. The WLS Emergency Plan states that the WLS Site Vice President is the overall authority for ensuring that there is an adequate level of emergency preparedness maintained at the site. The responsibility for the planning effort is delegated to the Emergency Planning Manager.

WLS Emergency Plan, Section II.P.3, "Emergency Planning Manager," describes the Emergency Planning Manager position. The incumbent is responsible for developing and updating the Emergency Plan and coordinating that plan with other response organizations. The Duke Energy corporate staff may augment the WLS onsite emergency planning efforts, as needed.

WLS Emergency Plan, Section II.P.4, "Plan Reviews and Updates," states that the WLS Emergency Plan is reviewed, updated as needed, and certified to be current on an annual basis. Changes identified by drills and exercises are incorporated into the WLS Emergency Plan. On an annual basis, the Emergency Planning Manager reviews with each affected State and local organization Lee Nuclear Station procedures for emergency classification.

WLS Emergency Plan, Section II.P.5, "Distribution of Revised Plans," covers the distribution of the revised plans. The Emergency Planning Manager or designee makes needed changes to the WLS Emergency Plan. The pages that are changed are marked and dated to indicate the



change. The WLS Site Vice President reviews and approves the changes. The approved revised plans are distributed through the WLS document control organization to organizations and individuals that have responsibilities associated with implementing the Plan.

WLS Emergency Plan, Section II.P.6, "Supporting Plans," provides a list of supporting plans, including the following:

- South Carolina Operational Radiological Emergency Response Plan, Appendix 2  
South Carolina Emergency Operation Plan
- North Carolina Emergency Operations Plan
- North Carolina Radiological Emergency Response Plan for Nuclear Power Facilities
- Cherokee County, SC, Emergency Operations Plan
- York County, SC, Emergency Operations Plan
- NRC Region II Incident Response Plan
- Interagency Radiological Assistance Plan - Region 3 - U.S. Department of Energy
- INPO Emergency Response Plan

WLS Emergency Plan, Section II.P.7, "Implementing Procedures" references the topical listing of EIPs supporting the plan as being contained in WLS Emergency Plan, Appendix 5, "Implementing Procedures."

The WLS Emergency Plan contains a Table of Contents. In addition, WLS Emergency Plan, Section II.P.8 "Table of Contents," states that the format for this Emergency Plan directly follows the format of NUREG-0654. Appendix 8, "Cross-References to Regulations, Guidance, and State and Local Plans," provides a cross reference for regulatory requirements (includes Appendix E) and NUREG-0654.

WLS Emergency Plan, Section II.P.9, "Emergency Plan Audits," describes the applicant's Nuclear Performance Assessment organization's independent audit of the WLS Emergency Preparedness Program. The organization performs or oversees the performance of periodic independent audits of the emergency preparedness program consistent with 10 CFR 50.54(t). Frequency of the periodic audits is based on an assessment of performance, but all elements of the emergency preparedness program must be reviewed at least once every 24 months. An audit is performed after a change occurs in personnel, procedures, equipment, or facilities that potentially could adversely affect emergency preparedness, but no longer than 12 months after the change. Audit results are documented and improvement recommendations sent to WLS and Duke Energy management. Duke Energy's Records Management shall file and maintain records of this and a description of any corrective actions for five years.

WLS Emergency Plan, Section II.P.10, "Emergency Telephone Numbers," states that the Emergency Planning Manager (or designee) is responsible for performing a quarterly review of the telephone numbers in the emergency response procedures and for ensuring required revisions are completed.

In WLS COLA Part 10, the applicant proposed License Condition 4 “Emergency Planning Actions” to address NRC inspection of Letters of Agreement with entities specific to emergency planning responsibilities. The staff refers to this as License Condition (13-6).

Proposed License Condition (13-6):

Prior to the full-participation exercise to be conducted in accordance with the requirements of Appendix E to 10 CFR Part 50, Duke Energy will have available for NRC inspection Letters of Agreement with the entities listed in Appendix 7 of the Lee Nuclear Station COLA Part 5, Emergency Plan. These Letters of Agreement will detail each entity’s specific emergency planning responsibilities, including response to hostile action affecting the plant site, and certify the entity’s concurrence with their responsibilities.

In addition, as discussed in Section 13.3.4.3 of this report, the general nature of the existing letters of agreement is such that the scope of expected support could include expected assistance associated with hostile action at the site, which is required by 10 CFR Part 50, Appendix E, Section IV.A.7 to be identified and described in the WLS Emergency Plan. However, this requirement was not effective until June 23, 2014, which occurred after WLS COLA submission. The WLS Units 1 and 2 letters of agreement supporting the WLS COLA did not specifically address hostile actions, and were not required to when the WLS COLA was initially submitted on December 12, 2007. To clarify that the expected assistance from offsite agencies includes hostile action, the staff has included in the License Condition (below) the requirement for the updated letters of agreement to reflect expected assistance associated with hostile actions at WLS, as required by 10 CFR Part 50, Appendix E, Section IV.A.7.

For the reasons discussed above, the staff finds that delaying the updating of the letters of agreement, and revising the WLS Emergency Plan to include the letters after execution until prior to WLS fuel load is consistent with the requirements in 10 CFR Part 50, Appendix E, Section IV.G, and guidance in NUREG-0654 Evaluation Criterion II.P.4. The staff reviewed the License Condition, and with the exception of the timeframe for submission of the updated letters of agreement, finds that it acceptable for the reasons as discussed above. The staff includes a similar submission timeframe for the updated letters of agreement based on the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR 52.103(a). Therefore, consistent with the applicant’s proposed License Condition the staff identified License Condition (13-6).

License Condition (13-6):

No later than 180 days before the date schedule for initial fuel load set forth in the notification submitted in accordance with 10 CFR 52.103(a), Duke Energy shall submit to the Director of the Office of New Reactors (NRO), or the Director’s designee, in writing, updated WLS Units 1 and 2, Letters of Agreement with the following entities, or their successors. These updated Letters of Agreement shall identify the specific nature of arrangements in support of emergency preparedness for WLS, and reflect expected assistance associated with hostile action at the WLS, as defined in 10 CFR Part 50, Appendix E, Section IV.A.7. The WLS Emergency Plan shall have been revised to include these updated Letters of Agreement after they have been executed.

1. South Carolina Emergency Management Division

2. Piedmont Medical Center
3. Upstate Medical Center, Emergency Medical Services
4. Draytonville-McKown Mountain-Wilkinsville Volunteer Fire Department
5. Cherokee County Emergency Management
6. Cleveland County Emergency Management and Fire Marshall's Office
7. North Carolina Emergency Management
8. South Carolina Department of Health and Environmental Control
9. York County Emergency Management

In its Interim Finding Report for Reasonable Assurance, FEMA found that the offsite emergency plans are adequate for this planning standard and the associated evaluation criteria in NUREG-0654.

Subject to License Condition (13-6), the staff finds that the applicant has established the responsibilities for plan development and review, including distribution of the emergency plans to all appropriate organizations. In addition, the applicant established provisions to properly train the planners (i.e., the individuals responsible for the emergency planning effort) and described the provisions to be employed to ensure that the emergency plan, its implementing procedures, and emergency equipment and supplies are maintained up-to-date.

### **Conclusion**

Subject to License Condition (13-6), the staff concludes that the information provided in the WLS COLA is consistent with the guidelines in NUREG-0654, Planning Standard P. Therefore, the staff finds the information acceptable and meets the relevant requirements of 10 CFR 50.47(b)(16) and 10 CFR Part 50, Appendix E, Section IV.G, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

#### ***13.3.4.17 Evacuation Time Estimate (ETE) Analysis***

The WLS Emergency Plan includes an analysis of the time required to evacuate the plume exposure pathway EPZ 16-km (10-mile EPZ). In a March 4, 2010, letter, the applicant filed the WLS Units 1 and 2 Emergency Plan, Revision 2. This submission included the report, "William S. Lee Nuclear Station Development of Evacuations Time Estimates," Revision 2, February 2010, referred to from this point forward as the ETE Report. The ETE Report is a non-public document and the results of the ETE Report, Revision 2, are summarized in WLS Emergency Plan, Appendix 4 "Evacuation Times Estimate. The ETE Report provides the basis for the following discussion and analyses. At the direction of the staff, technical experts from Sandia National Laboratories reviewed the ETE Report and prepared a technical evaluation report containing the results of their review. The staff and its contractors reviewed the applicant's ETE Report analysis for content and conformity to NUREG-0654, Appendix 4 and to guidance provided in NUREG/CR-7002 and NUREG/CR-6863. The staff considered the

contractor's assessment in findings of acceptability and applicability in determining its conclusions of adequacy and compliance with the regulatory guidance.

### Introductory Materials Related to the ETE Report

The proposed WLS is located west of the Broad River about 11 km (7 mi) southeast of Gaffney, South Carolina. A description, including a map in the ETE Report (Figure 1-1, "Lee Nuclear Station Site Location"), of the 16-km (10-mi) EPZ and surrounding area was provided. Additional information concerning small communities and topographical features in the WLS vicinity was requested in RAI 25, Questions 13.03-4 and 13.03-5, respectively. In a November 7, 2008, response, the applicant provided an updated Figure 1.1, which identified small unincorporated areas. The WLS EPZ includes 14 emergency response planning areas (ERPAs), as illustrated in ETE Report Figure 6-1, "Lee Nuclear Station EPZ ERPA." The ERPAs are described in ETE Report, Appendix L, "ERPA Boundaries," and are typically bounded by State highways, rivers, creeks and town boundaries.

The ETE study includes many assumptions, most of which are identified in Section 2.2, "Study Methodological Assumptions," and Section 2.3, "Study Assumptions." Methodological Assumption Number 3 explains evacuation movements are assumed to be outbound relative to the plant site. Methodological Assumption Number 5 describes assumptions related to voluntary evacuations. Section 2.3 also describes assumptions for the planning basis, school evacuations, mobilization of the general population, percent of households with commuters, and staffing of traffic access and control locations. Study Assumption Number 5 states that vehicles entering the 16-km (10-mi) EPZ along Interstate 85 will not be diverted. A fundamental assumption for the ETE is that advisory to evacuate is coincident with siren notification, which is consistent with guidance in NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimate Studies" (referred to as NUREG/CR-7002)<sup>10</sup>. The assumptions related to commuters are based on the results of a site-specific telephone survey, which is included in the ETE study as Appendix F, "Telephone Survey." Additional assumptions related to factors that influence roadway capacities are described in Section 4, "Estimation of Highway Capacity."

ETE Report Section 3, "Demand Estimation," describes the assumptions for each population segment. For instance, it is assumed 100 percent of the public will evacuate and that no residents are on vacation. Population estimates at special facilities are based on available data from county emergency management offices. Population mobilization times are based on a statistical analysis of data acquired from a telephone survey, as is the relationship between resident population and evacuating vehicles (vehicle occupancy factors). Those without access to private vehicles will be transported to reception centers by bus with an assumption that 50 percent share rides with family, neighbors, and friends. This assumption is consistent with current guidance in NUREG/CR-7002.

The method for analyzing evacuation times included gathering demographic information, performing a field survey of the 16-km (10-mi) EPZ, estimating trip generation times, defining evacuation regions, applying the procedures specified in the 2000 Highway Capacity Manual

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<sup>10</sup> 10 CFR 52.17(a)(xii) allows the use of existing guidance in effect 6 months or more from the date of the application submittal to be the basis of the evaluation. The staff used NUREG/CR-7002, which was not issued prior to the application submittal or included in the acceptance criteria in the SRP, to determine if the current guidance would be met for added prudence.

(HCM), and modeling the site using the IDYNEV system. The IDYNEV system includes the PC-DYNEV macroscopic simulation model and the Traffic Assignment Model (TRAD). In the ETE Report, the TRAD model is described in Appendix B, "Traffic Assignment Model," which provides a description of the model and application of links and nodes. The traffic simulation model is described in the ETE Report, Appendix C, "Traffic Simulation Model: PC-DYNEV," which describes the model, discusses inputs, outputs, and measures of effectiveness. In the ETE Report, Appendix D, "Detailed Description of Study Procedure," describes the step-by-step process for integrating the data and models to produce ETEs. In RAI 25, Question 13.03-39, the staff requested that the applicant provide additional information concerning the use of data from field surveys with the default capacity rates of the HCM. The applicant's December 9, 2008, response clarified that highway characteristics (posted speed, number of lanes, shoulder conditions, free flow speed, terrain, traffic control devices, etc.) observed during the survey were documented in Geographic Information System shapefiles, which were used in the development of the link node analysis network. The capacity of each link was estimated using the procedures outlined in the HCM and the data from the shapefiles. Shadow evacuation is assumed to occur at population percentages that diminish with distance out to 24 km (15 mi). In RAI 25, Question 13.03-7(A) the staff requested that the applicant provide clarification of the assumptions regarding shadow evacuation for partial evacuations and in RAI 25, Question 13.03-7(B) for full 16-km (10-mi) EPZ evacuations. In a November 11, 2008, response, the applicant clarified that 35 percent of individuals in areas within the 16-km (10-mi) EPZ, but not advised to evacuate, may do so voluntarily, and that 30 percent of the population in the shadow region beyond the 16-km (10-mi) EPZ that extends a distance of 24 km (15 mi) from WLS will also elect to evacuate. In RAI 25, Question 13.03-14, the staff requested that the applicant provide a definition of the basis of future projections of numbers of vehicles involved in shadow evacuation. In a November 20, 2008, response, the applicant provided revised information for the year 2011 and proposed textual revisions and updated tables. In RAI 25, Question 13.03-42, the staff requested that the applicant provide additional information related to shadow evacuation. The applicant's responses to RAI 25, Questions 13.03-42(A) and 13.03-42(C), describes how trip generation times for the shadow evacuation were developed. The applicant's response to RAI 25, Question 13.03-42(B) describes the population values for the percent shadow evacuation used in the sensitivity analyses of the ETE Report, Appendix I. The response to RAI 25, Question 13.03-42(D) provides the basis for the population used to calculate the shadow evacuation vehicles. In the response, the applicant assumed that the demographics in the shadow region are similar to those in the 16-km (10-mi) EPZ. Results of a sensitivity analysis that varied the shadow population from 15 percent to 60 percent show that the ETE is not sensitive to the number of shadow evacuees. The applicant's response to RAI 25, Question 13.03-44, clarified that "volunteer" evacuation and "shadow" evacuation have the same meaning.

The ETE Report includes a map showing the proposed site and plume exposure pathway EPZ, as well as transportation networks, topographical features, and political boundaries. The boundaries of the 16-km (10-mi) EPZ, in addition to the evacuation subareas within the 16-km (10-mi) EPZ, are based on factors such as current and projected demography, topography, land characteristics, access routes, and jurisdictional boundaries. A general description of the evacuation model was provided, including the assumptions used in the evacuation time estimate analysis.

The staff finds the clarifications, additional information and textual revisions provided by the applicant in response to RAI 25 Questions 13.03-4, 13.03-5, 13.03-7(A) and 13.03-7(B),

13.03-14, 13.03-39, 13.03-42, and 13.03-44 acceptable because they conform to the guidance in NUREG-0654. The ETE Report describes the method of analyzing the evacuation times. A general description of the evacuation model was provided including the assumptions used in the evacuation time estimate analysis.

### Demand Estimation

The ETE study includes an analysis of permanent residents and transient populations, transit-dependent permanent residents (including ambulatory and non-ambulatory), special facility residents, and schools. As described in the ETE Report, Section 2.1, "Data Estimates," the general population is based on the 2000 census data and is projected to 2007.

The population values include those with and without vehicles. Site-specific telephone survey results, provided in the ETE Report, Appendix F, "Telephone Survey," were used to establish demographic characteristics and automobile occupancy information. The ETE Report, Section 3, "Demand Estimation," provides an estimate of the number of people needing to be evacuated (the "demand estimation"), and explains the values for the average household size of 2.62 persons per household and 1.44 vehicles per household were adapted from the survey results. The ETE Report, Table 3-2, "Permanent Resident Population and Vehicles by ERPA," presents the number of residents by evacuation area showing a total 2007 population of 48,249 requiring 26,520 vehicles for a ratio of 1.82 permanent residents per vehicle. The ETE Report, Figure 3-2, "Permanent Residents by Sector," illustrates the residents distributed within radial sectors of the 16-km (10-mi) EPZ. Consistent with guidance in NUREG/CR-6863, "Development of Evacuation Time Estimate Studies for Nuclear Power Plants," demand estimates were adjusted for evening and daytime scenarios and are presented in the ETE Report, Table 6-3, "Percent of Population Groups for Various Scenarios." The ETE Report states that census data showed that the local population increased 7.4 percent between 2000 and 2007. In Revision 2 of the ETE Report, estimates of employees who commute into the 10-mile EPZ to work are based upon the state "Journey to Work Database for 2000," and projected to 2007 using the U.S. Department of Labor job growth rates.

Population estimates are provided for permanent residents, transients, and employees of local businesses. Employment was decreasing by 1.6 percent per year in Cherokee County as shown in the ETE Report, Table 3-3, "Cherokee County Employment," and this was used to extrapolate the 2000 employment numbers to 2007. According to the county website, employment continues to decrease. A vehicle occupancy factor of 1.03 employees per vehicle, obtained from the telephone survey, was used to estimate the number of evacuating vehicles for employees.

In RAI 25, Question 13.03-1, the staff requested that the applicant provide additional information regarding the assumptions related to the population estimates during plant construction, and their consistency with projections in other COL documents. In a November 7, 2008, response, the applicant clarified the methods used to project populations. In RAI 25, Question 13.03-22, the staff requested that the applicant provide clarification regarding the plant construction population itself. The applicant's November 20, 2008, response stated that while the number of employees peak at 1,000, only about 750 are assumed to be onsite at any one time.

In Revision 2 of the ETE Report, the special event evaluated in the analysis was new plant construction. ETE Report Table 6-4, "Vehicle Estimates By Scenario," identifies the peak

construction year as 2016 and explains that the permanent resident and shadow populations were escalated to 2016 to determine the ETE. During the peak construction period the workforce estimate is 4,398 construction workers. Based on shift work and operations work, the peak onsite worker estimate is 3,079. In RAI 123, Question 13.03-98, the staff requested that the applicant provide information regarding the peak construction year and the associated demand estimation. In a November 5, 2014, response, the applicant explained that peak construction is currently projected to occur in 2020, and the projected number of evacuating vehicles at that time is 51,255. A sensitivity study that considered 54,381 evacuating vehicles is provided in the ETE Report and shows there is no change to the ETE values with this increase in vehicles. This occurs because of a combination of excess roadway capacity within the 16-km (10-mi) EPZ, and because the ETE is influenced largely by the mobilization times for this site.

A separate analysis for people without personal vehicles is provided in ETE Report Section 8, "Transit Dependent and Special Facility Evacuation Time Estimates." Other transient groups include visitors to local recreational areas, boat launches, and parks. In RAI 25, Question 13.03-23, the staff requested that the applicant provide additional information regarding how transients and employees are factored into the need for additional transit services. The applicants response explained that because there is no mass transit to bring employees and transients into the area, the report assumes that employees and transients will evacuate via the same transportation method used to enter the evacuation area and do not require transit resources for evacuation. In RAI 25, 13.03-29, the staff requested the applicant provide clarification of information regarding special facility transit demand. In a March 4, 2010, response, the applicant explained that contributions for one of the Medical Centers were not included in the total and a revised ETE Report Table 8-4 was provided.

ETE Report, Appendix E, "Special Facility Data," includes data for schools, daycare centers, medical facilities and nursing homes, correctional facilities, hotels, motels and major retail areas. The medical facility patients are identified as ambulatory, wheelchair, and bedridden to quantify specialized vehicles needed to support the evacuation. Revision 2 of the ETE Report lists the EPZ school populations for Cherokee County, York County, and Cleveland County with a combined enrollment of over 10,800 students and 700 staff. Daycare centers in Cherokee County and York County have an enrollment of over 750 children and about 120 employees. In Revision 2 of the ETE Report, medical facilities and nursing homes with inpatient services are listed in Table 8-4, "Special Facilities Transit Demand," showing a capacity of over 500 residents. In RAI 25, Question 13.03-52, the staff requested that the applicant provide additional information regarding the definition of staff for these facilities. In a December 17, 2008, response, the applicant clarified that "staff" includes faculty, but does not include administrative, custodial, food service, and adult volunteers. In RAI 25, Questions 13.03-28(A) and 13.03-28(B), the staff requested that the applicant provide additional information regarding the adequacy of numbers of school buses for a single wave of evacuation. In a March 4, 2010, response, the applicant stated that there were an insufficient number of school buses in Cherokee County for a single wave of relocation. Evacuation of schools and transit-dependent individuals with the existing inventory of school buses available in Cherokee County would require additional trips resulting in an associated increase in the ETE. The applicant provided additional information stating that in accordance with a statewide mutual aid agreement, that in the event of an emergency at the WLS, additional bus transportation resources could be requested from other, non-affected counties or school districts. Also, additional analysis on the impact of solely using Cherokee County school busses for a second and third wave evacuation was provided. In RAI 83, Question 13.03-76, the staff requested that the applicant provide an

analysis to quantify the effect of these multiple trips on the ETE and to identify additional resources or implementation of alternate methods (e.g., mutual aid agreements) that will allow for single wave evacuation. In a December 11, 2009, response, the applicant stated that in accordance with a statewide mutual aid agreement, that in the event of an emergency at WLS, additional bus transportation resources could be requested from other, non-affected counties or school districts. Also, additional analysis on the impact of solely using Cherokee County school busses for a second and third wave evacuation was provided. The applicant updated the WLS Emergency Plan and the ETE Report and incorporated the necessary changes to resolve this question. The staff finds the applicant's responses to RAI 25, Question 13.3-28 and RAI 83, Question 13.03-76 acceptable. Accordingly, the staff considers these questions resolved.

In RAI 25, Questions 13.03-25(A) and 13.03-25(C), the staff requested that the applicant provide additional information regarding evacuation of daycare centers. . In a December 17, 2008, response, the applicant explained that to evacuate children not picked up by parents during the 90-minute mobilization period, daycare centers can transport children to the nearest public elementary school where they can evacuate with the school children. Daycare centers requiring transportation support may also contact the county emergency management agency who would dispatch buses to the daycare center when they become available following evacuation of the school children.

The ETE Report states that the 16-km (10-mi) EPZ has a number of areas that attract transient populations including Prime Outlets at Gaffney, Kings Mountain National Military Park, Kings Mountain State Park and hotels and motels. An estimate of the transient population is provided in ETE Report Section 3, "Demand Estimation," with the cumulative total population presented in ETE Report Figure 3-4, "Transient Population by Sector." The total transient population is listed as 6,678 requiring 2,790 vehicles. The method used to estimate the transient population within the 16-km (10-mi) EPZ included obtaining hotel information from the Cherokee County Office of Emergency Management (OEM), estimating parking spots using aerial imagery for the outlets stores, and obtaining data for the National Military Park and State Park from York County OEM. The staff notes this approach is consistent with the guidance in NUREG/CR-6863. In RAI 25, Question 13.03-20, the staff requested that the applicant provide additional information concerning transient populations in small parks, recreation areas, and campgrounds not listed in the ETE Report. In a December 20, 2008, response, the applicant indicated that these small facilities are assumed to be used by local residents who are already accounted for in the general population estimates. There is one correctional facility within the 16-km (10-mi) EPZ. In RAI 25, Questions 13.03-25(A) and 13.03-25(B), the staff requested that the applicant provide additional information regarding evacuation of correctional center inmates. In a December 17, 2009, response, the applicant stated that the Cherokee County Detention Center maintains emergency plans that cover facility evacuation and any such evacuation would require only four buses, which would not impact the ETE.

The ETE study states that based on data provided by Limestone College, there are 740 students, of which 370 commute, and it is estimated that 20 percent of the students commute from beyond the 16-km (10-mi) EPZ. In RAI 25, Question 13.03-25(D), the staff requested that the applicant provide additional information about evacuation of Limestone College students. In a December 17, 2008, response, the applicant explained that half of the students are campus residents included in the general population and 80 percent of the remainder are local residents; therefore, only about 74 students are in the same category as "employee commuters." This accounting resulted in a minor change to the ETE Report.



Therefore, in RAI 123, Question 13.03-97, the staff requested that the applicant explain why college students are included as permanent population if they are evacuating in their own vehicles. In a November 6, 2014, response, the applicant explained that the on-campus student population is 1,030 and there is no need to include the full enrollment because this would consider online students and extended campus students who would not be part of an evacuation. The staff finds the applicant's response to RAI 123, Question 13.03-97 acceptable. Accordingly, the staff considers this question resolved.

Evacuation routes are described and times are estimated for transit-dependent and special facilities in ETE Report Section 8, "Transit dependent and Special Facility Evacuation Time Estimates." Additional information provided by the applicant in a November 25, 2009, response to RAI 25, Question 13.03-27, which clarifies that medical facility residents are all assumed to be evacuated by bus. Revision 2 of the ETE Report states that based on experience at other plants, the estimated average mobilization time for buses is 90 minutes. The method for developing the ETEs considered evacuation of the inner areas and outer areas in each direction around the 16-km (10-mi) EPZ. The 3.2-km (2-mi) zone is assumed to be evacuated simultaneously with the downwind sectors and ERPA's following the keyhole configuration. Vehicles traveling through the 16-km (10-mi) EPZ (external trips) at the time of an accident are assumed to continue to enter the 16-km (10-mi) EPZ during the first 90 minutes. Thereafter, none are assumed to enter and those remaining also evacuate with the residents and other transients. In RAI 25, Question 13.03-41, the staff requested that the applicant provide clarification of the number of vehicles passing through the 16-km (10-mi) EPZ. In response, the applicant provided additional information about individual highway segments. In a December 9, 2008, response to RAI 25, Question 13.03-41(B), the applicant clarified that Floyd Baker Boulevard (State Route 11) is also called Chesnee Highway. In the response to RAI 25, Question 13.03-41(C), the applicant provided a revision to ETE Report Table 6-4 (which is also discussed in the response to RAI 25, Question 13.03-14).

In RAI 25, Questions 13.03-6, 13.03-26, and 13.03-30, the staff requested that the applicant provide additional information regarding possible additional special populations. In a March 4, 2010, response to RAI 25, Question 13.03-6, the applicant explained that up to seven additional medical facilities could be operating within the 16-km (10-mi) EPZ and that contact would be made with these facilities to verify that they are operational and to obtain population data. These contacts are described in the responses to RAI 25, Questions 13.03-26 and 13.03-30. In a March 4, 2010, response to RAI 25, Questions 13.03-26 and 13.03-30, the applicant explained that minor revisions will be made in the ETE Report to include these facilities but that each has its own transportation, resulting in no impact to the ETE. In RAI 25, Question 13.03-32, the staff requested that the applicant provide maps showing locations of these facilities. The applicant's response provided additional maps for the ETE Report.

In RAI 25, Question 13.03-15, the staff requested that the applicant provide additional information regarding special needs populations. In a March 4, 2010, response, the applicant provided additional information regarding estimates of homebound disabled individuals who are transit-dependent and proposed new text for the ETE Report. In RAI 25, Question 13.03-21(A), the staff requested that the applicant provide additional information regarding transient populations at special events routinely held in the region. In a November 20, 2008, response, the applicant provided a revision to Section 3 of the ETE Report describing the construction peak scenario and a sensitivity study related to inclusion of the Ed Brown Rodeo in the ETE estimates. In RAI 25, Question 13.03-21(B), the staff requested that the applicant provide

additional information regarding peak tourist populations. In a November 20, 2008, response, the applicant clarified that peak tourist populations are included in the recreational areas, shopping, and lodging estimates.

The potential for double counting is discussed in ETE Report Section 3 and subsequent sections quantify how double counting is considered. This includes an approach that avoids double counting by treating non-EPZ residents as commuters and 16-km (10-mi) EPZ residents who are employed within the 16-km (10-mi) EPZ as residents. The mapping clarity is consistent with the guidance in NUREG/CR-6863, "Development of Evacuation Time Estimate Studies for Nuclear Power Plants," with resolution that supports a detailed review of the roadway network and geographic features.

In RAI 25, Question 13.03-13, the staff requested that the applicant provide clarification of the "3 Miles to EPZ" notation in ETE Report Figure 3-3, "Permanent Resident Vehicles by Sector" and ETE Report Figure 3-4, "Transient Population by Sector." In a November 11, 2008, response, the applicant defined the notation as a distance 5 km (3 mi) from the plant to the 16-km (10-mi) EPZ boundary. In RAI 25, Question 13.03-11, the staff requested that the applicant provide additional information regarding number of vehicles estimated per scenario. In a November 11, 2008, response, the applicant clarified the relationship of the scenarios to the vehicle estimates in these figures.

The ETE Report provides an estimate of the number of people who may need to evacuate. Three population segments are considered including permanent residents, transients, and persons in special facilities. The permanent population is adjusted for growth, and the population data is translated into two groups including those with automobiles and those without automobiles. The number of vehicles used by permanent residents is estimated using an appropriate automobile occupancy factor. Evacuation time estimates for simultaneous evacuation of the entire plume exposure pathway 10-mile EPZ were provided.

Estimates of transient populations are developed using local data including peak tourist volumes and employment data. Estimates for special facility populations are provided and schools are included in this segment.

The zones for which evacuation time estimates were determined encompass the entire area within the plume exposure pathway 10-mile EPZ. The maps are generally adequate for the purpose, and the level of detail is approximately the same as USGS quadrant maps. The assumptions on evacuation are based on simultaneous evacuation of inner and outer sectors.

The staff finds the clarifications, additional information, and textual revision submitted by the applicant in response to RAI 25, Questions 13.03-1, 13.03-6, 13.03-11, 13.03-13, 13.03-15, 13.03-20, 13.03-21(A and B), 13.03-22, 13.03-23, 13.03-25(A, B, C, and D), 13.03-26, 13.03-27, 13.03-28(A and B), 13.03-29, 13.03-30, 13.03-32, 13.03-41(A and B), and 13.03-52, acceptable because they conform to the guidance in NUREG-0654. The staff confirmed Revision 2 of the WLS Emergency Plan incorporated the information and textual changes provided in the response to RAI 25, Questions 13.03-6, 13.03-15, 13.03-21(A), 13.03-25(D), 13.03-26, 13.03-28(A and B), 13.03-29, and 13.03-30. The staff finds the ETE Report adequately addresses the estimate of the number of people who may need to be evacuated. This is acceptable because it conforms to the guidance in NUREG-0654, Appendix A, Section II.

### Traffic Capacity

As described in ETE Report Section 1.1, "Overview of the ETE Process," a detailed field survey of the highway system and traffic conditions within the 16-km (10-mi) EPZ and shadow evacuation region was conducted. Major evacuation routes are shown in figures within ETE Report Section 10, "Evacuation Routes." The evacuation network used in the analysis is illustrated on mapping provided in ETE Report Appendix K, "Evacuation Roadway Network Characteristics," and the types and capacities of each roadway segment are listed by unique link numbers in ETE Report Table K-1, "Evacuation Roadway Network Characteristics." These unique link numbers identify the upstream and downstream node numbers, length, number of lanes, saturation flow rate, and free flow speed. The high quality of mapping is such that all evacuation routes are illustrated together with residential streets. Separate segments were established for areas where the roadway segment characteristics change or where the roadway is narrowed. In RAI 25, Question 13.03-39, the staff requested that the applicant provide additional information, describing the road network used for the evacuation routes, specifically, information regarding highway lane widths. In a December 9, 2008, response to RAI 25, Question 13.03-39, the applicant clarified the assumptions on lane widths.

The ETE Report included assumptions for determining the number of vehicles needed, as well as the methodology, for determining the transport dependent population. The applicant also analyzed travel times and potential locations for serious congestion along the evacuation routes. Since the maps provided in the ETE Report illustrated areas for which congestion was predicted, but not the duration of that congestion, additional information regarding duration of congestion was requested by the staff in RAI 25, Question 13.03-48. In a March 4, 2010, response, the applicant included updated figures with congested links identified that can be cross referenced to a new table containing related information. In Revision 2 of the ETE Report, traffic queuing and congestion areas are presented in Figure 7-3, "Areas of Traffic Congestion 1 Hour after the Advisory to Evacuate," through Figure 7-5, "Areas of Traffic Congestion 3 Hours after the Advisory to Evacuate." A Level of Service F, which indicates heavy congestion, is observed in and around Gaffney, South Carolina from 30 minutes until more than 2 hours after the advisory to evacuate. After about 3 hours, heavy congestion within the 16-km (10-mi) EPZ is no longer present.

In RAI 25, Question 13.03-12, the staff requested that the applicant provide clarification on several traffic capacity questions. In a March 4, 2010, response to RAI 25, Question 13.03-12(A), the applicant provided clarification that the ETE developed for school in session considers that the same buses will be used to evacuate transit-dependent individuals. In a March 4, 2010, response to RAI 25, Question 13.03-12(B) concerning the effect that this "second wave" had on the transit-dependent individual ETE, the applicant stated that after dropping off school children at the reception centers, the buses return to the 16-km (10-mi) EPZ to perform a "second wave" evacuation of transit-dependent persons. A minor adjustment to the ETE was also made to account for the response to RAI 25, Question 13.03-31, which adjusted assumed bus speeds. The applicant's response to RAI 25, Question 13.03-12(C) indicates that the bus routes pass schools and that some transit-dependent individuals will walk to the bus route and be picked up as the buses traverse these routes; others will walk to a school to await the arrival of a bus. In its response to RAI 25, Question 13.03-12(D) concerning the use of school buses on weekends and in summer, the applicant stated that some buses were assumed to be in use during these periods, but that the ETE calculations were not altered by this assumption. In RAI 25, Question 13.03-12E, the staff also requested that the applicant provide

an explanation of inbound travel speed and time. In a March 4, 2010, response, the applicant stated that transit bus speeds would be 72 kph (45 mph) in good weather and 64 kph (40 mph) in adverse weather, conditional on the assumption that traffic control points would not hinder the movement of inbound buses. In a March 4, 2010, response to RAI 25, Question 13.03-12(F), the applicant provided the basis for the estimate for pickup time that each bus will, on average, contain 30 passengers, each picked up individually, with a delay associated with each stop of 1 minute.

The ETE Report Section 4, "Estimation of Highway Capacity," describes the methods used to estimate highway capacity. Revision 2 of the ETE Report explains the methods used are generally taken from HCM 2000 published by the Transportation Research Board of the National Research Council. In RAI 13.03-40, the staff requested that the applicant provide additional information regarding use of empirical modifiers to the HCM queue discharge flow (QDF) rates. In a November 24, 2008, response, the applicant defended a conservative view in estimating the capacity at bottlenecks when congestion develops, so a QDF factor of 0.85, when flow breaks down as determined by the simulation model, was applied.

The modeling described in ETE Report Section 4 relies upon the simulation model PC DYNEV. In RAI 25, Question 13.03-10(A), the staff requested that the applicant provide clarification regarding the modeling of traffic through intersections. In a November 11, 2008, response, the applicant stated that application of traffic control points was not considered and the modeling used the equations presented in ETE Report Section 4. The staff notes this information was repeated in the December 9, 2008, response to the similar question in RAI 25, Question 13.03-43. In RAI 25, Question 13.03-10(B), the staff requested that the applicant clarify the use of field observations to determine allocation of characteristics to the modeled highway segments. In a November 11, 2008, response, the applicant supplied additional information regarding the use of data characteristics including number and estimated width of lanes, shoulder type and estimated width, intersection configuration, lane channelization, roadway geometrics; posted speed; actual free speed; abutting land use; traffic control devices; street parking; and signage. In RAI 25, Question 13.03-10(C), the staff requested that the applicant provide clarification of the use of several factors from the HCM in estimating flow rates of vehicles turning through intersections. In a November 11, 2008, response, the applicant provided additional information regarding the definition of these parameters.

ETE Report Section 9, "Traffic Management Strategy," presents a traffic control and management strategy that is designed to expedite the movement of evacuating traffic. The traffic management strategy is based on a field survey of critical locations and consultation with emergency management and enforcement personnel. In RAI 25, Question 13.03-3, the staff requested that the applicant provide clarification on whether local officials concurred with the selection of traffic control points. In a November 7, 2008, response to RAI 25, Question 13.03-3, the applicant explained the iterative process through which the traffic management plan had been arrived at with county and State authorities. In RAI 25, Questions 13.03-34 and 13.03-35, the staff requested that the applicant provide clarification of how the traffic management strategy was integrated into the ETE calculations. The applicant's responses states that the calculations do not rely upon any of the traffic control measures described and that their use would improve the ETE.

ETE Report Section 10, "Evacuation Routes," discusses the emergency evacuation routes. In RAI 25, Question 13.03-38, the staff also requested details regarding the link node map

presented in ETE Report Appendix K, "Evacuation Roadway Network Characteristics." In a March 4, 2010, response to RAI 25, Question 13.03-38, the applicant included a disc that contained a revised copy of ETE Report Figure 1-2, "Lee Link Node Analysis Network." In RAI 25, Question 13.03-36, the staff requested that the applicant provide clarification between the link node map and the evacuation routes of ETE Report Figures 10-2 through 10-5. In a March 4, 2010, response, the applicant clarified that there is no implication that evacuees are restricted to the major evacuation routes shown. The evacuation network includes many other minor roads that are capable of servicing evacuating traffic. In RAI 25, Question 13.03-37, the staff requested that the applicant provide information regarding funneling of traffic into the reception centers outside of the 16-km (10-mi) EPZ. In a March 4, 2010, response, the applicant indicated that the Reception Centers will be located several miles beyond the 16-km (10-mi) EPZ boundary and that congestion in the vicinity of the relocation/reception centers is unlikely to impact the ETE.

The ETE Report provides a complete review of the evacuation road network. Analyses are made of travel times and potential locations for congestion. All evacuation route segments and their characteristics, including capacity, are described.

A traffic control and management strategy that is designed to expedite the movement of evacuating traffic is described. The traffic management strategy is based on a field survey of critical locations and consultation with emergency management and enforcement personnel. The applicant also analyzed travel times and potential locations for serious congestion along the evacuation routes.

The staff finds the clarifications, additional information and textual revision submitted by the applicant in response to RAI 25 Questions 13.03-3, 13.03-10(A, B, and C), 13.03-12(A, B, C, D, E, and F), 13.03-34, 13.03-35, 13.03-36, 13.03-37, 13.03-38, 13.03-39, 13.03-40, 13.03-43, and 13.03-48 are acceptable because they conform to the guidance in NUREG-0654. The staff confirmed that Revision 2 of the WLS Emergency Plan incorporated the information and textual changes provided in the response to RAI 25, Question 13.03-38. The staff finds the ETE Report adequately describes the highway capacity estimates. The staff considers this acceptable because it conforms to the guidance in NUREG-0654, Appendix 4, Section III.

#### Analysis of Evacuation Times

The ETE study includes an analysis of permanent residents and transient populations, transit-dependent permanent residents (including ambulatory and non-ambulatory), special facility residents, and schools. There are 12 scenarios described in ETE Report Table 6-2, "Evacuation Scenario Definitions." These scenarios cover different times of day, days of the week, weather conditions, and a special event. The ETEs for the permanent residents and transients were developed for the 12 evacuation scenarios for each of the 22 evacuation regions presenting a total of 264 unique ETEs.

The assumptions regarding the population allocation for each evacuation scenario are described in ETE Report Table 6-3, "Percent of Population Groups for Various Scenarios." The percentage of each group of the public for each of the scenarios includes households with returning commuters, households without returning commuters, employees, transients, shadow, and special events. ETE Report Section 5, "Estimation of Trip Generation Time," describes the process used to develop distributions of elapsed times associated with mobilization activities for

each population subgroup for each scenario. A telephone survey of residents of the 16-km (10-mi) EPZ was conducted to gather data for trip generation time elements. In RAI 25, Question 13.03-24, the staff requested that the applicant provide additional information regarding trip generation times for transients. In a November 20, 2008, response, the applicant clarified that the 2-hour mobilization time for transients is adequate for those transients who return to their lodging facilities before evacuating. In RAI 25, Questions 13.03-45(A) through 13.03-45(F), the staff requested that the applicant provide additional information regarding use of truncated distributions of mobilization times. For each question (A) through (F), in the applicant's December 17, 2008, response the applicant explained that distributions were shortened because the objective was to evaluate the evacuation times under circumstances of greatest highway loading, given the uncertainty about those who are reluctant to prepare to leave or unwilling to evacuate. The applicant stated that although a telephone survey had indicated that some people would require as much as 6 hours preparing for an evacuation, it had used a 4-hour preparation time in its ETE calculations.

The ETEs range from one hour thirty minutes to three hours twenty minutes for the ninetieth percentile normal weather general population. The maximum ETE for the one hundredth percentile is four hours twenty minutes for evacuation during special event, which is the construction of the new plant. Separate ETEs were developed for the transit-dependent and special facility populations. In RAI 25, Question 13.03-46, the staff requested that the applicant provide an explanation for the absence of a "prepare to leave activity" and "travel home" sequences for scenarios on weekends. ETE Report Figure 5-1, "Events and Activities Preceding the Evacuation Trip," was revised to show these activities. The applicant provided data and an analysis example, which explains that due to the small number of people in the affected region working on weekends, the times for those sequences are negligible. Trip generation times were based on results from a telephone survey of the region. In RAI 25, Question 13.03-47, the staff requested that the applicant provide additional information about normalization of the "Don't Know" response to the telephone survey. In a November 24, 2008, response, the clarified that, in effect, the "Don't Know" responses are ignored.

ETE Report Section 6, "Demand Estimation for Evacuation Scenarios," defines the various evacuation cases for which time estimates were made, where a case is a combination of a scenario and a region. A scenario is defined to be a combination of circumstances, including time of day, day of week, season, and weather conditions. Scenarios define the number of people in each of the affected population groups and their respective mobilization time distributions. A region is defined to be a grouping of contiguous evacuation zones, which forms either a "keyhole" sector based area, or a circular area within the plume exposure pathway EPZ, that is evacuated in response to a radiological emergency. The WLS plume exposure pathway EPZ has been defined to contain 14 ERPAs, with boundaries along major roads or rivers. The boundaries do not bisect any population centers.

A summary of the ETEs are provided in ETE Report Section 7, "General Population Evacuation Time Estimates (ETE)." The evacuation times are presented for all 22 evacuation regions and 12 scenarios in ETE Report Appendix J, "Evacuation Time Estimates for All Evacuation Regions and Evacuation Time Graphs for Region 3 (R3), for All Scenarios." Results are presented for 50 percent, 90 percent, 95 percent, and 100 percent of vehicles. Results are also provided for good and adverse (rainy) weather conditions. Evacuation times are reported separately for the general population, schools, and transit-dependent population. ETE Report Figures J-1 through J-12, "Evacuation Time Estimates – Scenarios 1 through 12 for Region 3 (Entire EPZ),"

describe the time distribution of evacuating vehicles. In RAI 25, Question 13.03-2, the staff requested that the applicant provide clarification regarding whether the results presented in ETE Report Section 7 included schools, transit dependents, and special facilities. In a November 7, 2008, response, the applicant clarified that the ETE Report Section 7 results include only the general population and that the school, transient, and special facilities populations are reported separately. In RAI 25, Question 13.03-17, the staff requested that the applicant provide clarification regarding the use of rain as adverse conditions rather than icy conditions. In a November 11, 2008, response, the applicant stated that the counties considered icy conditions to be a low probability event that was not seriously under represented by rainy conditions. The apparent lack of impact of adverse weather on the calculated ETE values was questioned by the staff in RAI 25, Question 13.03-49. In a November 24, 2008, response, the applicant clarified that rain reduces the free travel speed somewhat, which is generally not sufficient by itself to increase the ETE, due to the relatively short trip lengths. In RAI 25, Question 13.03-33, the staff requested that the applicant provide clarification regarding the “long tail” of the traffic flow rates as a function of time. In a November 25, 2008, response, the applicant explained that the “long tail” of the curve in the Figure 7-6 of the ETE Report is where the slope of the curve has decreased to the point of being nearly horizontal. The staff finds the applicant’s explanation acceptable.

The IDYNEV System, which includes the PC-DYNEV macroscopic simulation model and the Traffic Assignment Model (TRAD), was used in the analysis. Inputs, outputs, and measures of effectiveness for the traffic simulation model are discussed throughout the ETE Report, and a step by step process for integrating the data and models to produce ETEs is provided.

The combined time dependent mobilization distribution, which represents traffic loading, is presented in ETE Report Figure 5-3, “Evacuation Trip Generation for Various Population Groups.” The simulation model analyzes when and where roadways are nearing capacity, and calculates the travel delays, queuing lengths, and travel times throughout the network. Traffic queuing and congestion areas are presented in ETE Report Figures 7-3 through 7-5, showing a Level of Service F, which indicates heavy congestion, is observed in and around Gaffney, SC from 30 minutes until more than 2 hours after the advisory to evacuate. After about 3 hours, heavy congestion within the 16-km (10-mi) EPZ is no longer present.

The ETE study describes the evacuation of ambulatory persons from special facilities as requiring 54 wheelchair bus runs. The resources required for each facility are identified in ETE Report Table 8-4, “Special Facility Transit Demand.” ETE Report, Revision 2, Section 8.4, “Evacuation Time Estimates for Transit Dependent People,” explains that wheelchair buses and vans are often scarce, but that regular buses can be used to transport wheelchair patients. In RAI 123, Question 13.03-98, the staff requested that the applicant provide information regarding the resources required to evacuate the special facilities. In a November 6, 2014, response, the applicant clarified that the resources identified in ETE Report Table 8-4 do not include regular buses. The applicant explained that in an earlier response on December 11, 2009, to RAI 83, Question 13.03-76, limitations on school buses and the impact to the ETE were discussed. The applicant explained that due to these limitations, the ETE for a multiple wave response was developed resulting in an 8-hour ETE for good weather and 9 hours 15 minutes for rain for schools and the transit-dependent population. However, the maximum ETE for schools shown in the ETE Report, Revision 2, Table 8-5E, “Third Wave School Evacuation Time Estimate – Good Weather,” is 5 hours 45 minutes, and the maximum ETE for rain for the third wave is 6 hours 35 minutes. In RAI 123, Question 13.03-98, the staff requested that the

applicant provide information regarding the impact to the ETE due to time to acquire regular buses and time for buses to complete other activities prior to supporting special facility evacuations. In a November 6, 2014, response, the applicant described the times needed to evacuate schools and the transit-dependent population are 8 hours in good weather and 9 hours 15 minutes in rain. The times were given in response to RAI 83, Question 13.03-76. The assumption that the applicant held is that there would be three waves of school evacuations before a single evacuation wave for the transit-dependent population. That is, the school evacuations have priority.

The times given were the sum of the average elapsed time to complete the three waves of school evacuations and the average of the single wave of transit-dependent evacuations. In each case, the applicant limited the evacuation to use only the 60 buses of Cherokee County. With both of the assumptions, the evacuation times are as follows:

Evacuation Population	Evacuation Times (hr:min)	
	Good Weather	Rain
Schools	5:30 (ETE Report Table 8-5E)	6:15 (ETE Report Table 8-5F)
Transit-dependent	2:30 (ETE Report Table 8-7A)	2:55 (ETE Report Table 8-7B)
Total	8:00	9:15 (sum rounded up)

The results prompted Cherokee County to find and use other resources, which are available through the South Carolina Statewide Mutual Aid Agreement for Catastrophic Disaster Response and Recovery. Using the mutual aid agreement will ensure sufficient transportation resources are available for timely evacuation of school children and transit-dependent people and allow the evacuations of both populations to occur simultaneously. The use of additional resources through the mutual aid agreement will reduce the amount of evacuation times. The staff finds the applicant's responses to RAI 25, Question 13.03-76 and RAI 123, Question 13.03-98 acceptable.

A series of sensitivity tests are documented in Appendix I, "Evacuation Sensitivity Studies," including sensitivity of the results to trip generation time (directly related to time-dependent traffic loading) and to the amount of shadow evacuation.

The ETE Report includes separate calculations for special populations of school children and transit-dependent individuals in ETE Report Section 8, "Transit Dependent and Special Facility Evacuation Time Estimates." In RAI 25, Question 13.03-8, the staff requested that the applicant provide clarification of assumptions regarding mobilization of school buses. In a November 11, 2008, response, the applicant stated that the county authorities had suggested 90 minutes for Cherokee County schools, but that the schools in York and Cleveland Counties required only 30 minutes because the buses for those schools remained at the schools. Telephone survey



results are used to estimate the portion of the population requiring transit service, including persons in households that do not have a vehicle available and persons in households that have vehicles, but these vehicles would not be available at the time the evacuation is ordered. ETE Report Table 8-1, "Transit Dependent Population Estimates," shows 2,539 transit-dependent people, of which 1,270 of these would require public transport. ETE Report Table 8-6, "Summary of Transit Dependent Bus Routes for the Lee Nuclear Station," lists 42 bus runs on 11 routes to evacuate this population. In the ETE Report, Revision 2, Section 8.4, "Evacuation Time Estimates for Transit Dependent People," the applicant explained that the dispatch of buses should consider the time for transit-dependent evacuees to complete their mobilization activities and be in position to board buses when they arrive. ETE Report Section 8.4 states that bus resources are assigned to evacuating schoolchildren as the first priority. In RAI 123, Question 13.03-99, the staff requested that the applicant provide information regarding the resources needed to evacuate the transit-dependent population. In a November 6, 2014, response, the applicant explained that the times in ETE Report Tables 8-7A and 8-7B do not begin at the end of the three wave school evacuation because it is assumed that additional buses from neighboring counties will be available pursuant to mutual aid agreements. The staff finds the applicant's response to RAI 123, Question 13.03-99 acceptable.

Proposed routes for transit-dependent and special facility populations are shown in ETE Report Figure 8-2, "Proposed Transit Dependent Bus Routes." Assumed general population reception centers are shown in ETE Report Figure 10-1, "Assumed General Population Reception Centers." Clarification of bus routes was requested by the staff in RAI 25, Question 13.03-16. In a November 20, 2008, response, the applicant included a revised ETE Report Figure 8-2 outlining the assumed routing for buses. In RAI 25, Question 13.03-18, the staff requested that the applicant provide clarification of travel times for bus service through congested areas of the City of Gaffney, South Carolina. In a November 20, 2008, response, the applicant stated that average speeds in congested areas include periods of higher speed outside of the congested zones. In RAI 25, Question 13.03-19, the staff requested that the applicant explain the assumptions regarding bus return times for "second wave" evacuation. In a November 20, 2008, response, the applicant clarified that the travel times back to the 16-km (10-mi) EPZ for those buses performing a second wave evacuation of transit dependents are the average travel times based on assumed bus speeds of 72 kph and 64 kpm (45 mph and 40 mph) for good weather and rain, respectively. The bus routes identified in ETE Report Figure 8-2 illustrate the primary evacuation routes and are described in ETE Report Table 8-6, "Summary of Transit Dependent Bus Routes for the Lee Nuclear Station," which identifies buses travelling major roadways. The Cherokee County Emergency Operating Procedure states that residents should walk to the nearest public school if it is within 0.8 km (0.5 mi) or contact the Cherokee County Emergency Management Agency for assistance. In RAI 123, Question 13.03-100, the staff requested that the applicant provide a description of how the ETE calculation considers the time for buses to travel residential routes to pick up those residents living more than one-half mile from schools. In response, the applicant referenced ETE Report Figure 5-3, "Comparison of Trip Generation Distributions," show that 85 percent of these evacuees will be ready in 90 minutes, and 100 percent would be ready in 180 minutes. The applicant explained that ETE Report Tables 8-7A and B show 90 minutes for mobilization in good weather and 100 minutes for mobilization in the rain, respectively. The ETE Report shows an additional 30 minutes for pickup time. When considering pickup times, route travel times, and return to the EPZ, the second wave of evacuation takes more than 180 minutes to begin, showing that there is time for all residents to mobilize. In RAI 123, Question 13.03-101, the staff requested that the applicant provide information regarding the ETE values for the transit-dependent population. In a

November 6, 2014, response, the applicant explained that ETE Report, Tables 8-7A and B include time for all buses to complete the evacuation route because the buses travel the routes simultaneously. With this process, there is no impact to the ETE because all buses are considered in the analysis. The staff finds the applicant's responses to RAI 123, Questions 13.03-100 and 13.03-101 acceptable.

The quantity and type of specialized vehicles required to support evacuation of special facilities and special needs populations are identified. The ETE Report, Revision 2 explains that bus mobilization time for special facilities is estimated to be 90 minutes based on experience at other plants. In RAI 123, Question 13.03-102, the staff requested that the applicant provide additional information regarding bus mobilization time. In a November 6, 2014, response, the applicant explained that although previous experience for mobilization times was initially based on other plants, the counties either confirmed or corrected the mobilization times, and county specific times were used in the analysis. In ETE Report Section 8.5, "Special Needs Population," the ETE Report, Revision 2 explains that 24 ambulance runs are needed to evacuate the special facility bed-ridden population and 10 ambulance runs are needed to evacuate the homebound special needs residents. The ETE study describes the time to evacuate the special facility residents first, followed by the homebound population. The study explains that ambulances will be provided from within the 16-km (10-mi) EPZ and additional ambulances will be provided by neighboring cities. In RAI 123, Question 13.03-103, the staff requested that the applicant provide additional information regarding ambulance resources. In a November 6, 2014, response, the applicant clarified that there are 17 ambulances available within 30 minutes, and 7 of these are based in the EPZ. An additional 30 ambulances are available within 90 minutes of notification. The applicant explained that the ETE Report includes the time for ambulances to make return trips to pick up the next set of residents. Using the ambulances that are available within 90 minutes of notification would reduce the ETE value. The maximum ETE for this population segment is 4 hours and 25 minutes. The staff finds the applicant's responses to RAI 123, Questions 13.03-102 and 13.03-103 acceptable.

A total of 264 evacuation time estimates are computed for the evacuation of the general public. Each evacuation time estimate quantifies the aggregate evacuation time estimated for the population within one of the 22 Evacuation Regions to completely evacuate from that Region, under the circumstances defined for one of 12 evacuation scenarios ( $22 \times 12 = 264$ ). Separate evacuation time estimates are calculated for transit-dependent evacuees, including school children. An acceptable variant of the NUREG-0654 format is used for the presentation of the evacuation times.

Distribution functions for notification of the various categories of evacuees were developed. The distribution functions for the action stages after notification predict what fraction of the population will complete a particular action within a given span of time. There are separate distributions for auto-owning households, school population, and transit-dependent populations. These times are combined to form the trip generation distributions.

On-road travel and delay times are calculated. An estimate of the time required to evacuate a particular segment of the non-auto-owning population dependent on public transportation is developed, in a manner similar to that used for the auto-owning population.

The staff finds the clarifications, additional information, and textual revision submitted by the applicant in response to RAI 25, Questions 13.03-2, 13.03-8, 13.03-16, 13.03-17, 13.03-18,

13.03-19, 13.03-24, 13.03-33, 13.03-45(A through F), 13.03-46, 13.03-47, and 13.3-49 acceptable because they conform to the guidance in NUREG-0654. The staff also confirmed that Revision 2 of the WLS Emergency Plan incorporated the information and textual changes provided in the response to RAI 25. Questions 13.03-16 and 13.03-46.

The staff finds that the ETE Report adequately addresses the descriptions of the methods used to estimate the evacuation times. The staff finds this acceptable because it conforms to the guidance in NUREG-0654, Appendix 4, Section IV.

#### Other Requirements

ETE Report Section 11, "Surveillance of Evacuation Operations," addresses monitoring of the evacuation by use of staff at traffic control points, ground and aerial surveillance and citizen reports via cellular telephones. Surveillance of the evacuation will be coordinated and executed by local authorities. ETE Report Section 12, "Confirmation Time," describes the necessity to confirm the evacuation process and explains this is a county level responsibility. In RAI 13.03-50, the staff requested that the applicant provide clarification regarding assumptions regarding telephone surveys and county agreements on methods of confirming evacuation. In a November 24, 2008, response, the applicant identified an advantage to the telephone based approach and suggested the approach could be reinforced with ground vehicles if decided at a later date. The use of a telephone survey is one approach suggested in NUREG-0654.

Intelligent Transportation Systems (Dynamic Message Signs, Highway Advisory Radio, Automated Traveler Information Systems, etc.) are discussed in ETE Report Section 9. In RAI 25, Question 13.03-51, the staff requested that the applicant provide additional information regarding the use of such systems in the ETE analysis. In a November 24, 2008, response, the applicant clarified that the various intelligent transportation systems were not credited in the development of the ETE, and the results of the ETE are not dependent on their use.

The development of the ETE Report was coordinated with emergency planners from the State of South Carolina, and from Cherokee and York Counties, which are involved in emergency response for the site. In RAI 25, Question 13.03-3, the staff requested that the applicant provide information regarding the review of the ETE Report by State and local organizations involved with emergency response. In a November 7, 2008, response, the applicant described collaboration with State and local emergency management officials and law enforcement personnel in developing the ETE analysis and resolving their comments on the draft ETE Report. In addition, RAI 25, Question 13.03-3, the staff requested that the applicant provide clarification regarding whether State and local organizations provided any comments and that any comments and their resolution be provided as additional information. In a November 7, 2008, response to RAI 25, Question 13.03-3, the applicant described its collaboration with State and local emergency management officials and law enforcement personnel in developing the ETE analysis and resolving their comments on the draft ETE Report. Also, in RAI 25, Question 13.03-3, the staff requested that the applicant provide specific clarification regarding whether the State and local emergency response agencies had concurred with traffic control point and access control point selection and arrangements. In a November 7, 2008, response, the applicant stated that State and local emergency response agencies had concurred with the traffic control points during the development of the Emergency Plan and ETE, and had signed letters of commitment to support the Emergency Plan and ETE. In a November 11, 2008, response to RAI 25, Question 13.03-9, in which the staff requested that the applicant provide

clarification of the use of traffic control points in the ETE estimate, the applicant explained that the functions of the traffic control points were not assumed in the ETE estimation and would act to reduce the time if employed. The staff noted in RAI 25, Question 13.03-53 that ETE Report Table G-1, "Lee Nuclear Station Traffic Control Points," that summarized the traffic control points was referred to but omitted from the ETE Report. The applicant's response rectified this omission.

In the March 4, 2010, submission of Revision 2 of the ETE Report, the applicant explained that ETE Report, Revision 2 was provided to State and county emergency management agencies for review and comment. In a March 4, 2010, letter, the applicant provided a list of state and county agencies that had been provided a copy of Revision 2 of the ETE Report. The applicant also provided copies of signed letters from these agencies which indicate they have reviewed the document.

The applicant estimated the time required for confirmation of evacuation. In addition, the development of the ETE Report was coordinated with emergency planners from the state and counties who are involved in emergency response for the site.

The staff finds the clarifications, additional information, and textual revision submitted by the applicant in response to RAI 25, Questions 13.03-3, 13.03-9, 13.03-50, 13.03-51, and 13.03-53 acceptable because they conform to the guidance in NUREG-0654. The staff confirmed that Revision 2 of the WLS Emergency Plan incorporated the information and textual changes provided in the response to RAI 25, Question 13.03-53. The staff finds the ETE Report adequately addresses the description of the procedure to confirm that the evacuation process is effective. This is acceptable because it conforms to the guidance in NUREG-0654, Appendix 4, Section V.

### Conclusions

The ETE Report describes the method of analyzing the evacuation times. A general description of the evacuation model was provided including the assumptions used in the evacuation time estimate analysis.

The staff finds the ETE Report adequately addresses the estimate of the number of people who may need to be evacuated. This is acceptable because it conforms to the guidance in NUREG-0654, Appendix 4, Section II.

The ETE Report provides a complete review of the evacuation road network. Analyses are made of travel times and potential locations for congestion. All evacuation route segments and their characteristics, including capacity, are described.

A traffic control and management strategy that is designed to expedite the movement of evacuating traffic is described. The traffic management strategy is based on a field survey of critical locations and consultation with emergency management and enforcement personnel. The applicant also analyzed travel times and potential locations for serious congestion along the evacuation routes.

The time required for confirmation of evacuation was estimated. In addition, the development of the ETE Report was coordinated with emergency planners from the state and counties who are involved in emergency response for the site.

On the basis of its review of the analysis of the ETE Report as described above, the staff concluded that the information provided in the ETE Report is consistent with the guidance in Appendix 4 to NUREG-0654, Appendix 4; NUREG-6368; and portions of NUREG/CR--002 as described above. Therefore, the staff considers the ETE Report acceptable and meets the applicable requirements of 10 CFR Part 50, Appendix E.IV.

#### **13.3.4.18 AP1000 COL Information Items**

WLS COLA FSAR Table 1.8-202, "COL Item Tabulation," identifies two COL information items from AP1000 DCD Tier 2, Section 13.3.1, relating to EP. These consist of STD COL 13.3-1 and STD COL 13.3-2, which correspond to COL Action Items 13.3-1 and 13.3.3.3.5-1, respectively, in NUREG-1793, Section 13.3. The following addresses the resolution of the two COL information items.

- STD COL 13.3-1

STD COL Information Item 13.3-1 requires that COL applicants referencing the AP1000 certified design will address EP, including post-72 hour actions and its communication interface. In consideration of WLS COL 13.3-1, the applicant addressed STD COL 13.3-1 in WLS COL FSAR Section 13.3 by stating the following:

The emergency planning information is submitted to the Nuclear Regulatory Commission as a separate licensing document (WLS COL 13-3.1).

Post-72 hour support actions, as discussed in DCD Subsections 1.9.5.4 and 6.3.4, are addressed in DCD Subsections 6.2.2, 8.3, and 9.1.3. Provisions for establishing post-72 hour ventilation for the main control room, instrumentation and control rooms, and dc [direct current] equipment rooms are established in operating procedures.

The staff's evaluation of communication interfaces is addressed above in Section 13.3.4.6, "Emergency Communications," of this report. With regard to post-72 hour actions associated with the AP1000 DCD, the applicant referenced operating procedures and various AP1000 DCD sections listed above that address post-72 hour support actions. The staff identified additional AP1000 DCD Tier 2 sections that address post-72 hour support actions, which include AP1000 DCD Sections 6.4, "Habitability Systems"; 9.4, "Air-Conditioning, Heating, Cooling, and Ventilation System"; and 9.5, "Other Auxiliary Systems," for example, plant lighting systems described in AP1000 DCD, Section 9.5.3.

As discussed in AP1000 DCD Section 1.9.5.4, post-72 hour support actions relate to an extended loss of the non-safety-related systems for both offsite and onsite ac power sources for more than 72 hours. For purposes of the staff's review of EP information in the WLS COLA, and in the context of COL Action Item 13.3-1, the reference to post-72 hour support actions is limited and indirectly related to the habitability and functionality of the TSC. Specifically, it is limited to the reliability of the electrical power supply (post-72 hours) to the TSC ventilation system and communication equipment. The evaluation of the reliability of the electrical power supplies, including the power supplies to the TSC, is addressed in the AP1000 DCD sections referenced above. The habitability and functionality of the TSC is addressed in Section 13.3.4.8 of this report.

The staff finds that the applicant has addressed EP communication interfaces in support of WLS Units 1 and 2 in the WLS Emergency Plan. In addition, the applicant has addressed post-72 hour actions through reference to the AP1000 DCD sections that specifically address an extended loss of the non-safety-related systems for both offsite and onsite ac power sources for more than 72 hours. The staff's evaluation of those systems and power sources, including the establishment of associated operating procedures, are addressed in their respective sections of this report. Therefore, the staff finds that the COL applicant has adequately addressed STD COL 13.3-1.

- STD COL 13.3-2

STD COL 13.3-2 requires that COL applicants referencing the AP1000 certified design will address the activation of the EOF, consistent with current operating practice and NUREG-0654. In WLS COL FSAR Section 13.3, the applicant addressed STD COL 13.3-2 by stating that the emergency plan describes the plans for coping with emergency situations, including communication interfaces and staffing of the EOF.

Activation and staffing of the EOF is described in the WLS Emergency Plan, and the staff's evaluation of this information is addressed in Section 13.3.4.2, "Onsite Emergency Organization," Section 13.3.4.3, "Emergency Response Support and Resources," Section 13.3.4.5, "Notification Methods and Procedures," and Section 13.3.4.8, "Emergency Facilities and Equipment," of this report. Communication interfaces are addressed in Section 13.3.4.6, "Emergency Communications," of this report. Therefore, the staff finds that the COL applicant has adequately addressed STD COL 13.3-2.

- WLS COL 9.5-9 and WLS COL 9.5-10

WLS COL 9.5-9 requires that COL applicants referencing the AP1000 certified design will address interfaces to required offsite locations, including the recommendations of BL-80-15 regarding loss of the emergency notification system due to a loss of offsite power. In addition, WLS COL 9.5-10 requires that COL applicants referencing the AP1000 certified design will address the emergency offsite communication system, including the crisis management radio system. In WLS COL FSAR Section 9.5.2.2.3, the applicant addressed WLS COL 9.5-9 and WLS COL 9.5-10 together by stating that offsite interfaces and emergency offsite communication are described in the emergency plan (See also, WLS COL FSAR Table 1.8-202).

The applicant described the emergency notification systems, including the ENS, in WLS Emergency Plan, Section II.E, and the emergency communication systems in WLS Emergency Plan, Section II.F. The staff's evaluation of offsite emergency notification and communication systems is addressed in Sections 13.3.4.5 and 13.3.4.6, respectively of this report. Therefore, the staff finds that the COL applicant has adequately addressed WLS COL 9.5-9 and WLS COL 9.5-10, with regard to emergency planning for WLS Units 1 and 2. Offsite interfaces and emergency offsite communication are discussed further in Section 9.5.2, "Communication System," of this report.

- WLS COL 18.2-2

WLS COL 18.2-2 requires that COL applicants referencing the AP1000 certified design will provide specific information regarding EOF and TSC communication and human factors attributes. WLS COL FSAR Table 1.8-202 identifies WLS COL FSAR Section 18.2.1.3 as the location where WLS COL 18.2-2 is addressed. In WLS COL FSAR Section 18.2.1.3, the applicant addressed WLS COL 18.2-2 by stating that the EOF and TSC communication strategies, as well as the EOF and TSC human factors attributes, are described in the emergency plan.

The applicant described EOF and TSC communication and human factors attributes in WLS Emergency Plan, Sections II.E, II.F, and II.H. The staff's evaluation is addressed in Sections 13.3.4.5, 13.3.4.6, and 13.3.4.8, respectively, of this report. Therefore, the staff finds that the COL applicant has adequately addressed WLS COL 18.2-2, with regard to emergency planning for WLS Units 1 and 2. WLS COL 18.2-2 is discussed further in Section 18.2, "Human Factors Engineering Program Management," of this report.

#### ***13.3.4.19 Supplemental Information***

- STD SUP 13.3-1

Activities that the COL holder shall perform after the COL is issued, that are applicable to emergency planning, consist of the implementation milestones and license conditions. The applicant provided supplemental information in STD SUP 13.3-1, which states that WLS COL FSAR Table 13.4-201, "Operational Programs Required by NRC Regulations," provides milestones for emergency planning implementation. WLS COL FSAR Table 13.4-201 identifies the emergency planning program as operational program Item No. 14, and includes the four associated implementation milestones listed below. (See also, Table 13.3-1 of this report, ITAAC 8.1.) The staff reviewed WLS COL FSAR Table 13.4-201, and finds that the identified implementation milestones associated with the emergency planning program are acceptable because they are consistent with the relevant guidance and acceptance criteria in NUREG-0800; therefore, the milestones meet the respective requirements in 10 CFR Part 50, Appendix E. (See also, Sections 1.5.5<sup>11</sup> and 13.4 of this report.)

#### **Implementation Milestones**

- A full participation exercise conducted within 2 years of the scheduled date for initial loading of fuel, as required by 10 CFR Part 50, Appendix E, Section IV.F.2(a)(ii)
- Onsite exercise conducted within 1 year before the scheduled date for initial loading of fuel, as required by 10 CFR Part 50, Appendix E, Section IV.F.2(a)(ii)

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<sup>11</sup> Section 1.5.5, "Receipt, Possession, and Use of Source, Byproduct and Special Nuclear Material Authorized by 10 CFR Part 52 Combined Licenses," of this report addresses implementation milestones for the various operational programs (including emergency planning) relating to byproduct, source, and special nuclear material (pursuant to 10 CFR Part 30, "Rules of general applicability to domestic licensing of byproduct material"; 10 CFR Part 40, "Domestic licensing of source material"; and 10 CFR Part 70, "Domestic licensing of special nuclear material").

- Licensee's detailed implementing procedures for its emergency plan submitted at least 180 days prior to the scheduled date for initial loading of fuel, as required by 10 CFR Part 50, Appendix E, Section V
- EPZ population change review conducted at least 365 days before scheduled date for initial loading of fuel, as required by 10 CFR Part 50, Appendix E, Section IV.7

License Condition 6

In WLS COLA Part 10, the applicant proposed License Condition 6 to provide a schedule to support NRC inspection of operational programs, including (a) the EIPs, and (e) an ERDS implementation program plan. The applicant proposed the following, emergency preparedness parts extracted:

The licensee shall submit to the appropriate Director of the NRC, a schedule, no later than 12 months after issuance of the COL, that supports planning for and conduct of NRC inspections of operational programs listed in the operational program FSAR Table 13.4-201. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until either the operational programs in the FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first. This schedule shall address:

- a. the emergency planning implementation procedures to the NRC consistent with 10 CFR Part 50, Appendix E, Section V
- e. an emergency response data system (ERDS) implementation program plan consistent with 10 CFR Part 50, Appendix E, Section VI

The schedule for submission of the EIPs to the NRC is addressed in WLS COL FSAR Table 13.4-201. (See implementation milestone, discussed above.) The ERDS program, including implementation, is addressed above in Sections 13.3.4.5, 13.3.4.6, 13.3.4.8 and 13.3.4.14 of this report and in EP-ITAAC 3.2. The staff reviewed License Condition 6 against the recommendations in SECY-05-0197, as endorsed by the related February 22, 2006, SRM. The staff concludes that License Condition 6 conforms to the guidance in SECY-05-0197, with regard to implementation of the emergency planning program (including EIPs and an ERDS), and is therefore acceptable. Consistent with the applicant's proposed License Condition 6, the staff identified License Condition (13-8) and License Condition (13-9), which include minor revisions to reflect the emergency planning operational program:

License Conditions (13-8) and (13-9)

No later than 12 months after issuance of the COL, Duke Energy shall submit to the NRC a schedule that supports planning for and conduct of NRC inspection of the emergency planning program implementation as identified in FSAR Table 13.4-201. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until the emergency planning operational program has been fully implemented. This schedule shall address the following two items from FSAR Table 13.4-201:



- a. the emergency planning implementation procedures submitted to the NRC consistent with 10 CFR Part 50, Appendix E, Section V. (License Condition (13-8))
- e. an emergency response data system (ERDS) implementation program plan consistent with 10 CFR Part 50, Appendix E, Section VI. (License Condition (13-9))

(See also, Section 13.4, "Operational Programs," of this report.)

### ITAAC

- WLS SUP 14.3-1

As stated in Section 13.3.2 of this report, the applicant proposed a license condition to incorporate EP ITAAC into the COL, which are identified in Table 3.8-1 of Appendix B to Part 10 of the WLS COL application. WLS COLA Part 10, Appendix B includes Table 3.8-1 (EP-ITAAC) and incorporates by reference AP1000 DCD Tier 1, Table 3.1-1 (ITAAC). AP1000 DCD Table 3.1-1 also addresses the AP1000 locations of the OSC and TSC, which are changed by WLS COLA Departure WLS DEP 18.8-1 and evaluated in Section 13.3.4.8 of this report. In addition, in WLS COL FSAR Section 14.3.2.3.1, the applicant provided supplemental information in WLS SUP 14.3-1, which states:

Emergency Planning ITAAC (EP-ITAAC) have been developed to address implementation of elements of the Emergency Plan. Site-specific EP-ITAAC are based on the generic ITAAC provided in Appendix C.II.1-B of Regulatory Guide 1.206. These ITAAC have been tailored to the specific reactor design and emergency planning program requirements.

The staff reviewed the complete set of EP-ITAAC for WLS, which consist of the EP-ITAAC in WLS COLA Part 10, Table 3.8-1 plus the EP ITAAC in AP1000 DCD Tier 1, Table 3.3-1. The staff identified that proposed EP-ITAAC Acceptance Criterion 3.1.4 omitted communication links between the EOF and the radiological monitoring teams as compared to the EP-ITAAC in NUREG-0800, Table 14.3.10-1. Therefore, the staff revised the proposed EP-ITAAC Acceptance Criterion 3.1.4 to conform to NUREG-0800, Table 14.3.10-1. Similarly, the staff identified instances in EP-ITAAC Acceptance Criteria 8.1.1.2.E.4.b and EP-ITAAC 8.1.1.2.E.7.c with ambiguous criteria that did not conform to NUREG-0800, Table 14.3.10-1. The staff revised the acceptance criteria by replacing "and/or" with "or." The staff noted that the revised EP-ITAAC are collectively adequate because they conform to the respective acceptance criteria in NUREG-0800, Section 14.3.10.<sup>12</sup> Therefore, the staff finds that the WLS SUP 14.3-1 is adequately addressed and that the EP-ITAAC in WLS COLA Part 10, Table 3.8-1, as modified in Table 13.3-1 of this report, and AP1000 DCD Table 3.3-1 are acceptable because they are consistent with NUREG-0800.

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<sup>12</sup> The generic EP ITAAC in RG 1.206 Appendix B, Table C.II.1-B1 are identical to the generic EP ITAAC in NUREG-0800, Section 14.3, Table 14.3.10-1.

### 13.3.5 Post Combined License Activities

The license condition language in this section has been clarified from previously considered language. In a letter dated March 22, 2016 (ADAMS Accession No. ML16084A099), the applicant did not identify any concerns with the clarified license condition language. The changes do not affect the staff's above analysis of the conditions, and therefore, for the reasons discussed in the technical evaluation section above, the staff finds the following ITAAC and license conditions acceptable:

- The licensee shall perform and satisfy the ITAAC defined in SER Table 13.3-1, "Emergency Plan ITAAC."
- License Condition (13-3) – No later than one hundred eighty (180) days before the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR § 52.103(a), the licensee shall submit to the Director of NRO, or the Director's designee, in writing, a fully developed set of plant-specific emergency action levels (EALs) for WLS Unit [1 and 2], in accordance with NEI 07-01, "Methodology for Development of Emergency Action Levels – Advanced Passive Light Water Reactors," Revision 0, with no deviations. The EALs shall have been discussed and agreed upon with State and local officials. (See Section 13.3.4.4 of this report.)
- License Condition (13-4) – Prior to the full participation exercise to be conducted in accordance with the requirements of 10 CFR Part 50, Appendix E, Duke Energy shall identify the specific locations of the reception centers and relocation sites and shall obtain Letters of Agreement for locations not under the Duke Energy's control.
- License Condition (13-5) – No later than 18 months before the latest date set forth in the schedule submitted in accordance with 10 CFR § 52.99(a) for completing the inspections, tests, and analyses in the ITAAC, the licensee shall have performed a detailed staffing analysis, in accordance with NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0.

No later than one hundred eighty (180) days before the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR § 52.103(a), the licensee shall have revised the Emergency Plan to incorporate any changes identified in the staffing analysis that are needed to bring staffing to the required levels.

- License Condition (13-6) – No later than 180 days before the date schedule for initial fuel load set forth in the notification submitted in accordance with 10 CFR 52.103(a), Duke Energy shall submit to the Director of the Office of New Reactors (NRO), or the Director's designee, in writing, updated WLS Units 1 and 2, Letters of Agreement with the following entities, or their successors. These updated Letters of Agreement shall identify the specific nature of arrangements in support of emergency preparedness for WLS, and reflect expected assistance associated with hostile action at the WLS, as defined in 10 CFR Part 50, Appendix E, Section IV.A.7. The WLS Emergency Plan shall have been revised to include these updated Letters of Agreement after they have been executed.

1. South Carolina Emergency Management Division

2. Piedmont Medical Center
  3. Upstate Medical Center, Emergency Medical Services
  4. Draytonville-McKown Mountain-Wilkinsville Volunteer Fire Department
  5. Cherokee County Emergency Management
  6. Cleveland County Emergency Management and Fire Marshall's Office
  7. North Carolina Emergency Management
  8. South Carolina Department of Health and Environmental Control
  9. York County Emergency Management
- License Condition (13-7) – Prior to fuel load, DEC will demonstrate the integrated capability and functionality of the EOF for activation and operation of the facility to respond to emergency events at WLS and one additional nuclear site that is supported by the EOF. Integrated communication and data capability and functionality will include the Technical Support Centers for WLS and one additional nuclear site, and other Federal, State, and local coordination centers as appropriate.
  - License Condition (13-8) – The licensee shall develop a schedule that supports planning for and conduct of NRC inspections of the operational programs listed in WLS COL FSAR Table 13.4-201, "Operational Programs Required by NRC Regulations." This schedule must be available to the NRC staff no later than 12 months after issuance of the COL. The schedule shall be updated every 6 months until 12 months before scheduled fuel load, and every month thereafter until the operational programs listed in WLS COL FSAR Table 13.4-201 have been fully implemented. This schedule shall include a schedule for submitting the EP implementing procedures to the NRC consistent with 10 CFR Part 50, Appendix E, Section V.
  - License Condition (13-9) – The licensee shall develop a schedule that supports planning for and conduct of NRC inspections of the operational programs listed in WLS COL FSAR Table 13.4-201, "Operational Programs Required by NRC Regulations." This schedule must be available to the NRC staff no later than 12 months after issuance of the COL. The schedule shall be updated every 6 months until 12 months before scheduled fuel load, and every month thereafter until the operational programs listed in WLS COL FSAR Table 13.4-201 have been fully implemented. This schedule shall address an emergency response data system (ERDS) implementation program plan to the NRC consistent with 10 CFR Part 50, Appendix E, Section VI.
  - License Condition (13-10) – No later than eighteen (18) months before the latest date set forth in the schedule submitted in accordance with 10 CFR § 52.99(a) for completing the inspections, tests, and analyses in the ITAAC, the licensee shall have performed an assessment of the on-site and augmented staffing capability for response to a multi-unit event. The staffing assessment shall be

performed in accordance with NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0.

No later than one hundred eighty (180) days before the date scheduled for initial fuel load, as set forth in the notification submitted in accordance with 10 CFR § 52.103(a), the licensee shall revise the Emergency Plan to include the following:

- (a) Incorporation of corrective actions identified in the staffing assessment required by this license condition; and
  - (b) Identification of how the augmented staff will be notified, given degraded communications capabilities.
- License Condition (13-11) – No later than eighteen (18) months before the latest date set forth in the schedule submitted in accordance with 10 CFR § 52.99(a) for completing the inspections, tests, and analyses in the ITAAC, the licensee shall have performed an assessment of on-site and off-site communications systems and equipment relied upon during an emergency event to ensure communications capabilities can be maintained during an extended loss of alternating current power. The communications capability assessment shall be performed in accordance with NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0.

No later than one hundred eighty (180) days before the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR § 52.103(a), the licensee shall have completed implementation of corrective actions identified in the communications capability assessment, including revisions to the Emergency Plan.

### **13.3.6 Conclusion**

The staff reviewed the WLS COL application, including applicable portions of the referenced AP1000 DCD. The staff confirmed that the applicant addressed the required information relating to emergency planning and there is no additional information needed to support the WLS COLA. The results of the staff's technical evaluation of the information incorporated by reference in the application are documented in NUREG-1793 and its supplements for the AP1000 DCD.

The EP-ITAAC are provided in Table 13.3-1, "WLS Units 1 & 2 ITAAC," of this report. The staff concludes that, pursuant to 10 CFR 52.80(a), the applicant included in the WLS COL application the proposed inspections, tests, and analyses that the licensee shall perform, and the acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the license, the provisions of the Atomic Energy Act of 1954, as amended, and NRC rules and regulations.

As part of its review of the WLS COL application, FEMA provided its findings and determinations concerning the adequacy of offsite emergency planning, which are based on its review of State and local emergency plans. FEMA concluded that the offsite State and local

emergency plans are adequate to cope with an incident at WLS, and there is reasonable assurance that these plans can be implemented. On the basis of its review of the FEMA findings and determinations, the staff concludes that the State and local emergency plans are adequate, and there is reasonable assurance that they can be implemented.

Based on its evaluation, the staff concludes that the onsite emergency plan establishes an adequate basis for an acceptable state of onsite emergency preparedness, and there is reasonable assurance that the plan can be implemented.

Based on FEMA’s conclusions and the staff’s evaluation the staff concludes that the emergency plans provide an adequate expression of the overall concept of operation and describe the essential elements of advanced planning and the provisions made to cope with emergency situations. Therefore, the staff concludes that the overall state of onsite and offsite emergency preparedness, when fully implemented, will meet the requirements of 10 CFR 50.33(g), 10 CFR 50.47, 10 CFR Part 50, Appendix E; 10 CFR 50.72(a)(3); 10 CFR 52.79(a)(21); 10 CFR 52.79(a)(22)(i); 10 CFR 52.80; and 10 CFR 100.21.

Further, in accordance with 10 CFR 50.47(a), the staff concludes that, subject to the required conditions and limitations of the full-power license, including the license condition listed in Section 13.3.5 of this report, there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the WLS, and that emergency preparedness at WLS Units 1 and 2 is adequate to support full-power operations.

**Table 13.3-1 WLS Units 1 and 2 ITAAC**

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
<b>1.0 Emergency Classification System</b>			
10 CFR 50.47(b)(4) – A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.	1.1 A standard emergency classification and emergency action level (EAL) scheme exists, and identifies facility system and effluent parameters constituting the bases for the classification scheme. [D.1**]	1.1 An inspection of the control room, technical support center (TSC), and emergency operations facility (EOF) will be performed to verify that they have displays for retrieving facility system and effluent parameters that constitute the bases for the classification scheme in the emergency plan implementing procedure addressing “Emergency Classification.”	1.1.1 The specific parameters identified in the Emergency Action Level Thresholds in the emergency plan implementing procedure addressing “Emergency Classification” have been retrieved and displayed in the control room, TSC, and EOF.

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
	<p>[**D.1 corresponds to NUREG-0654 /FEMA-REP-1 evaluation criteria.]</p> <p>[**References in brackets throughout this table correspond to with NUREG-0654/FEMA-REP-1 Evaluation Criteria]</p>		<p>1.1.2 The ranges available in the control room, TSC, and EOF encompassed the values for the specific parameters identified in the Emergency Action Level Thresholds in the emergency plan implementing procedure addressing "Emergency Classification."</p>
<p>2.0 Notification Methods and Procedures</p>			
<p>10 CFR 50.47(b)(5) – Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow-up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency</p>	<p>2.1 The means exist to notify responsible State and local organizations within 15 minutes after the licensee declares an emergency. [E.1]</p>	<p>2.1 A test will be performed of the capabilities.</p>	<p>2.1.1 A report exists that confirms communication has been established via the Selective Signaling Telephone System between the control room and the following:</p> <ul style="list-style-type: none"> <li>- Cherokee County Warning Point</li> <li>- York County Warning Point</li> <li>- Cleveland County Warning Point</li> <li>- South Carolina Warning Point</li> <li>- North Carolina Emergency</li> </ul>

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
Planning Zone have been established.			Operations Center Radiological Warning Point
	2.2 The means exist to notify emergency response personnel. [E.2]	2.2 A test will be performed of the capabilities.	2.2 A report exists that confirms notification to the Lee Nuclear Station emergency response organization has been performed.
	2.3 The means exist to notify and provide instructions to the populace within the plume exposure pathway EPZ. [E.6]	NOTE: The means to notify and provide instructions to the populace within the plume exposure pathway EPZ is addressed by Acceptance Criteria 8.1.1.2.	
<b>3.0 Emergency Communications</b>			
10 CFR 50.47(b)(6) – Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.	3.1 The means exist for communications among the control room, TSC, EOF, principal State and local emergency operations centers (EOCs), and radiological field assessment teams. [F.1.d]	3.1 A test will be performed of the capabilities.  NOTE: Additional ITAAC for the as-built TSC and OSC are addressed in Table 3.1-1 of Tier 1 of the AP1000 Design Control Document, Rev. 19.	3.1.1 A report exists that confirms communication has been established among the control room, OSC, and TSC.  3.1.2 A report exists that confirms communication have been established among the control room, TSC, and EOF.  3.1.3 A report exists that confirms communication via the Selective Signaling

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>Telephone System between the TSC and the following:</p> <ul style="list-style-type: none"> <li>- Cherokee County Warning Point</li> <li>- York County Warning Point</li> <li>- Cleveland County Warning Point</li> <li>- South Carolina Warning Point</li> <li>- North Carolina Emergency Operations Center Radiological Warning Point</li> </ul> <p>3.1.4 A report exists that confirms communication has been established between the TSC, EOF, and radiological monitoring teams.</p>
	<p>3.2 The means exist for communications from the control room, TSC, and EOF to the NRC headquarters and regional office EOCs (including establishment of the Emergency Response Data System (ERDS) between the onsite computer system and the NRC Operations Center.) [F.1.f]</p>	<p>3.2 A test will be performed of the capabilities from the control room, TSC and EOF to the NRC, including ERDS.</p>	<p>3.2.1 A report exists that confirms communication has been established from the control room, TSC, and EOF to NRC Headquarters and Region II EOC.</p> <p>3.2.2 A report exists that confirms ERDS data was provided from the plant computer system to</p>



Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			NRC Headquarters and Region II EOC.
<b>4.0 Public Education and Information</b>			
10 CFR 50.47(b)(7) – Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.	4.1 The licensee has provided space which may be used for a limited number of the news media at the EOF. [G.3.b]	4.1 An inspection of the Joint Information Center will be performed to verify that space is provided for a limited number of the news media.	4.1 The Joint Information Center has been located in the Duke Energy Center at 526 South Church Street, Charlotte, NC.
<b>5.0 Emergency Facilities and Equipment</b>			
10 CFR 50.47(b)(8) – Adequate emergency facilities and equipment to support the emergency response are provided and maintained.	5.1 The licensee has established a technical support center (TSC) and onsite operations support center (OSC). [H.1]	5.1 An inspection of the as-built TSC and OSC will be performed.  NOTE: Additional ITAAC for the as-built TSC and OSC are addressed in Table	5.1.1 The TSC has been located in the Maintenance Building.  5.1.2 The TSC includes radiation monitors and a ventilation system with a high efficiency

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
		3.1-1 of Tier 1 of the AP1000 Design Control Document, Rev. 19.	<p>particulate air (HEPA) and charcoal filter.</p> <p>5.1.3 Back-up electrical power supply was available for the TSC.</p> <p>5.1.4 The OSC was in a location separate from the control room.</p>
	5.2 The licensee has established an Emergency Operations Facility (EOF). [H.2]	5.2 An inspection of the EOF will be performed.	<p>5.2.1 The EOF had at least 243 square meters (2,625 square feet).</p> <p>5.2.2 Voice transmission and reception have been accomplished between the EOF and TSC.</p> <p>5.2.3 A report exists that confirms voice transmission and reception have been accomplished via the Selective Signaling Telephone System between the EOF and the following:</p> <ul style="list-style-type: none"> <li>- Cherokee County Warning Point</li> </ul>

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<ul style="list-style-type: none"> <li>- York County Warning Point</li> <li>- Cleveland County Warning Point</li> <li>- South Carolina Warning Point</li> <li>- North Carolina Emergency Operations Center Radiological Warning Point</li> </ul>
<b>6.0 Accident Assessment</b>			
10 CFR 50.47(b)(9) – Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.	6.1 The means exist to provide initial and continuing radiological assessment throughout the course of an accident. [1.2]	6.1 A test of the emergency plan will be conducted by performing an exercise or drill to verify the capability to perform accident assessment.	<p>6.1 A report exists that confirms an exercise or drill has been accomplished including use of selected monitoring parameters identified in the EAL Thresholds in the emergency plan implementing procedure addressing “Emergency Classification,” to assess simulated degraded plant conditions and initiate protective actions in accordance with the following criteria:</p> <p>A. Accident Assessment and Classification</p> <p>1. Initiating conditions identified, EALS parameters determined, and the emergency correctly</p>

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>classified throughout the drill.</p> <p>B. Radiological Assessment and Control</p> <ol style="list-style-type: none"> <li>1. Onsite radiological surveys performed and samples collected.</li> <li>2. Radiation exposure to emergency workers monitored and controlled.</li> <li>3. Field monitoring teams assembled and deployed.</li> <li>4. Field team data collected and disseminated.</li> <li>5. Dose projections developed.</li> <li>6. The decision whether to issue radioprotective drugs to Duke emergency workers made.</li> <li>7. Protective action recommendations developed and communicated to appropriate authorities.</li> </ol>
	<p>6.2 The means exist to determine the source term of releases of radioactive material within plant systems, and the</p>	<p>6.2 An analysis of emergency plan implementing procedures will be performed.</p>	<p>6.2 A methodology has been established to determine source term of releases of</p>

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
	magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. [I.3]		radioactive materials within plant systems.
	6.3 The means exist to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions. [I.4]	6.3 An analysis of emergency plan implementing procedures will be performed.	6.3 A methodology has been provided to establish the relationship between effluent monitor readings and onsite and offsite exposures and contamination for various meteorological conditions.
	6.4 The means exist to acquire and evaluate meteorological information. [I.5]	6.4 An inspection of the control room, TSC, and EOF will be performed to verify the availability of the following meteorological data is available:  - Wind speed (at 10 m and 60 m)  - Wind direction (at 10 m and 60 m)  - Air temperature (at 10 m and 60 m)	6.4 The specified meteorological data was available at the control room, TSC, and EOF.
	6.5 The means exist to make rapid assessments of actual or potential magnitude and locations of any radiological hazards	6.5 An analysis of emergency plan implementing procedures will be performed.	6.5 A methodology has been established to provide rapid assessment of the actual or potential magnitude and

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
	<p>through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times. [I.8]</p>		<p>locations of any radiological hazards through liquid or gaseous release pathways.</p>
	<p>6.6 The capability exists to detect and measure radioiodine concentrations in air in the plume exposure pathway EPZ, as low as 10E-7 <math>\mu\text{Ci/cc}</math> (microcuries per cubic centimeter) under field conditions. [I.9]</p>	<p>6.6 A test of Duke field survey instrumentation will be performed to verify the capability to detect airborne concentrations as low as 10E-07 microcuries per cubic centimeter.</p>	<p>6.6 A report exists that confirms instrumentation used for monitoring I-131 to detect airborne concentrations as low as 10E-07 microcuries per cubic centimeter has been provided.</p>
	<p>6.7 The means exist to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA protective action guides (PAGs). [I.10]</p>	<p>6.7 An analysis of emergency plan implementing procedures will be performed to verify that a methodology is provided to establish means for relating contamination levels and airborne radioactivity levels to dose rates and gross radioactivity measurements for the following isotopes –</p> <p>Kr-88, Ru-106, I-131, I-132, I-133, I-134, I-135, Te-132, Xe-133,</p>	<p>6.7 The means for relating contamination levels and airborne radioactivity levels to dose rates and gross radioactivity measurements for the specified isotopes has been established.</p>

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
		Xe-135, Cs-134, Cs-137, Ce-144.	
<b>7.0 Protective Response</b>			
<p>10 CFR 50.47(b)(10) – A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.</p>	<p>7.1 The means exist to warn and advise onsite individuals of an emergency, including those in areas controlled by the operator, including: [J.1]</p> <p>a. Employees not having emergency assignments</p> <p>b. Visitors</p> <p>c. Contractor and construction personnel</p> <p>d. Other people who may be in the public access areas, on or passing through the site, or within the owner controlled area.</p>	<p>7.1 A test of the onsite warning and communication capability will be performed during a drill or exercise.</p>	<p>7.1.1 A report exists that confirms that, during a drill or exercise, notification and instructions were provided to onsite workers and visitors, within the Protected Area, over the plant public announcement system.</p> <p>7.1.2 A report exists that confirms that, during a drill or exercise, audible warnings were provided to individuals outside the Protected Area, but within the Owner Controlled Area.</p>
<b>8.0 Exercises and Drills</b>			
<p>10 CFR 50.47(b)(14) – Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic</p>	<p>8.1 Licensee conducts a full-participation exercise to evaluate major portions of emergency response capabilities, which includes participation</p>	<p>8.1 A full participation exercise (test) will be conducted within the specified time periods of Appendix E to 10 CFR Part 50.</p>	<p>8.1.1.1 A report exists that confirms an exercise was conducted within the specified time periods of Appendix E to 10 CFR Part 50, onsite</p>

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
<p>drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.</p>	<p>by the State and local agency within the plume exposure pathway EPZ, and the State within the ingestion control EPZ. [N.1]</p>		<p>exercise objectives listed below were met, and there are no uncorrected onsite exercise deficiencies.</p>
			<p>8.1.1.2 A report exists that confirms the following exercise objectives were satisfied by meeting the specified performance criteria:</p> <p>A. Accident Assessment and Classification</p> <p>1. Demonstrate the ability to identify initiating conditions, determine emergency action level (EAL) parameters, and correctly classify the emergency throughout the exercise.</p> <p>Performance Criterion:</p> <p>a. Determine the correct emergency classification level based on events which were in progress, considering past events and their impact on the current conditions, within 15 minutes from the time the initiating condition(s) or EAL is identified.</p>



Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>B. Notifications</p> <p>1. Demonstrate the ability to alert, notify and mobilize site emergency response personnel.</p> <p>Performance Criteria:</p> <p>a. Complete the designated actions in accordance with emergency plan implementing procedures and perform the announcement within 15 minutes of the initial event classification for an Alert or higher.</p> <p>b. Mobilize site emergency responders in accordance with emergency plan implementing procedures within 15 minutes of the initial event classification for an Alert or higher.</p> <p>2. Demonstrate the ability to notify responsible State, local government agencies within 15 minutes and the NRC within 60 minutes after declaring an emergency.</p>

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>Performance Criteria:</p> <p>a. Transmit information in accordance with approved emergency plan implementing procedures within 15 minutes of event classification.</p> <p>b. Transmit information in accordance with approved emergency plan implementing procedures, within 60 minutes of last transmittal for a follow-up notification to State and local authorities.</p> <p>3. Demonstrate the ability to warn or advise onsite individuals of emergency conditions.</p> <p>Performance Criterion:</p> <p>a. Initiate notification of onsite individuals within 15 minutes of declaration.</p> <p>4. Demonstrate the capability of the Public Alert and Notification System to operate properly when required.</p> <p>Performance Criteria:</p>

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>a. 90% of the sirens operate properly, as indicated by the siren feedback system.</p> <p>b. The EAS is activated.</p>
			<p>C. Emergency Response</p> <p>1. Demonstrate the capability to direct and control emergency operations.</p> <p>Performance Criterion:</p> <p>a. Command and control is demonstrated in the control room in the early phase of the emergency, and the technical support center (TSC) within 75 minutes of declaration minutes of an Alert or higher emergency classification.</p> <p>2. Demonstrate the ability to transfer emergency direction from the control room to the TSC upon activation.</p> <p>Performance Criteria:</p> <p>a. Turnover briefings are conducted in accordance with emergency plan</p>

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Units 1 and 2

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>implementing procedures.</p> <p>b. Documentation of transfer of duties is completed in accordance with emergency plan implementing procedures.</p> <p>3. Demonstrate the ability to prepare for around-the-clock staffing requirements.</p> <p>Performance Criterion:</p> <p>a. Complete 24-hour staff assignments.</p> <p>4. Demonstrate the ability to perform assembly and accountability within 30 minutes of an emergency requiring protected area assembly and accountability.</p> <p>Performance Criterion:</p> <p>a. Protected area (PA) personnel assembly and accountability completed within 30 minutes of an emergency requiring PA assembly and accountability.</p>
			<p>D. Emergency Response Facilities</p>

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>1. Demonstrate activation of the operational support center (OSC), and full functional operation of the TSC and EOF within 75 minutes declaration of Alert or higher emergency classification.</p> <p>Performance Criterion:</p> <p>a. The TSC, OSC, and EOF are activated within 75 minutes of the initial notification.</p> <p>2. Demonstrate the adequacy of equipment, security provisions, and habitability precautions for the TSC, OSC, and EOF as appropriate.</p> <p>Performance Criteria:</p> <p>a. Demonstrate the adequacy of the emergency equipment in the emergency response facilities as specified in emergency plan implementing procedures.</p> <p>b. The Security Force implements and follows applicable emergency plan implementing procedures.</p>

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>c. The Radiological Assessment Manager implements habitability controls in accordance with emergency plan implementing procedures if an onsite/offsite release has occurred.</p> <p>3. Demonstrate the adequacy of communication for all emergency support resources.</p> <p>Performance Criteria:</p> <p>a. Emergency response facility personnel are able to operate communication systems in accordance with emergency plan implementing procedures.</p> <p>b. Emergency response communication systems listed in emergency plan implementing procedures are available and operational for the duration of the exercise.</p>
			<p>E. Radiological Assessment and Control</p>

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>1. Demonstrate the ability to obtain onsite radiological surveys and samples.</p> <p>Performance Criteria:</p> <p>a. Radiation Protection Technicians demonstrate the ability to obtain appropriate instruments (range and type) and perform surveys.</p> <p>b. Airborne samples are taken in accordance with emergency plan implementing procedures.</p> <p>2. Demonstrate the ability to continuously monitor and control radiation exposure to emergency workers.</p> <p>Performance Criteria:</p> <p>a. Emergency workers are issued self-reading dosimeters when radiation levels require, and exposures are controlled to 10 CFR Part 20 limits (unless the Emergency Coordinator authorizes emergency limits).</p>

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>b. Exposure records are available.</p> <p>c. Emergency workers include Security and personnel within all emergency facilities.</p> <p>3. Demonstrate the ability to assemble and deploy field monitoring teams within 75 minutes from the decision to do so.</p> <p>Performance Criterion:</p> <p>a. One Field Monitoring team is ready to be deployed within 15 – 30 minutes of their arrival onsite. In addition, an offsite monitoring team must be able to be dispatched within 75 minutes of an Alert or higher emergency classification.</p> <p>4. Demonstrate the ability to collect and disseminate field team data.</p> <p>Performance Criteria:</p> <p>a. Field team collects data for dose rate and airborne radioactivity levels in accordance with emergency plan implementing procedures.</p>



Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>b. Field team communicates data to the TSC or EOF in accordance with emergency plan implementing procedures.</p> <p>5. Demonstrate the ability to develop dose projections.</p> <p>Performance Criterion:</p> <p>a. Timely and accurate dose projections are performed in accordance with emergency plan implementing procedures.</p> <p>6. Demonstrate the ability to make the decision whether to issue radioprotective drugs (KI) to onsite emergency workers.</p> <p>Performance Criterion:</p> <p>a. KI is issued (simulated) if the estimated dose to the thyroid will exceed 25 rem committed dose equivalent (CDE).</p> <p>7. Demonstrate the ability to develop appropriate protective action recommendations (PARs) and notify</p>

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>appropriate authorities within 15 minutes after development.</p> <p>Performance Criteria:</p> <p>a. Total effective dose equivalent (TEDE) and CDE dose protections from the dose assessment computer code are compared, in accordance with emergency plan implementing procedures.</p> <p>b. PARs are developed within 15 minutes of data availability.</p> <p>c. PARs are transmitted to responsible State and local government agencies via voice or fax within 15 minutes of event classification or PAR development.</p>
			<p>F. Public Information</p> <p>1. Demonstrate the capability to develop and disseminate clear, accurate, and timely information to the news media in accordance with emergency plan implementing procedures.</p>

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>Performance Criterion:</p> <p>a. The Joint Information Center (JIC) is activated within 75 minutes following the declaration of a Site Area Emergency or higher classification or following the Emergency Coordinator's or JIC Director's instruction to do so.</p> <p>2. Demonstrate the capability to establish and effectively operate rumor control in a coordinated fashion.</p> <p>Performance Criteria:</p> <p>a. Calls are answered in a timely manner with the correct information, in accordance with emergency plan implementing procedures.</p> <p>b. Calls are returned or forwarded, as appropriate, to demonstrate responsiveness.</p> <p>c. Rumors are identified and addressed in accordance with emergency plan</p>

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			implementing procedures.
			<p>G. Evaluation</p> <p>1. Demonstrate the ability to conduct a post-exercise critique, to determine areas requiring improvement and corrective action.</p> <p>Performance Criteria:</p> <p>a. An exercise time line is developed, followed by an evaluation of the objectives.</p> <p>b. Significant problems in achieving the objectives are discussed to ensure understanding of why objectives were not fully achieved.</p> <p>c. Recommendations for improvement in non-objective areas are discussed.</p>
			<p>8.1.2.1 A report exists that confirms onsite emergency response personnel were mobilized to fill emergency response positions and there were no uncorrected onsite exercise deficiencies.</p> <p>8.1.2.2 A report exists that confirms onsite emergency response</p>

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			<p>personnel performed their assigned responsibilities as provided in Section II.B of the WLS Combined License Application Emergency Plan and there were no uncorrected onsite exercise deficiencies.</p>
			<p>8.1.3.1 The exercise is completed within the specified time periods of Appendix E to 10 CFR Part 50, offsite exercise objectives have been met, and there are either no uncorrected offsite deficiencies, or a license condition requires offsite deficiencies to be corrected prior to operation above 5% rated power.</p>
<p><b>9.0 Assignment of Responsibility – Organizational Control</b></p>			
<p>10 CFR 50.47(b)(1) – Primary responsibilities for emergency response by the nuclear facility licensee, and by State and local organizations within the EPZs have been assigned, the emergency responsibilities of the various supporting organizations have been specifically</p>	<p>9.1 The staff exists to provide 24-hour per day emergency response and manning of communications links, including continuous operations for a protracted period. [A.1.e.A.4**]</p>	<p>9.1 An inspection of the emergency plan implementing procedures will be performed.</p>	<p>9.1 Emergency plan implementing procedures provide for 24-hour per day emergency response staffing and manning of communication links, including continuous operations for a protracted period.</p>

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
established, and each principle response organization has staff to respond and to augment its initial response on a continuous basis.			
<b>10.0 Onsite Emergency Organization</b>			
10 CFR 50.47(b)(2) – On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.	10.1 The staff exists to provide minimum and augmented on-shift staffing levels, consistent with Table B-1 of NUREG-0654/FEMA-REP-1, Rev. 1. [B.5, B.7]	10.1 An inspection of the emergency plan implementing procedures will be performed.	10.1 Emergency plan implementing procedures provide minimum and augmented on-shift staffing levels, consistent with Table II-2 of the WLS Combined License (COL) Application Emergency Plan.

## **13.4 Operational Programs (Related to RG 1.206, Section C.III.1, Chapter 13, C.I.13.4, “Operational Program Implementation”)**

### **13.4.1 Introduction**

In SECY-05-0197, “Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria,” October 28, 2005, the staff detailed its plan for reviewing operational programs in a COL application. The Commission approved the staff’s plan in the related February 22, 2006, SRM,

Although numerous programs support the operation of a nuclear power plant, SECY-05-0197 focused on those programs that meet the following three criteria:

1. required by regulation
2. reviewed in a COL application
3. inspected to verify program implementation as described in the FSAR

The programs that meet the above criteria are collectively referred to as “operational programs” and most are identified in SECY-05-0197.

### **13.4.2 Summary of Application**

WLS COL FSAR, Revision 11, Section 13.4 incorporates by reference AP1000 DCD, Revision 19, Section 13.4.

In addition, in WLS COL FSAR Section 13.4 and in WLS COLA Part 10, “Proposed License Conditions and ITAAC,” the applicant provided the following:

#### AP1000 COL Information Item

- STD COL 13.4-1

The applicant provided additional information in STD COL 13.4-1 to address COL Information Item 13.4-1 and COL Action Item 13.4-1, identified in NUREG-1793, Appendix F and its supplements. This item states that COL applicants referencing the AP1000 certified design will address each operational program.

#### License Conditions

- Part 10, License Condition 3, “Operational Program Implementation”
- Part 10, License Condition 6, “Operational Program Readiness”

Both license conditions are related to STD COL 13.4-1. License Condition 3 addresses implementation milestones for those operational programs whose implementation is not addressed in the regulations. License Condition 6 includes the timing of information related to operational programs to support NRC inspection activities.

### **13.4.3 Regulatory Basis**

The regulatory basis of the information incorporated by reference is addressed in NUREG-1793 and its supplements.

In addition, the regulatory basis for acceptance of the supplementary information presented in this application is identified in the individual chapters of this report that address the evaluations of the specific operational programs, which are itemized in the next section, as clarified by the regulatory guidance in SECY-05-0197 and RG 1.206.

#### 13.4.4 Technical Evaluation

The staff reviewed WLS COL FSAR Section 13.4 and checked the referenced DCD to ensure that the combination of the DCD and the COL application represents the complete scope of information relating to this review topic.<sup>1</sup> The staff's review confirmed that the information in the application and incorporated by reference addresses the required information relating to operational programs. The results of the staff's evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

Section 1.2.3 of this report provides a discussion of the strategy used by the staff to perform one technical review for each standard issue outside the scope of the DC and use this review to evaluate subsequent COL applications. To ensure that the staff's findings on standard content that were documented in the SER for the reference COL application (VEGP Units 3 and 4) were equally applicable to the WLS Units 1 and 2 COL application, the staff undertook the following reviews:

- The staff compared the Vogtle (VEGP) COL FSAR, Revision 5 to the WLS COL FSAR. In performing this comparison, the staff considered changes made to the WLS COL FSAR (and other parts of the COL application, as applicable) resulting from responses to RAIs.
- The staff confirmed that all responses to RAIs identified in the corresponding standard content evaluation were endorsed.
- The staff verified that the site-specific differences were not relevant.

The staff completed its review and concluded that the evaluation performed for the standard content is directly applicable to the WLS COL application. This standard content material is identified in this report by use of italicized, double-indented formatting. Section 1.2.3 of this report provides an explanation of why the standard content material from the SER for the reference COL application (VEGP) includes evaluation material from the SER for the Bellefonte (BLN) Units 3 and 4 COL application.

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.4.4:

*Although the staff concluded that the evaluation performed for the standard content is directly applicable to the VEGP COL application, there were differences in the response provided by the VEGP applicant from that provided by the BLN applicant regarding the standard content material. These differences affect the two license conditions and the table listing the operational programs. These differences are evaluated by the staff below, following the standard content material.*

##### AP1000 COL Information Item

- STD COL 13.4-1

*The applicant provided supplemental information by adding the following statement to Section 13.4 of the VEGP COL FSAR:*



*Operational programs are specific programs that are required by regulations. Table 13.4-201 lists each operational program, the regulatory source for the program, the section of the FSAR in which the operational program is described, and the associated implementation milestone(s).*

*Each operational program is evaluated by the staff in the applicable SER chapters.*

*License Conditions*

- *License Condition 3, "Operational Program Implementation"*
- *License Condition 6, "Operational Program Readiness"*

*These two proposed license conditions are evaluated by the NRC staff as part of its evaluation of each of the operational programs in the applicable SER chapters.*

*The following portion of this technical evaluation section provides the staff's general evaluation of the operational programs and associated license conditions and is reproduced from Section 13.4.4 of the BLN SER:*

*The NRC staff's review of the acceptability of the supplemental information added by STD COL 13.4-1 and the proposed license conditions is based on four considerations. The first consideration is the acceptability of the individual operational programs, including the implementation of the different phases of these operational programs. The second consideration is whether the applicant correctly identified those operational programs whose implementation requirements are not addressed in the regulations, and, therefore, need to be included in License Condition 3. The third consideration is whether the applicant correctly specified in License Condition 6 the timing of information related to operational programs to support NRC inspection activities. The fourth consideration is whether the list of operational programs in BLN COL FSAR Table 13.4-201 is complete.*

*In regard to the first consideration, the SER sections referenced in the above table address the NRC staff's regulatory evaluation of the individual operational programs. For each of these operational programs, the staff has either concluded that the applicant has satisfied the applicable regulatory guidance (including the implementation requirements when specified in the regulations), or the staff's review is still ongoing. For those operational program reviews that are ongoing, the staff's final conclusions will be provided in the SER sections referenced in the above table at a later date.*

*In regard to the second consideration, the NRC staff verified that those operational programs, whose implementation requirements are not specified in the regulations, are captured in License Condition 3.*

*In regard to the third consideration, the NRC staff compared License Condition 6 to the recommended license condition in SECY-05-0197 related to the timing of*

*information to support NRC inspection activities of operational programs. The staff finds that the applicant used language similar to the recommended license condition specified in SECY-05-0197 to develop License Condition 6. It should be noted that License Condition 6 addresses additional scheduler requirements (Sections b. through d.) that are not related to the operational programs evaluated in this section of the SER, and, therefore, are not evaluated in this SER section.*

*In regard to the fourth consideration, the NRC staff compared the operational programs provided by the applicant in BLN COL FSAR Table 13.4-201 (included in the above table) to the operational programs specified in SECY-05-0197. The staff finds that the applicant has included all the operational programs specified in SECY-05-0197, including the two operational programs (Motor-Operated Valve Testing Program and the Safeguards Contingency Program) added by the NRC to the list of operational programs provided by the NEI in its letter dated August 31, 2005.*

*There are differences between BLN COL FSAR Table 13.4-201 and the table of operational programs in SECY-05-0197 with respect to implementation milestone information. The first difference is the SECY paper states that there are no required implementation milestones in the regulations for the Maintenance Rule Program and the Quality Assurance Program (Operation), while BLN COL FSAR Table 13.4-201 references regulations that require implementation milestones for these two programs. The staff has reviewed the regulation references provided by the applicant and concludes that they do provide appropriate requirements for implementation milestones. Further support for this conclusion is the regulatory guidance in Section C.I.13.4 of RG 1.206. The example table located in this section of the RG references the same implementation regulatory guidance for the Maintenance Rule Program and the Quality Assurance Program (Operation) as does BLN COL FSAR Table 13.4-201.*

*The second difference is that the SECY paper states that 10 CFR Part 50, Appendix J, specifies implementation requirements for the Containment Leakage Rate Testing Program, while BLN COL FSAR Table 13.4-201 states that the implementation milestones for this program will be controlled by a license condition. The staff has reviewed the implementation milestone proposed in License Condition 3 for the Containment Leakage Rate Testing Program, and finds that it is more stringent than the regulatory guidance in Appendix J. Therefore, the staff finds this difference to be acceptable.*

*The applicant added an operational program to BLN COL FSAR Table 13.4-201, the Initial Test Program, which is not in the list of operational programs specified in SECY-05-0197. The option of adding operational programs to this list is specifically allowed by SECY-05-0197. Further support for the acceptability of adding the Initial Test Program is that the example table located in Section C.I.13.4 of RG 1.206 also lists this operational program.*

*Therefore, the NRC staff concludes that the additional information (STD COL 13.4-1) provided by the applicant in BLN COL FSAR Section 13.4, in*

*conjunction with the conditions specified in BLN COL FSAR, Part 10, License Conditions 3 and 6, complies with the applicable regulatory guidance provided in SECY-05-0197.*

*Evaluation of Site-specific Response to Standard Content*

*The staff notes that the VEGP applicant separated the fitness-for-duty (FFD) program from the overall security program and added a new operational program, Cyber Security, to the list of operational programs in FSAR Table 13.4-201. The implementation requirements for these additional operational programs comply with the considerations identified above in the standard content material, and are, therefore, acceptable. In addition, the VEGP applicant also made minor changes to operational program implementation details in License Condition 3 and also modified Sections a. through d. associated with License Condition 6. The changes to these two license conditions are evaluated by the staff in the applicable SER chapters and do not affect the evaluation of operational programs covered in this section of the SER. Therefore, the conclusions reached by the NRC staff related to STD COL 13.4-1 are directly applicable to the VEGP COL application.*

*The BLN SER text refers to an SER table listing operational programs. This table was not reproduced for the VEGP SER since it duplicates the information in VEGP COL FSAR Table 13.4-201.*

The staff also notes that the applicant added the operational program, SNM Material Control and Accounting Program, to the list of operational programs in WLS COL FSAR Table 13.4-201. The implementation requirements for this additional operational program comply with the considerations identified above in the standard content material, and is therefore acceptable.

#### **13.4.5 Post Combined License Activities**

The license conditions for each of the operational programs are discussed in the applicable SER chapters. Therefore, there are no post-COL activities related to this section.

#### **13.4.6 Conclusion**

The staff reviewed the WLS COL application and checked the referenced DCD. The staff's review confirmed that the applicant addressed the required information relating to operational programs, and there is no outstanding information expected to be addressed in the WLS COL FSAR related to this section. The results of the staff's technical evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

The staff concludes that the relevant information presented in the WLS COL FSAR is acceptable based on the regulatory guidance in SECY-05-0197, in conjunction with the applicable regulations specified in the individual sections of this report that evaluated each of the operational programs discussed above. The staff based its conclusion on the following:

- STD COL 13.4-1, as related to operational programs, is acceptable because each of the operational programs in WLS COL FSAR Table 13.4-201 has been found acceptable by the staff in other sections of this report, as noted in Section 13.4.4 above. In addition, the guidance in SECY-05-0197 and RG 1.206 was used to verify that the applicant's list of operational programs is complete.

## **13.5 Plant Procedures**

### **13.5.1 Introduction**

Descriptions of the administrative and operating procedures that the applicant uses to ensure routine operating, off-normal, and emergency activities are conducted in a safe manner are provided. In its plant procedures, the applicant provided a brief description of the nature and content of the procedures and a schedule for the preparation of appropriate written administrative and operating procedures. The applicant delineated in the description of the procedures the functional position for procedural revision and approval prior to implementation. Inspection of procedures will occur as part of the construction inspection program.

### **13.5.2 Summary of Application**

WLS COL FSAR, Revision 11, Section 13.5, incorporates by reference AP1000 DCD, Revision 19, Section 13.5.

In addition, in WLS COL FSAR Section 13.5, the applicant provided the following:

#### *AP1000 COL Information Item*

- STD COL 13.5-1

The applicant provided additional information in STD COL 13.5-1 to resolve COL Information Item 13.5-1 (COL Action Item 13.5-1), which addresses plant procedures.

- WLS COL 13.5-1

The applicant provided additional information in WLS COL FSAR Section 13.5.2.2.5 related to procedures to control radionuclide inventories and personnel doses in the Radwaste Building. This information, as well as related additional WLS COL FSAR information in WLS COL 11.2-1 and proposed License Condition 13 in Part 10 of the WLS COL application. This information is reviewed in Section 11.2 of this report.

The applicant provided additional information in WLS COL FSAR Section 13.5.1 related to the process for implementing the safety/security interface requirements of 10 CFR 73.58. This information is reviewed in Section 13.4.1.17 of this report.

The applicant provided additional information in WLS COL FSAR Section 13.5.2.2.8 related to security procedures provided in the Security Plan related to Special Nuclear Material (SNM) Physical Protection Program. This information is reviewed in Section 1.5.5 of this report.

### 13.5.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed in NUREG-1793 and its supplements.

In addition, the acceptance criteria associated with the relevant requirements of NRC regulations for plant procedures are given in NUREG-0800. Sections 13.5.1.1 and 13.5.2.1.

The applicable regulations and regulatory guidance are as follows:

- 10 CFR 50.34(a), "Preliminary safety analysis report"
- 10 CFR 50.34(b)
- RG 1.33, "Quality Assurance Program Requirements (Operation)"

### 13.5.4 Technical Evaluation

The staff reviewed WLS COL FSAR Section 13.5 and checked the referenced DCD to ensure that the combination of the DCD and the COL application represents the complete scope of information relating to this review topic.<sup>1</sup> The staff's review confirmed that the information in the application and incorporated by reference addresses the required information relating to plant procedures. The results of the staff's evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

Section 1.2.3 of this report provides a discussion of the strategy used by the staff to perform one technical review for each standard issue outside the scope of the DC and use this review to evaluate subsequent COL applications. To ensure that the staff's findings on standard content that were documented in the SER for the reference COL application (VEGP Units 3 and 4) were equally applicable to the WLS Units 1 and 2 COL application, the staff undertook the following reviews:

- The staff compared the VEGP COL FSAR, Revision 5 to the WLS COL FSAR. In performing this comparison, the staff considered changes made to the WLS COL FSAR (and other parts of the COL application, as applicable) resulting from responses to RAIs.
- The staff confirmed that all responses to RAIs identified in the corresponding standard content evaluation were endorsed.
- The staff verified that the site-specific differences were not relevant.

The staff completed its review and concluded that the evaluation performed for the standard content is directly applicable to the VEGP COL application. This standard content material is identified in this report by use of italicized, double-indented formatting. Section 1.2.3 of this report provides an explanation of why the standard content material from the SER for the reference COL application (VEGP) includes evaluation material from the SER for the BLN Units 3 and 4 COL application.

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.5.4:

AP1000 COL Information Item

- *STD COL 13.5-1, addressing plant procedures*

*The applicant provided the following additional information to resolve COL Information Item 13.5-1, which addresses the plant procedures of the COL applicant. COL Information Item 13.5-1 states:*

*Combined License applicants referencing the AP1000 certified design will address plant procedures including the following:*

- *Normal operation*
- *Abnormal operation*
- *Emergency operation*
- *Refueling and outage planning*
- *Alarm response*
- *Maintenance, inspection, test and surveillance*
- *Administrative*
- *Operation of post-72 hour equipment*

*The commitment was also captured as COL Action Item 13.5-1 in Appendix F of the staff's FSER for the AP1000 DCD (NUREG-1793).*

*The applicant provided additional text in BLN COL FSAR Section 13.5 to describe the administrative, operating and maintenance procedures that the operating organizational staff uses to conduct routine operating, abnormal, and emergency activities in a safe manner.*

*In BLN COL FSAR Section 13.5, the applicant described the different classifications of procedures that the operators will use, including normal, abnormal, emergency, refueling and outage, and alarm response procedures. The staff finds this information acceptable because it meets the criteria in NUREG-0800, Chapter 13.5.2.1.*

*In BLN COL FSAR Section 13.5, the applicant stated that the format and content of procedures are controlled by the applicable AP1000 writer's guideline. The DCD, Section 13.5.1, describes a referenced document, APP-GW-GLR-040, "Plant Operations Maintenance and Surveillance Procedures," dated August 23, 2007, which includes the AP1000 writer's guidelines. The staff finds this acceptable because the applicant-provided procedure format and content are consistent with the guidance in NUREG-0800, Section 13.5.2.1.*

*In BLN COL FSAR Section 13.5.1, the applicant describes the nature and content of administrative procedures for both Category (A) - Controls, and Category (B) - Specific Procedures. The staff finds this acceptable because the listed procedures are consistent with the guidance in NUREG-0800, Section 13.5.1.1.*

*In BLN COL FSAR Section 13.5.2, the applicant stated that EP procedures are discussed in the Emergency Plan and that security procedures are discussed in the Security Plan. The evaluation of EP procedures may be found in Section 13.3 of this SER. The evaluation of security procedures is found in Section 13.6 of this SER.*

*In BLN COL FSAR Section 13.5.2, the applicant stated the Quality Assurance Program description (QAPD) provides a description of procedural requirements for maintenance, instrument calibration and testing, inspection, and material control. The evaluation of QAPD procedures is found in Section 17.5 of this SER.*

*In BLN COL FSAR, Section 13.5.2.1, the applicant stated that information related to EOPs is addressed in the DCD. The DCD, Section 13.5.1, describes the program for developing and implementing EOPs and the required content of EOPs procedures in the referenced document, APP-GW-GLR-040. In addition, this information clarifies the procedure development program (PDP) as described in the procedures generation package (PGP) for EOPs, provides a description of the EOP [emergency operating plan] verification and validation (V&V) program, and describes the program for training operators on EOPs, including an explanation of how the recommendations of TMI Action Plan, Item I.C.1, will be met. The staff finds the program for developing and implementing EOPs acceptable because it meets the criteria in NUREG-0800, Section 13.5.2.1.*

*Evaluation of Plant Procedure Issues Not Addressed] in the Standard Content Evaluation*

*In VEGP COL FSAR Table 1.9-202, "Conformance with SRP Acceptance Criteria," the applicant identified two exceptions to the criteria of NUREG-0800, Section 13.5, which recommend[s] providing a schedule for procedure development in the FSAR, and including a description of procedures to be used by operators in the FSAR. The staff notes that the BLN COL FSAR Table 1.9-202 includes these same two exceptions to the criteria of Section 13.5 of NUREG-0800. The guidance of NUREG-0800, Section 13.5.2.1, states that while the submittal should describe the different classifications of procedures that operators will use, it is not necessary that each applicant's procedures conform precisely. In addition, the procedures, regardless of title or classification, are to be available to accomplish the functions identified in RG 1.33. NUREG-0800 makes allowance for "general areas." The staff finds the two exceptions to the criteria of NUREG-0800, Section 13.5, to be acceptable because the applicant's procedure classification follows the guidance in NUREG-0800, Section 13.5.*

*In RAI [request for additional information] 13.6-36, the staff requested the VEGP applicant address the requirements of 10 CFR 73.58, "Safety/security requirements for nuclear power plants." In its response dated May 14, 2010, the applicant stated that management controls and processes used to establish and maintain an effective interface between nuclear safety and physical security are addressed by administrative controls. The VEGP applicant committed to revise FSAR Section 13.5.1 to include the safety/security interface implementation process in the list of procedural instructions provided in plant administrative procedures. The NRC staff's review of this safety/security procedural issue, which includes tracking the incorporation of the relevant material into the VEGP COL application, is addressed in Section 13.6.4.1.17 of this SER.*

### Supplemental Information

- WLS COL 13.5-1

The applicant provided additional information in WLS COL FSAR Section 13.5.2.2.5 related to procedures to control radionuclide inventories and personnel doses in the Radwaste Building. This information, as well as related additional WLS COL FSAR information in Levy Nuclear Plant (LNP) COL 11.2-1 and proposed License Condition 13 in Part 10 of the WLS COL application. This information is reviewed in Section 11.2 of this report.

The applicant provided additional information in WLS COL FSAR Section 13.5.1 related to the process for implementing the safety/security interface requirements of 10 CFR 73.58. This information is reviewed in Section 13.6.4.1.17 of this report.

The applicant provided additional information in WLS COL FSAR Section 13.5.2.2.8 related to security procedures provided in the Security Plan related to Special Nuclear Material (SNM) Physical Protection Program. This information is reviewed in Section 1.5.5 of this report.

### **13.5.5 Post Combined License Activities**

There are no post COL activities related to this section.

### **13.5.6 Conclusion**

The staff reviewed the WLS COL application and checked the referenced DCD. The staff's review confirmed that the applicant addressed the required information relating to plant procedures, and there is no outstanding information expected to be addressed in the WLS COL FSAR related to this section. The results of the staff's technical evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

In addition, the staff concludes that the relevant information presented in the WLS COL FSAR is acceptable and meets the recommendations of NUREG-0800, Sections 13.5.1.1 and 13.5.2.1. The staff based its conclusion on the following:

- STD COL 13.5-1, as related to plant procedures, is acceptable because it describes the procedures used by the applicant's operating organizational staff to conduct routine



administrative, operating, abnormal, and emergency activities in a safe manner, in accordance with the regulatory guidance in NUREG-0800, Sections 13.5.1.1 and 13.5.2.1.

- In WLS COL FSAR Table 1.9-202, the applicant identified two exceptions to the criteria of NUREG-0800, Section 13.5, related to providing WLS COL FSAR descriptions of, and a development schedule for, procedures to be used by operators. The guidance of NUREG-0800, Section 13.5.2.1, makes allowances for “general areas,” stating that while the FSAR submittal should describe the different classifications of procedures used by operators, it is not expected that each applicant’s procedures conform precisely. The staff finds the two exceptions acceptable because the applicant’s procedure classification follows the guidance in NUREG-0800, Section 13.5.

## **13.6 Physical Security**

### **13.6.1 Introduction**

The COL application for the WLS COL Units 1 and 2 describes the WLS COL applicant’s physical protection program, which is intended to meet NRC regulations for the use of the design basis threat (DBT) to design safeguards systems to protect against acts of radiological sabotage as stated in 10 CFR 73.1, “Purpose and Scope.” The overall purpose of the applicant’s physical protection program is to provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety.

The physical protection program includes the design of a physical protection system that ensures the capabilities to detect, assess, interdict, and neutralize threats of radiological sabotage are maintained at all times. The applicant incorporates by reference the standard AP1000 design that includes design of physical protection systems within the design of the vital island and vital structures, as described in the Westinghouse Electric Company (Westinghouse) DC document for the AP1000 standard design Tier 1 and Tier 2 information, including Technical Report (TR)-49, “AP1000 Enhancement Report, TR-94, “AP1000 Safeguards Assessment Report,” and TR-96, “Interim Compensatory Measures Report.” Part 8 of the WLS COL application consists of the WLS Units 1 and 2 Physical Security Plan (PSP), Training and Qualification Plan (T&QP), and Safeguards Contingency Plan (SCP). WLS COL FSAR Section 13.6 describes the physical protection program and the physical protection system that are not addressed within the scope of the standard AP1000 design for meeting NRC performance and prescriptive requirements for physical protection stated in 10 CFR Part 73, “Physical Protection of Plants and Material.” Due to security restraints, the staff’s evaluation of the physical security protection program presented in this publicly-available report does not include the same level of detail as the safeguards information version. Those persons with the correct access authorization and need-to-know may view the safeguards information version of the WLS COL application Section 13.6 SER, which is located in the NRC Secure Local Area Network.

### **13.6.2 Summary of Application**

WLS COL FSAR, Revision 11, Section 13.6, incorporates by reference AP1000 DCD, Revision 19, Section 13.6.

- WLS COLA Part 8 – Safeguards/Security Plans

In a December 12, 2007, letter, the applicant submitted a PSP to the NRC as part of the WLS COL application for proposed WLS Units 1 and 2. In a May 12, 2009, letter, the applicant submitted Revision 1 to the PSP. In a November 17, 2011, letter, the applicant submitted PSP, Revision 2. In an April 10, 2013, letter the applicant submitted PSP, Revision 3.

In addition, in WLS COL FSAR Section 13.6, the applicant provided the following:

#### AP1000 COL Information Items

- STD COL 13.6-1

The applicant provided additional information in STD COL 13.6-1 to address COL Information Item 13.6-1, which provides information related to the security plan. The security plan consists of three parts, the PSP, T&QP, and SCP.

- STD COL 13.6-5

The applicant provided additional information in STD COL 13.6-5 to address COL Information Item 13.6-5, which provides information related to the cyber security program. This COL item is evaluated in Section 13.8 of this report.

#### License Conditions

- Part 10, License Condition 3 D.3, and G.9

The applicant proposed a license condition in WLS COLA Part 10, which provides the milestones to implement applicable portions of the Security Program:

- Part 10, License Condition 5

The applicant proposed a license condition in WLS COLA Part 10, which proposed the maintenance of the PSP, T&QP, and the SCP when nuclear fuel is onsite (protected area), and continuing until all nuclear fuel is permanently removed from the site.

- Part 10, License Condition 6

The applicant proposed a license condition to provide a schedule to support NRC inspection of operational programs including the PSP, T&QP, and the SCP.

### **13.6.3 Regulatory Basis**

The regulatory basis of the information incorporated by reference is addressed in NUREG-1793, and its supplements. In addition, the relevant requirements of NRC regulations for the physical

security, and the associated acceptance criteria, are summarized in NUREG-0800, Section 13.6.1.

The applicable regulatory requirements for physical protection are as follows:

- The provisions of 10 CFR 52.79(a)(35)(i) and (ii) require that information submitted for a COL describe how the applicant will meet the requirements of 10 CFR Part 73, "Physical Protection of Plants and Material"; and provide a description of the implementation of the PSP. The provisions of 10 CFR 52.79(a)(36)(i) through (iv) require that the application include an SCP in accordance with the criteria set forth in 10 CFR Part 73, Appendix C, "Nuclear Power Plant Safeguards Contingency Plans," and a T&QP in accordance with 10 CFR Part 73, Appendix B, "General Criteria for Security Personnel." The provisions also require that the applicant provide a description of the implementation of the SCP and the T&QP and that the applicant protect the PSP, T&QP, and SCP in accordance with the requirements of 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements" and 10 CFR 73.22, "Protection of Safeguards Information: Specific requirements."
- The provisions of 10 CFR Part 73 include performance-based and prescriptive regulatory requirements that, when adequately met and implemented, provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety. A COL applicant must describe how the regulatory requirements of 10 CFR Part 73 will be met that are applicable to nuclear power plants.

A COL applicant is required to identify and describe design features, analytical techniques, and technical bases for its design and how the provisions of physical protection system requirements in the NRC regulations will be met, using applicable regulatory guides and NUREG-0800. However, NRC regulatory guides and NUREG-0800 are not regulatory requirements and are not a substitute for compliance with established regulations. Where alternative methods are chosen or differences exist, the COL applicant is required to describe how the proposed alternatives to guidance or acceptance criteria provide acceptable methods of compliance with NRC regulations.

NUREG-0800, Section 13.6.1, Revision 1, June 15, 2010, was used by the staff to complete the physical security COL review.

Regulatory guidance documents, TRs, and accepted industry codes and standards that an applicant may apply to meet regulatory requirements include, but are not limited to the following:

Documents publicly available:

- RG 5.7, "Entry/Exit Control for Protected Areas, Vital Areas, and Material Access Areas," Revision 1
- RG 5.12, "General Use of Locks in the Protection and Control of Facilities and Special Nuclear Materials"
- RG 5.44, "Perimeter Intrusion Alarm Systems," Revision 3

- RG 5.62, "Reporting of Safeguards Events," Revision 1
- RG 5.65, "Vital Area Access Controls, Protection of Physical Protection System Equipment and Key and Lock Controls"
- RG 5.66, "Access Authorization Program for Nuclear Power Plants"
- RG 5.68, "Protection Against Malevolent Use of Vehicles at Nuclear Power Plants"
- RG 5.74, "Managing the Safety/Security Interface"
- RG 5.75, "Training and Qualification of Security Personnel at Nuclear Power Reactor Facilities"
- NRC April 9, 2009, letter, NRC Staff Review of NEI 03-12, "Template for Security Plan, Training and Qualification, Safeguards Contingency Plan, [and Independent Spent Fuel Storage Installation Security Program]" (Revision 6).
- SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," October 28, 2005.

The following documents include security-related or safeguards information and are not publicly available:

- RG 5.69, "Guidance for the Application of Radiological Sabotage Design Basis Threat in the Design, Development, and Implementation of a Physical Security Protection Program that Meets 10 CFR 73.55 Requirements."
- RG 5.76, "Physical Protection Programs at Nuclear Power Reactors."
- RG 5.77, "Insider Mitigation Program."
- NEI 03-12, Revision 6, "Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan, and Independent Spent Fuel Installation Security Program."
- NUREG/CR-6190, "Update of NUREG/CR-6190 Material to Reflect Postulated Threat Requirements."

#### **13.6.4 Technical Evaluation**

The staff reviewed WLS COL FSAR Section 13.6 and checked the referenced DCD to ensure that the combination of the DCD and the COL application represents the complete scope of information relating to this review topic.<sup>1</sup> The staff's review confirmed that the information in the application and incorporated by reference addresses the required information relating to physical security. The results of the staff's evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

Section 1.2.3 of this report provides a discussion of the strategy used by the staff to perform one technical review for each standard issue outside the scope of the DC and use this review to evaluate subsequent COL applications. To ensure that the staff's findings on standard content that were documented in the SER for the reference COL application (VEGP Units 3 and 4) were equally applicable to the WLS Units 1 and 2 COL application, the staff undertook the following reviews:

- The staff compared the VEGP COL FSAR, Revision 5 to the WLS COL FSAR. In performing this comparison, the staff considered changes made to the WLS COL FSAR (and other parts of the COL application, as applicable) resulting from responses to RAIs.
- The staff compared the VEGP PSP, T&QP, and SCP to the corresponding WLS programs. The staff concluded that these plans are sufficiently similar to warrant standard content treatment.
- The staff confirmed that all responses to RAIs identified in the corresponding standard content evaluation were endorsed.
- The staff verified that the site-specific differences were not relevant.

The staff completed its review and concluded that the evaluation performed for the standard content is directly applicable to the WLS COL application, with the exception discussed in the following paragraph. This standard content material is identified in this report by use of italicized, double-indented formatting. One clarification to the standard content material presented below is that the staff's detailed evaluation of the physical protection program, which is site-specific, is provided in the safeguards information version of the WLS COL application Section 13.6 SER, which is located in the NRC Secure Local Area Network.

There were site-specific RAIs issued to the WLS applicant that resulted in site-specific evaluations for several of the Security Plan review areas. There were also site-specific RAIs issued to the VEGP applicant that were not applicable to the WLS application. In addition, there are several Security Plan review areas with site-specific characteristics requiring a specific review by the staff. For these cases, the staff provides the WLS evaluation in the same location as provided in the VEGP SER, but without the use of italicized, double-indented formatting.

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4:

*AP1000 COL Information Item*

- *STD COL 13.6-1*

*The NRC staff reviewed STD COL 13.6-1 related to COL Information Item 13.6-1, which identified the need for a COL applicant to address the security plan. STD COL 13.6-1 supplemented Section 13.6 of the VEGP COL FSAR by stating the following text is to be added after Section 13.6 of the VEGP ESP SSAR:*

*The Security Plan consists of the Physical Security Plan, the Training and Qualification Plan, and the Safeguards Contingency*

*Plan. The Security Plan is submitted to the Nuclear Regulatory Commission as a separate licensing document in order to fulfill the requirements of 10 CFR 52.79(a)(35) and 52.79(a)(36). The Security Plan meets the requirements contained in 10 CFR Part 73 and will be maintained in accordance with the requirements of 10 CFR 52.98. The Plan is categorized as Security Safeguards Information and is withheld from public disclosure pursuant to 10 CFR 73.21.*

*Section 13.6 of the VEGP COL FSAR also refers to FSAR Table 13.4-201, "Operational Programs Required by NRC Regulations," as providing the milestones for implementing the security program and cyber security program.*

*The NRC staff's evaluation of the PSP is documented in Section 13.6.4.1 of this SER. The NRC staff's evaluation of the T&QP is documented in Section 13.6.4.2 of this SER. The NRC staff's evaluation of the SCP is documented in Section 13.6.4.3 of this SER. The NRC staff's evaluation of the safety/security interface is documented in Section 13.6.4.1.17 of this SER. Section 13.6.5 of this SER includes the post-combined license activities. Section 13.6.6 of this SER includes the NRC staff's overall conclusions regarding each of the plan submissions.*

*The NRC staff's evaluation of the physical protection program is provided in detail in the safeguards information version of the VEGP COL application Section 13.6 SER, which is located in the NRC's Secure Local Area Network, document number ES1000015157. Due to security restraints, the NRC staff's evaluation of the physical protection program presented in this publicly-available SER does not include the same level of detail as the safeguards information version. Those persons with the correct access authorization and need-to-know may view the safeguards information version of the VEGP COL application Section 13.6 SER.*

#### License Conditions

- *Part 10, License Condition 3, Items C.5, D.3, and G.9*

*The applicant proposed license condition in Part 10 of the VEGP COL application, which provides the milestones for implementing applicable portions of the Security Program. Specifically, the applicant proposed the following:*

*C. Receipt of Materials – The licensee shall implement each operational program identified below prior to initial receipt of byproduct, source, or special nuclear materials onsite (excluding Exempt Quantities as described in 10 CFR 30.18)*

#### *C.5 – Security Program (applicable portions)*

*D. Fuel Receipt – The licensee shall implement each operational program identified below prior to initial receipt of fuel onsite.*

*D.3 – Security Program (applicable portions)*

*G. Fuel Loading – The licensee shall implement each operational program identified below prior to initial fuel load.*

*G.9 – Physical Security*

- *Part 10, License Condition 5*

*The applicant proposed license condition in Part 10 of the VEGP COL application, which proposed the maintenance of the PSP, T&QP, and the SCP when nuclear fuel is onsite, and continuing until all nuclear fuel is permanently removed from the site. Specifically, the applicant proposed the following:*

*The licensee shall maintain in effect the provisions of the physical security plan, security personnel training and qualification plan, and safeguards contingency plan, and all amendments made pursuant to the authority of 10 CFR 50.90, 50.54(p), 52.97, and Section VIII of Appendix D to Part 52 when nuclear fuel is onsite, and continuing until all nuclear fuel is permanently removed from the site.*

*In a letter dated October 22, 2010, the applicant proposed to revise the [security plan] milestone included in VEGP COL FSAR Table 13.4-201 to implement the [security plan] prior to receipt of fuel onsite (protected area.) The NRC staff finds the implementation milestone for the security program-[plan] (security prior to receipt of fuel onsite (protected area)) appropriate and in accordance with the requirement in 10 CFR 73.55. Therefore the staff finds that the proposed License Condition 3, Items C.5, D.3, and G.9 and License Condition 5 are not necessary. The incorporation of proposed changes to the VEGP COL FSAR is tracked as **Confirmatory Item 13.6-1**.*

*Resolution of Standard Content Confirmatory Item 13.6-1*

*Confirmatory Item 13.6-1 is an applicant commitment to revise its FSAR Table 13.4-201 regarding the implementation milestones for the security program. The staff verified that the VEGP COL FSAR was appropriately revised. As a result, Confirmatory Item 13.6-1 is now closed.*

- *Part 10, License Condition 6*

*The applicant proposed a license condition to provide a schedule to support the NRC's inspection of operational programs including the PSP, T&QP, and the SCP. Specifically, the applicant proposed the following:*

*The licensee shall submit to the appropriate Director of the NRC, a schedule, no later than 12 months after issuance of the COL, that supports planning for and conduct of NRC inspections of operational programs listed in the operational program FSAR Table 13.4-201. The schedule shall be updated every 6 months*

*until 12 months before scheduled fuel loading, and every month thereafter until either the operational programs in the FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first.*

*The staff reviewed the above proposed license condition against the recommendations in SECY-05-0197 as endorsed by the related SRM dated February 22, 2006. The staff concludes these proposed license conditions conform to the guidance in SECY-05-0197 and is, therefore, acceptable.*

#### **13.6.4.1 Physical Security Plan**

*The applicant submitted Part 8 of the COL application for the VEGP PSP, T&QP and SCP, to meet the requirements of 10 CFR 52.79(a)(35) and (36). Part 2, FSAR, Chapter 13, Section 13.6 references the VEGP PSP, T&QP, and SCP in describing the licensing basis for establishing a physical protection program, design of a physical protection system, and security organization, which will have, as its objective, to provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety. The VEGP submitted PSP makes references to 10 CFR 50.34(c)(2) and (d)(2). The correct references should be 10 CFR 52.79(a)(35) and (36). It is noted that this is a template error, and both references require that the same criteria be met.*

*Security plans must describe how the applicant will implement Commission requirements and those site-specific conditions that affect implementation as required by 10 CFR 73.55(c)(1)(i).*

*The requirements are provided in 10 CFR 73.55(c), and (d) to establish, maintain, and implement a PSP to meet the requirements of 10 CFR 73.55, and 10 CFR Part 73, Appendices B and C. The applicant must show establishment and maintenance of a security organization, the use of security equipment and technology, the training and qualification of security personnel, the implementation of predetermined response plans and strategies, and the protection of digital computer and communication systems and networks. The applicant must have a management system for development, implementation, revision, and oversight of security implementing procedures. The approval process for implementing security procedures will be documented.*

*The NRC staff has reviewed the applicant's description in PSP Section 1 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(c) and (d), and is, therefore, acceptable.*



#### **13.6.4.1.1 Introduction and Physical Facility Layout**

The provisions of 10 CFR 52.79(a)(35) require:

- (i) A PSP, describing how the applicant will meet the requirements of 10 CFR Part 73 (and 10 CFR Part 11, if applicable, including the identification and description of jobs as required by 10 CFR 11.11(a) of this chapter, at the proposed facility). The plan must list tests, inspections, audits, and other means to be used to demonstrate compliance with the requirements of 10 CFR Parts 11 and 73, if applicable.
- (ii) A description of the implementation of the PSP.

The provisions of 10 CFR 52.79(a)(36) require:

- (i) An SCP in accordance with the criteria set forth in 10 CFR Part 73, Appendix C. The safeguards contingency plan shall include plans for dealing with threats, thefts, and radiological sabotage, as defined in 10 CFR Part 73 of this chapter, relating to the special nuclear material and nuclear facilities licensed under this chapter and in the applicant's possession and control. Each application for this type of license shall include the information in the applicant's SCP. (Implementing procedures required for this plan need not be submitted for approval).
- (ii) A T&QP in accordance with the criteria set forth in 10 CFR Part 73, Appendix B.
- (iii) A cyber security plan (CSP) in accordance with the criteria set forth in 10 CFR 73.54 of this chapter.
- (iv) A description of the implementation of the SCP, T&QP, and CSP.
- (v) Each applicant who prepares a PSP, an SCP, a T&QP, or a CSP, shall protect the plans and other related Safeguards Information against unauthorized disclosure in accordance with the requirements of 10 CFR 73.21 of this chapter.

The provisions of 10 CFR 52.79(a)(44) require a description of the FFD program required by 10 CFR Part 26 "Fitness for Duty Program" and its implementation.

Requirements are established in 10 CFR 73.55(c)(2) to ensure protection of safeguards information (SGI) against unauthorized disclosure in accordance with 10 CFR 73.21. The applicant's WLS COLA Part 8 submittal acknowledges that the PSP, the TQ&P and the SCP discuss specific features of the physical security system or response procedures and are SGI.

PSP Section 1 describes the applicant's commitment to satisfy 10 CFR 50.34(c), 10 CFR 50.34(d), and 10 CFR Part 73 by submitting a PSP, and to controlling the PSP and appendices as Safeguards Information according to 10 CFR 73.21.

The provisions of 10 CFR Part 73, Appendix C, Section II.B.3.b, requires a description of the physical layout of the site.

PSP Section 1.1 provides descriptions of location, site layout, and facility configuration. The PSP describes the physical structures and their locations on the site, description of the

protected area, and a description of the site in relation to nearby town, roads, and other environmental features important to the coordination of response operations. The plant layout includes identification of main and alternate entry routes for law enforcement assistance forces and the location of control points for marshalling and coordinating response activities.

In addition, WLS COL FSAR Chapter 2, "Site Characteristics," provides general plant descriptions that include details of the 16 to 80-km (10 to 50-mi) radius of the geographical area of the WLS Units 1 and 2 site, a site area map, and general plant and site descriptions. WLS COL FSAR Chapter 1, references the AP1000 DCD for the principal design and operating characteristics for the design and construction of the WLS Units 1 and 2. WLS COLA Part 1, "General Information," describes the name of the applicant and principal business locations.

The staff reviewed the facility physical layout provided in PSP Section 1.1 and as supplemented by WLS COL FSAR. The staff concluded that the applicant included site-specific conditions that affect the applicant's capability to satisfy the requirements of a comprehensive PSP. The applicant has adequately described the physical structures and their locations onsite and the site in relation to nearby towns, roads, and other environmental features important to the effective coordination of response operations. The applicant described the main and alternate entry routes for law-enforcement assistance forces and the location of control points for marshaling and coordinating response activities in the site-specific law enforcement response plan. The staff concludes that the applicant's security plans have met the requirements for content of a PSP as stated above. Therefore, the staff finds the "Facility Layout" described in the PSP and the WLS COL FSAR acceptable.

#### **13.6.4.1.2 Performance Objectives**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1:

##### **13.6.4.1.2 Performance Objectives**

*The provisions of 10 CFR 73.55(b)(1) requires, in part, that the applicant shall establish and maintain a physical protection program with an objective to provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety. The provisions of 10 CFR 73.55(b)(2) establish, in part, the requirement to protect a nuclear power reactor against the DBT of radiological sabotage as described in 10 CFR 73.1, [. The provisions of ] 10 CFR 73.55(b)(3)(i), and 10 CFR 73.55(b)(3)(ii) require the applicant to establish a physical protection program designed to ensure the capabilities to detect, assess, interdict, and neutralize threats up to and including the DBT of radiological sabotage as stated in 10 CFR 73.1, are maintained at all times, provide defense-in-depth, supporting processes, and implementing procedures, which ensure the effectiveness of the physical protection program.*

*Section 2 of the PSP outlines the requirements for the establishment and maintenance of an onsite physical protection system, security organization, and integrated response capability. As part of the objective, the security program design shall incorporate supporting processes such that no single event can*

*disable the security response capability because of defense-in-depth principles including diversity and redundancy. The physical protection systems and programs described herein are designed to protect against the DBT of radiological sabotage in accordance with the requirements of 10 CFR 73.55(a) through (r) or equivalent measures that meet the same high assurance objectives provided by paragraph (a) through (r). VEGP Units 3 and 4 uses the corrective action program to track, trend, correct and prevent recurrence of failures and deficiencies in the physical protection program,*

*The NRC staff has reviewed the applicant's description in PSP Section 2 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(b), and is, therefore, acceptable.*

#### **13.6.4.1.3 Performance Evaluation Program**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1:

##### **13.6.4.1.3 Performance Evaluation Program**

*Requirements are established in 10 CFR 73.55(b)(4) through (b)(11) for the applicant to analyze and identify site-specific conditions, establish programs, plans, and procedures that address performance evaluations, access authorization, cyber security, insider mitigation, fitness for duty (FFD), corrective actions, and operating procedures. 10 CFR 73.55(b)(6) prescribes specific requirements to establish, maintain, and implement a performance evaluation program in accordance with 10 CFR Part 73, Appendix B, Section VI for implementation of the plant protective strategy.*

*Section 3.0 of the PSP describes that drills and exercises, as discussed in the T&QP, will be used to assess the effectiveness of the contingency response plan and the effectiveness of the applicant's response strategy. Other assessment methods include formal and informal exercises or drills, self-assessments, internal and external audits and evaluations.*

*Section 3.0 of the PSP describes that drills and exercises, as discussed in the T&QP, will be used to assess the effectiveness of the contingency response plan and the effectiveness of the applicant's response strategy. Other assessment methods include formal and informal exercises or drills, self-assessments, internal and external audits and evaluations.*

*The performance evaluation processes and criteria that assess the effectiveness of the security program, including adequate protection against radiological sabotage, will be established in facility procedures and the deficiencies identified are managed through the corrective action program.*

*Section 3.0 of the PSP references Section 4.0 of the T&QP, which provides additional details related to the performance evaluation of security personnel in accordance with 10 CFR Part 73, Appendix B, Section VI. Section 4.0 of the T&QP includes the requirements to conduct security force tactical drills [drills] and force-on-force exercises to evaluate security systems effectiveness and response performances of security personnel. In addition, Section 17 of the PSP describes additional detail regarding the applicant's processes for reviews, evaluations and audits that will complement the performance evaluation program.*

*The NRC staff has reviewed the applicant's description in PSP Section 3 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(b)(6), and is, therefore, acceptable.*

#### **13.6.4.1.4 Establishment of Security Organization**

The provisions of 10 CFR 73.55(d) establish requirements to describe a security organization, including the management system for oversight of the physical protection program. The security organization must be designed, staffed, trained, qualified, periodically re-qualified, and equipped to implement the physical protection program as required by 10 CFR 73.55(b) and 10 CFR Part 73, Appendices B and C.

As explained below, PSP Section 4.0 describes how the applicant meets the requirements of 10 CFR 73.55(d)(1).

##### Security Organization Management

PSP Section 4.1 describes the organization's management structure. The PSP establishes that the security organization is a critical component of the physical protection program and is responsible for the effective application of engineered systems, technologies, programs, equipment, procedures, and personnel necessary to detect, assess, interdict, and neutralize threats up to and including the DBT of radiological sabotage. The security organization may be proprietary, contractor, or other qualified personnel.

The PSP describes that the organization will be staffed with appropriately trained and equipped personnel, in a command structure with administrative controls and procedures, to provide a comprehensive response. PSP Section 4.1 also describes the roles and responsibilities of the Security Organization. The PSP provides that at least one full-time, Response Team Leader that has the authority for command and control of all security operations is onsite at all times.

The security force implementing the security functions as described in this section of the plan will be either a proprietary force, contractor, or other qualified personnel. The training qualification provision is described in the T&QP.

The staff has reviewed the applicant's description in PSP Sections 4 and 4.1 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the PSP

is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in PSP meets the requirements of 10 CFR 73.55(d), and is therefore acceptable.

#### **13.6.4.1.5 Qualification for Employment in Security**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1:

##### **13.6.4.1.5 Qualification for Employment in Security**

*The requirements of 10 CFR 73.55(d)(3) state, in part, that the applicant may not permit any individual to implement any part of the physical protection program unless the individual has been trained, equipped and qualified to perform assigned duties and responsibilities in accordance with Appendix B to 10 CFR Part 73 and the applicant's T&QP.*

*Section 5 of the PSP describes that employment qualifications for members of the security force are delineated in the T&QP.*

*The NRC staff has reviewed the applicant's description in PSP Section 5 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(d)(3), and is, therefore, acceptable.*

#### **13.6.4.1.6 Training of Facility Personnel**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1:

##### **13.6.4.1.6 Training of Facility Personnel**

*Consistent with requirements in 10 CFR 73.55(d)(3), 10 CFR 73.56 and 10 CFR Part 73, Appendix B, Section VI.C.1, all personnel who are authorized unescorted access to the applicant's PA receive training, in part to ensure that they understand their role in security and their responsibilities in the event of a security incident. Individuals assigned to perform security-related duties or responsibilities, such as, but not limited to, material searches and vehicle escort are trained and qualified in accordance with the T&QP to perform these duties and responsibilities and to ensure that each individual has the minimum knowledge, skills, and abilities required for effective performance of assigned duties and responsibilities.*

*Section 6 of the PSP describes the training provided for all personnel who have been granted unescorted access to the applicant's PA.*

*The NRC staff has reviewed the applicant's description in PSP Section 6 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.56 and 10 CFR Part 73, Appendix B, and is, therefore, acceptable.*

#### **13.6.4.1.7 Security Personnel Training**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1:

##### **13.6.4.1.7 Security Personnel Training**

*The provisions of 10 CFR 73.55(d) require that all security personnel are trained and qualified in accordance with 10 CFR Part 73, Appendix B, Section VI prior to performing their duties.*

*Section 7 of the PSP describes that all security personnel are trained, qualified and perform tasks at levels specific for their assignments in accordance with the applicant's T&QP.*

*The NRC staff has reviewed the applicant's description in PSP Section 7 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(d), and is, therefore, acceptable. The NRC staff's review of the licensee T&QP is located in Section 13.6.4.2 of this SER.*

#### **13.6.4.1.8 Local Law Enforcement Liaison**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1:

##### **13.6.4.1.8 Local Law Enforcement Liaison**

*The following requirement is stated in 10 CFR 73.55(k)(9) "To the extent practicable, licensees shall document and maintain current agreements with applicable law enforcement agencies to include estimated response times and capabilities." In addition, 10 CFR 73.55(m)(2) requires, in part, that an evaluation of the effectiveness of the physical protection system include an audit of response commitments by local, State and Federal law enforcement authorities.*

*Section 8 of the PSP provides a detailed discussion of its ongoing relationship with local law enforcement agencies (LLEAs). The plans addressing response, communication methodologies and protocols, command and control structures and marshaling locations are located in the operations procedures, emergency*

*plan procedures and the site-specific law enforcement response plan. The law enforcement response plan is reviewed biennially concurrent with the PSP effectiveness review.*

*The NRC staff has reviewed the applicant's description in PSP Section 8 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(k)(9) and 10 CFR 73.55(m)(2), and is, therefore, acceptable.*

#### **13.6.4.1.9 Security Personnel Equipment**

The requirements of 10 CFR 73.55(d)(3) state, in part, that the applicant may not permit any individual to implement any part of the physical protection program unless the individual has been trained, equipped and qualified in accordance with 10 CFR Part 73, Appendix B and the T&QP. The provisions of 10 CFR Part 73, Appendix B, Section VI.G.2(a) state, in part, that the applicant must ensure that each individual is equipped or has ready access to all personal equipment or devices required for the effective implementation of the NRC-approved security plans, the applicant's protective strategy, and implementing procedures. The provisions of 10 CFR Part 73, Appendix B, Sections VI.G.2(b) and (c) delineate the minimum equipment requirements for security personnel and armed response personnel.

PSP Section 9 describes the equipment, including armament, ammunition, and communications equipment that is provided to security personnel in order to ensure that security personnel are capable of performing the function stated in the NRC-approved security plans, applicant's protective strategy, and implementing procedures.

The staff reviewed the applicant's description in PSP Section 9 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(d)(3) and Appendix B, Section VI.G.2 and is therefore acceptable.

#### **13.6.4.1.10 Work Hour Controls**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1:

##### **13.6.4.1.10 Work Hour Controls**

*The provisions of 10 CFR Part 26, "Fitness for duty programs" Subpart I, "Managing Fatigue," establish the requirements for managing fatigue. 10 CFR 26.205 establishes requirements for work hours. 10 CFR 26.205(a) requires that any individual who performs duties identified in 10 CFR 26.4(a)(1) through (a)(5) shall be subject to the requirements of this section.*

*Section 10 of the PSP describes that the site will implement work hour controls consistent with 10 CFR Part 26, Subpart I, and that site procedures shall describe performance objectives and implementing procedures.*

*The NRC staff's review of the fitness-for-duty program is found in Section 13.7 of this SER/*

#### **13.6.4.1.11 Physical Barriers**

The following requirements are established in 10 CFR 73.55(e): "Each applicant shall identify and analyze site-specific conditions to determine the specific use, type, function, and placement of physical barriers needed to satisfy the physical protection program design requirements of 10 CFR 73.55(b). (1) The applicant shall: (i) Design, construct, install and maintain physical barriers as necessary to control access into facility areas for which access must be controlled or denied to satisfy the physical protection program design requirements of paragraph (b) of this section." The regulation 10 CFR 73.55(b)(3)(ii) states, that the physical protection program must: "Provide defense-in-depth through the integration of systems, technologies, programs, equipment, supporting processes, and implementing procedures as needed to ensure the effectiveness of the physical protection program."

PSP Section 11 provides a general description of how the applicant will implement its program for physical barriers, and that this implementation will meet the performance objectives and requirements of 10 CFR 73.55(b).

#### Owner Controlled Area (OCA) Barriers

PSP Section 11.1 describes WLS use of OCA barriers at the site.

#### Vehicle Barriers

PSP Sections 11.2.1 and 11.2.2 establish and maintain vehicle control measures, as necessary, to protect against the DBT of radiological sabotage, consistent with the physical protection program design requirements of 10 CFR 73.55(b)(3)(ii) and 10 CFR 73.55(e)(10)(i), and in accordance with site-specific analysis. The PSP identifies measures taken to provide high assurance that such an event can be defended against. The applicant's PSP also provides that the inspection, monitoring, and maintenance of the vehicle barrier system (VBS) will be included in the facility procedures.

#### Waterborne Threat Measures

The provisions of 10 CFR 73.55(e)(10)(ii) require the applicant to "Identify areas from which a waterborne vehicle must be restricted, and where possible, in coordination with local, State, and Federal agencies having jurisdiction over waterway approaches, deploy buoys, markers, or other equipment. In accordance with the site-specific analysis, provide periodic surveillance and observation of waterway approaches and adjacent areas."

PSP Section 11.2.3 states that a site-specific analysis for a water-borne DBT has been conducted and documented. The analysis determined that there is no waterborne access to WLS Units 1 and 2.



### Protected Area Barriers

The provisions of 10 CFR 73.55(e)(8)(i) require that the protected area perimeter must be protected by physical barriers that are designed and constructed to do the following: (1) limit access to only those personnel, vehicles, and materials required to perform official duties; (2) channel personnel, vehicles, and materials to designated access control portals; and (3) be separated from any other barrier designated as a vital area physical barrier, unless otherwise identified in the PSP.

The descriptions of the protected area barrier are provided in the PSP Section 11.3. The staff notes that these descriptions meet the definitions of physical barriers and protected areas in 10 CFR 73.2 and requirements of 10 CFR 73.55(e)(8).

PSP Section 11.3 describes the extent to which the protected area barrier at the perimeter is separated from a vital area/island barrier. The security plan identifies where the protected area barrier is not separated from a vital area barrier, as required by 10 CFR 73.55(e)(8)(i)(c).

PSP Section 11.3 describes isolation zones. As required in 10 CFR 73.55(e)(7), the isolation zone is maintained in outdoor areas adjacent to the protected area perimeter barrier and is designed to ensure the ability to observe and assess activities on either side of the protected area perimeter.

### Vital Area Barriers

The provisions of 10 CFR 73.55(e)(9) require that "Vital equipment must be located only within vital areas, which must be located within a protected area so that access to vital equipment requires passage through at least two physical barriers, except as otherwise approved by the NRC and identified in the security plans." In addition, 10 CFR 73.55(e)(5) requires that the physical barriers to access of certain vital areas shall be bullet resisting.

PSP Section 11.4 states that vital areas are restricted access areas surrounded by physical barriers with the capability to restrict access to only authorized individuals. All vital areas are constructed in accordance with established regulatory requirements. PSP Section 11.4 also describes that the reactor control room, central alarm station (CAS) and the location within which the last access control function for access to the protected area is performed, must be bullet resisting.

In RAI 97, Question 13.06-49, the staff requested that the applicant provide clarification regarding functionality in certain vital areas. In a July 6, 2011, response, the applicant confirmed that the response provided in VEGP Reference (R)-COLA RAI 13.06-13 (VEGP eRAI 3394) is also applicable to WLS. On the basis of its review, the staff finds the revised description in the November 17, 2011, PSP Revision 2, acceptable, as it provides the additional information on how the applicant meets the requirements of 10 CFR 73.55(e)(9).

### Target Set Equipment

The provisions of 10 CFR 73.55(f) require the following, "The licensee shall document and maintain the process used to develop and identify target sets, to include the site-specific analyses and methodologies used to determine and group the target set equipment or elements. The licensee shall consider cyber attacks in the development and identification of

target sets. Target set equipment or elements that are not contained within a protected or vital area must be identified and documented consistent with the requirements in 10 CFR 73.55(f)(1) and be accounted for in the licensee's protective strategy. The licensee shall implement a process for the oversight of target set equipment and systems to ensure that changes to the configuration of the identified equipment and systems are considered in the licensee's protective strategy. Where appropriate, changes must be made to documented target sets."

PSP Section 11.5 describes that target set equipment or elements that are not contained within a protected or vital area are identified and accounted for in the site protective strategy.

The staff identified several RAIs relating to target sets for the purpose of reviewing the Westinghouse physical protection program. Westinghouse provided design details as background information to assist an applicant with the development of site-specific target set analyses. The staff evaluated the applicant's responses, and found them acceptable for the DC review of the AP1000 physical protection program. In TR-94, Westinghouse stated in, APP-GW-GLR-066, "AP1000 Safeguards Assessment Report" that target sets were created to aid in the development of the AP1000 physical security system, and that final target sets will be developed by the COL applicant prior to fuel onsite (inside protected areas).

The staff reviewed the applicant's description in PSP Sections 11.5 and 14.5, SCP Section 7 and information in Westinghouse TR-94, APP-GW-GLR-066, "AP1000 Safeguards Assessment Report," for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in PSP Sections 11.5 and 14.5, SCP Section 7, and the information in Westinghouse TR-94 are consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP Sections 11.5 and 14.5 and SCP Section 7 meets the requirements of 10 CFR 73.55(f)(1), (3), and (4) and is, therefore, acceptable. The target sets, target set analysis and site protective strategy are in the facility implementing procedures. They will be subject to future NRC inspections in accordance with 10 CFR 73.55(c)(7)(iv) and 10 CFR Part 73, Appendix C, Section II.B.5(iii).

#### Delay Barriers

The provisions of 10 CFR 73.55(e)(3)(ii) require that physical barriers must "provide deterrence, delay, or support access control" to perform the required function of the applicant physical protection program. The PSP describes the use of delay barriers at WLS Units 1 and 2.

PSP Section 11.6 includes a description of the use of Delay Barriers to meet requirement of 10 CFR 73.55(e).

The staff reviewed the applicant's description in PSP Sections 11, 11.1, 11.2, 11.2.1, 11.2.2, 11.2.3, and Sections 11.3 through 11.6 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meet the requirements of 10 CFR 73.55(e), and are, therefore, acceptable.

#### **13.6.4.1.12 Security Posts and Structures**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1:

##### **13.6.4.1.12 Security Posts and Structures**

*The provisions of 10 CFR 73.55(e)(5) require that the reactor control room, the CAS, and the location within which the last access control function for access to the PA is performed, must be bullet-resisting.*

*Section 12 of the PSP describes that security posts and structures are qualified to a level commensurate with their application within the site protective strategy, and that these positions are constructed of bullet resisting materials.*

*The NRC staff has reviewed the applicant's description in PSP Section 12 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(e)(5), and is, therefore, acceptable.*

#### **13.6.4.1.13 Access Control Devices**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1:

##### **13.6.4.1.13 Access Control Devices**

*It is stated in 10 CFR 73.55(g)(1) that, consistent with the function of each barrier or barrier system, the applicant shall control personnel, vehicle, and material access, as applicable, at each access control point in accordance with the physical protection program design requirements of 10 CFR 73.55(b).*

*The provisions of 10 CFR 73.55(g)(6) require control of access control devices as stated: "The licensee shall control all keys, locks, combinations, passwords and related access control devices used to control access to protected areas, vital areas and security systems to reduce the probability of compromise."*

##### Types of Security-Related Access Control Devices

*Section 13.1 of the PSP describes that the applicant uses security-related access control devices to control access to protected and vital areas and security systems.*

##### Control and Accountability

*Section 13.2.1 of the PSP describes the control of security related locks. Section 13.2.2 of the PSP describes the controls associated with the changes to*

*and replacements of access control devices and the accountability and inventory control process, and the circumstances that require changes in security-related locks. The applicant uses facility procedures to produce, control, and recover keys, locks, and combinations for all areas and equipment, which serve to reduce the probability of compromise. The issue of access control devices is limited to individuals who have unescorted access authorization and require access to perform official duties and responsibilities. Keys and locks are accounted for through a key inventory control process as described in facility procedures.*

*The NRC staff has reviewed the applicant's description in PSP Sections 13, 13.1, 13.2, 13.2.1, and 13.2.2 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meet the requirements of 10 CFR 73.55(g)(1) and (6), and are, therefore, acceptable.*

#### **13.6.4.1.14 Access Requirements**

##### Access Authorization and Fitness for Duty

The provisions of 10 CFR 73.55(b)(7) require the applicant shall establish, maintain, and implement an access authorization program in accordance with 10 CFR 73.56 and shall describe the program in the PSP. The provisions of 10 CFR Part 26 require the applicant to establish and maintain a FFD program.

PSP Section 14.1 describes that the access authorization program implements regulatory requirements utilizing the provisions in RG 5.66, "Nuclear Power Plant Access Authorization Program," Revision 1, July 2009. The staff finds that RG 5.66, is an acceptable method to meet the requirements of 10 CFR 73.55(b)(7).

The staff reviewed the applicant's description in PSP Section 14.1 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(b)(7), 10 CFR 73.56 and 10 CFR Part 26 and is, therefore, acceptable.

##### Insider Mitigation Program

The provisions of 10 CFR 73.55(b)(9) require that the applicant shall establish, maintain, and implement an insider mitigation program and shall describe the program in the PSP. The insider mitigation program must monitor the initial and continuing trustworthiness and reliability of individuals granted or retaining unescorted access authorization to a protected or vital area, and implement defense-in-depth methodologies to minimize the potential for an insider to adversely affect, either directly or indirectly, the applicant's capability to prevent significant core damage and spent fuel sabotage. The insider mitigation program must include elements from: the access authorization program, the FFD program, the cyber security program and the physical protection program.

PSP Section 14.2 describes how the applicant will establish, maintain, and implement an insider mitigation program utilizing the guidance in RG 5.77, "Insider Mitigation Program." The insider mitigation program requires elements from the access authorization program described in 10 CFR 73.56; FFD program described in 10 CFR Part 26; the cyber security program described in 10 CFR 73.54; and the physical security program described in 10 CFR 73.55. In addition, PSP Section 14.2 describes the integration of the programs discussed above to form a cohesive and effective insider mitigation program. The applicant addressed the observations for the detection of tampering. The staff notes that RG 5.77 is an acceptable method to meet the requirements of 10 CFR 73.55(b)(9).

The staff reviewed the applicant's description in PSP Section 14.2 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(b)(9) and is, therefore, acceptable.

#### Picture Badge Systems

Requirements for badges are stated in 10 CFR 73.55(g)(6)(ii). "The licensee shall implement a numbered photo identification badge system for all individuals authorized unescorted access to the protected area and vital areas." In addition, identification badges may be removed from the protected area under limited conditions and only by authorized personnel. Records of all badges shall be retained and shall include name and areas to which persons are granted unescorted access.

The provisions of 10 CFR 73.55(g)(7)(ii) require that individuals not employed by the applicant but who require frequent or extended unescorted access to the protected area and/or vital areas to perform duties and responsibilities required by the applicant at irregular or intermittent intervals, shall satisfy the access authorization requirements of 10 CFR 73.56 and 10 CFR Part 26 of this chapter, and shall be issued a non-employee photo identification badge that is easily distinguished from other identification badges before being allowed unescorted access to the protected and vital areas. Non-employee photo identification badges must visually reflect that the individual is a non-employee and that no escort is required.

PSP Section 14.3 describes the site picture badge system. Identification badges will be displayed while individuals are inside the protected area or vital areas. When not in use, badges may be removed from the protected area by authorized holders, provided that a process exists to deactivate the badge upon exit and positively confirm the individual's true identity and authorization for unescorted access prior to entry into the protected area. Records are maintained to include the name and areas to which unescorted access is granted of all individuals to whom photo identification badges have been issued.

The staff reviewed the applicant's description in PSP Section 14.3 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(g)(6) and (7) and is, therefore, acceptable.

### Searches

The provisions of 10 CFR 73.55(h) require, in part, that applicants meet the objective to detect, deter, and prevent the introduction of firearms, explosives, incendiary devices, or other items that could be used to commit radiological sabotage. To accomplish this, applicant's shall search individuals, vehicles, and materials consistent with the physical protection program design requirements in paragraph (b) of this section, and the function to be performed at each access control point or portal before granting access.

PSP Section 14.4 provides an overview description of the search process for vehicle, personnel, and materials. The search process is conducted using security personnel, specifically trained non-security personnel and technology. Detailed discussions of actions to be taken in the event unauthorized materials are discovered are found in implementing procedures.

### Vehicle Barrier Access Control Point

The provisions of 10 CFR 73.55(h)(2)(ii) through (v) provide the requirements for the applicant to search vehicles at the OCA and 10 CFR 73.55(h)(3) provides requirements for searches of personnel, vehicles, and materials prior to entering the protected area.

PSP Section 14.4.1 describes the process for the search of personnel, vehicles, and materials at predetermined locations prior to granting access to designated facility areas identified by the applicant as needed to satisfy the physical protection program. The applicant stated that it has developed specific implementing procedures to address vehicle and materials searches at these locations.

### Protected Area Packages and Materials Search

PSP Section 14.4.2 describes the process for conducting searches of packages and materials for firearms, explosives, incendiary devices, or other items that could be used to commit radiological sabotage using equipment capable of detecting these items or through visual and physical searches, or both, to ensure that all items are clearly identified before these items can enter the WLS Units 1 and 2 protected area. Detailed provisions for conducting these searches are found in applicant implementing procedures and include the search and control of bulk materials and products. Applicant implementing procedures also discuss the control of packages and materials previously searched and tamper sealed by personnel trained in accordance with the T&QP.

### Protected Area Vehicle Search

PSP Section 14.4.3 describes the process for the search of vehicles for firearms, explosives, incendiary devices, or other items that could be used to commit radiological sabotage using equipment capable of detecting these items or through visual and physical searches, or both, to ensure that all items are clearly identified at the protected area. Detailed provisions for conducting these searches are found in the applicant's implementing procedures. The applicant's implementing procedures also address the search methodologies for vehicles that must enter the protected area under emergency conditions.

### Protected Area Personnel Searches

PSP Section 14.4.4 describes the process for searches of all personnel requesting access into protected areas. The PSP describes the search for firearms, explosives, incendiary devices, or other items that could be used to commit radiological sabotage using equipment capable of detecting these items or through visual and physical searches or both to ensure that all items are clearly identified prior to granting access into the protected area. All persons except official Federal, State, and local law enforcement agency personnel on official duty are subject to these searches upon entry to the protected area. Detailed discussions of observation and control measures are found in implementing procedures.

### Protected Area Access Controls

PSP Section 14.4.5 of the PSP describes the process for controlling access at all points where personnel or vehicles could gain access into the applicant's protected area. The plan notes that principal personnel access to the protected area is through a lockable portal. Personnel are only permitted into the protected area after positive identification (ID) verification, access authorization verification, and a search is performed per PSP Section 14.4. Vehicles are controlled through positive control methods described in the facility procedures.

### Escort and Visitor Requirements

The provisions of 10 CFR 73.55(g)(7) state in part, that the applicant may permit escorted access to protected and vital areas to individuals who have not been granted unescorted access in accordance with the requirements of 10 CFR 73.56 and 10 CFR Part 26. Provision in 10 CFR 73.55(g)(8) establishes escort requirements. Applicants are required to implement procedures to process, escort and control visitors. Procedures shall address confirmation of identity of visitors, maintenance of a visitor control register, visitor badging and escort controls including, training, communications, and escort ratios.

PSP Section 14.4.6 describes the process for control of visitors. The PSP affirms that procedures address the identification, processing, and escorting of visitors and the maintenance of a visitor control register. Training provisions for escorting visitors include responsibilities, communications and escort ratios. All escorts are trained to perform escort duties in accordance with site requirements. All visitors wear a badge that clearly indicates that an escort is required.

The staff reviewed the applicant's description in PSP Sections 14.4, and 14.4.1 through 14.4.6 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(h)(2), 10 CFR 73.55(h)(3), 10 CFR 73.55(g)(7) and 10 CFR 73.55(g)(8) and are, therefore, acceptable.

### Vital Area Access Controls

The provisions of 10 CFR 73.55(g)(4) require that applicants control access into vital areas consistent with established access authorization lists. In response to a site-specific credible

threat or other credible information, applicants shall implement a two-person (line-of-sight) rule for all personnel in vital areas so that no one individual is permitted access to a vital area.

The provisions of 10 CFR 73.56(j) require the applicant to establish, implement, and maintain a list of individuals who are authorized to have unescorted access to specific nuclear power plant vital areas during non-emergency conditions. The list must include only those individuals who have a continued need for access to those specific vital areas to perform their duties and responsibilities. The list must be approved by a cognizant applicant manager or supervisor responsible for directing the work activities of the individual who is granted unescorted access to each vital area, and be updated and re-approved no less frequently than every 31 days.

PSP Section 14.5 describes vital areas and states that the applicant maintains vital areas locked and protected by an active intrusion alarm system. An access authorization system is established to limit unescorted access that is controlled by an access authorization list that is reassessed and reapproved at least once every 31 days. Additional access control measures are described in the facility procedures.

In RAI 97, Question 13.06-50, the staff requested that the applicant clarify how the minimum vital areas and equipment are protected, including any proposed revision to this section of the security plan. The applicant responded that PSP Section 14.5 will be revised, as necessary, to clearly identify any regulatory minimum vital areas that are bounded by the larger vital areas included in the list. In a July 6, 2011, response, the applicant stated that the VEGP R-COLA RAI 13.6-19 October 16, 2009, response is applicable to WLS Units 1 and 2. In Enclosure 22 of their July 6, 2011, response, the applicant provided a description that clearly identifies the minimum vital areas. On the basis of its review, the staff finds the revised description in the PSP Revision 2, dated November 17, 2011, acceptable, as it provides the additional information on how the applicant meets 10 CFR 73.55(e)(9) and 10 CFR 73.55(g)(4).

The staff reviewed the applicant's description in PSP Section 14.5 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(g)(4) and is, therefore, acceptable.

#### **13.6.4.1.15 Surveillance Observation and Monitoring**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1.15:

##### **13.6.4.1.15 Surveillance Observation and Monitoring**

*The provisions of 10 CFR 73.55(i)(1) require that the applicant establish and maintain intrusion detection systems that satisfy the design requirements of 10 CFR 73.55(b) and provide, at all times, the capability to detect and assess unauthorized persons and facilitate the effective implementation of the protective strategy.*



### Illumination

*The provisions of 10 CFR 73.55(i)(6) require, in part, that all areas of the facility are provided with illumination necessary to satisfy the design requirements of 10 CFR 73.55(b) and implement the protective strategy. Specific requirements include providing a minimum illumination level of 0.2 foot-candles, measured horizontally at ground level, in the isolation zones and appropriate exterior areas within the PA. Alternatively, the applicant may augment the facility illumination system by means of low-light technology to meet the requirements of this section or otherwise implement the protective strategy. The applicant shall describe in the security plans how the lighting requirements of this section are met and, if used, the type(s) and application of low-light technology.*

*Section 15.1 of the PSP describes that all isolation zones and appropriate exterior areas within the PA have lighting capabilities that provide illumination sufficient for the initiation of an adequate response to an attempted intrusion of the isolation zone, a PA, or a vital area. A discussion of the implementation of technology using fixed and non-fixed low light level cameras or alternative technological means is provided. The applicant has addressed the potential for loss of lighting and the compensatory actions that would be taken if that event were to occur.*

### Surveillance Systems

*The provisions of 10 CFR 73.55(i)(1) require, in part, that the applicant implement, establish, and maintain intrusion detection and assessment, surveillance, observation and monitoring systems to satisfy the design requirements of 10 CFR 73.55(b), and of the applicant's OCA.*

*Section 15.2 of the PSP describes that surveillance is accomplished by human observation and technology. Surveillance systems include a variety of cameras, video display, and annunciation systems designed to assist the security organization in observing, detecting assessing alarms or unauthorized activities. Certain systems provide real-time and recorded play back of recorded video images. The specifics of surveillance systems are described in facility implementing procedures.*

### Intrusion Detection Equipment

*Section 15.3 of the PSP describes the perimeter intrusion detection system, and the PA and vital area intrusion detection systems. These systems are capable of detecting attempted penetration of the PA perimeter barrier; are monitored with assessment equipment designed to satisfy the requirements of 10 CFR 73.55(i) and provide real-time and play-back/recorded video images of the detected activities before and after each alarm annunciation. The PSP describes how the applicant will meet regulatory requirements for redundancy, tamper indication and uninterruptable power supply.*

Central Alarm Station (CAS) and Secondary Alarm Station (SAS) Operation

*The provisions of 10 CFR 73.55(i)(4) provide requirements for alarm stations. It is required, in 10 CFR 73.55(i)(4)(i), that both alarm stations must be designed and equipped to ensure that a single act, in accordance with the DBT of radiological sabotage defined in 10 CFR 73.1, cannot disable both alarm stations. The applicant shall ensure the survivability of at least one alarm station to maintain the ability to perform the following functions: 1) detect and assess alarms; 2) initiate and coordinate an adequate response to an alarm; 3) summon offsite assistance; and 4) provide command and control. 10 CFR 73.55(i)(4)(iii) requires that alarm stations must be equal and redundant.*

*Section 15.4 of the PSP describes the functional operations of the CAS and the SAS. The PSP provides that the alarm stations are equipped, such that no single act will disable both alarm stations. The applicant's PSP provides that each alarm station is properly manned and that no activities are permitted that would interfere with the operator's ability to execute assigned duties and responsibilities.*

Security Patrols

Owner Controlled Area (OCA) Surveillance and Response

*The provisions of 10 CFR 73.55(e)(6) require that the applicant establish and maintain physical barriers in the OCA as needed to satisfy the physical protection program design requirements of 10 CFR 73.55(b). It is required, in 10 CFR 73.55(i)(5)(ii), in part, that the applicant provide continuous surveillance, observation and monitoring of the OCA and that these responsibilities may be performed by security personnel during continuous patrols, through the use of video technology, or by a combination of both.*

*Section 15.5.1 of the PSP describes the processes used to meet this requirement. The PSP discusses the process to be used and provides that details regarding the implementation of OCA surveillance techniques are found in facility procedures. The PSP provides a discussion regarding the implementation of manned and video options for patrolling and surveillance of the OCA.*

Protected and Vital Area Patrols

*The provisions of 10 CFR 73.55(i)(5)(iii) through (viii) require, in part, that armed patrols check unattended openings that intersect a security boundary, such as an underground pathways, check external areas of the PA and vital area portals, periodically inspect vital areas, conduct random patrols of accessible target set equipment, be trained to recognize obvious tampering and if detected, initiate an appropriate response in accordance with established plans and procedures.*

*Section 15.5.2 of the PSP describes the process employed by the applicant to meet the above requirements. The PSP describes the areas of the facility that will be patrolled and observed, as well as the frequency of these patrols and*

observations. The applicant has addressed the observations for the detection of tampering in Section 14.2 of the PSP and in the facility procedures.

The NRC staff has reviewed the applicant's description in PSP Sections 15, 15.1 through 15.4, 15.5.1, and 15.5.2 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(b) and (i), and are, therefore, acceptable.

#### **13.6.4.1.16 Communications**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1.16:

##### **13.6.4.1.16 Communications**

*The provisions of 10 CFR 73.55(j)(1) through (6) describe the requirements for establishment and maintenance of continuous communication capabilities with both onsite and offsite resources to ensure effective command and control during both normal and emergency situations. Alarm stations must be capable of calling for assistance, on-duty security force personnel must be capable of maintaining continuous communication with each alarm station and vehicle escorts, and personnel escorts must maintain timely communication with security personnel. Continuous communication capabilities must terminate in both alarm stations, between LLEA and the control room. Non-portable communications must remain operable from independence power sources. The applicant must identify areas where communications could be interrupted or not maintained.*

##### Notifications (Security Contingency Event Notifications)

*Section 16.1 of the PSP describes that the applicant have a process to ensure that continuous communications are established and maintained between the onsite security force staff and the offsite support agencies.*

##### System Descriptions

*Section 16.2 of the PSP describes the establishment and maintenance of the communications system. Detailed descriptions of security systems are included in the facility procedures. VEGP has access to both hard wired and alternate communications systems. Site security personnel are assigned communications devices with which to maintain continuous communications with the CAS and SAS. All personnel and vehicles are assigned communications resources with which to maintain continuous communications. Continuous communication protocols are available between the CAS, SAS and the control room.*

*The NRC staff has reviewed the applicant's description in PSP Sections 16, 16.1 and 16.2 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria.*

*Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(j)(1) through (6), and are, therefore, acceptable.*

#### **13.6.4.1.17 Review, Evaluation and Audit of the Physical Security Program**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1.17.

##### **13.6.4.1.17 Review, Evaluation and Audit of the Physical Security Program**

*The provisions of 10 CFR 73.55(m) require, in part, that each element of the physical protection program will be reviewed at least every 24 months. An initial review is required within 12 months after original plan implementation, or a change in personnel, procedures, equipment or facilities, which could have a potentially adverse affect on security, or as necessary based on site-specific analysis assessments, or other performance indicators. Reviews must be conducted by individuals independent of the security program and must include the plans, implementing procedures and local law enforcement commitments. Results of reviews shall be presented to senior management above the level of the security manager and findings must be entered in the site corrective action program.*

*Section 17 of the PSP describes that the physical security program is reviewed 12 months following initial implementation and at least every 24 months by individuals independent of both security program management and personnel who have a direct responsibility for implementation of the security program. The physical security program review includes, but is not limited to, an audit of the effectiveness of the physical security program, cyber security plans, implementing procedures, safety/security interface activities, the testing, maintenance, and calibration program, and response commitments by local, State, and Federal law enforcement authorities.*

*A review shall be conducted as necessary based upon site-specific analyses, assessments, or other performance indicators and as soon as reasonably practical, but no longer than 12 months, after changes occur in personnel, procedures, equipment, or facilities that potentially could adversely affect safety/security.*

*The results and recommendations of the physical security program review, management's finding on whether the physical security program is currently effective and any actions taken as a result of recommendations from prior program reviews are documented in a report to plant management and to appropriate corporate management at least one level higher than that having responsibility for the day-to-day plant operation. These reports are maintained in an auditable form and maintained for inspection.*

*Findings from the onsite physical security program reviews are entered into the facility corrective action program.*

*In RAI 13.6-36, the NRC staff requested that the applicant address the requirements of 10 CFR 73.58, "Safety/security requirements for nuclear power reactors." In its response dated May 14, 2010, the applicant stated that management controls and processes used to establish and maintain an effective interface between nuclear safety and physical security are addressed by administrative procedures. The applicant committed to revise VEGP COL FSAR Section 13.5.1 to include the safety/security interface implementation process in the list of procedural instructions provided in plant administrative procedures.*

*On the basis of its review, the NRC staff finds that since the applicant will revise VEGP COL FSAR Section 13.5.1 to incorporate the requirements for safety/security interfaces, the response to RAI 13.6-36 meets the requirements of 10 CFR 73.58 and is, therefore, acceptable. The incorporation of changes to the VEGP COL FSAR Section 13.5.1 is being tracked as **Confirmatory Item 13.6-2**.*

*Resolution of Standard Content Confirmatory Item 13.6-2*

*Confirmatory Item 13.6-2 is an applicant commitment to revise its FSAR Section 13.5 regarding the requirements of safety/security interfaces. The staff verified that the VEGP COL FSAR was appropriately revised. As a result, Confirmatory Item 13.6-2 is now closed.*

*The NRC staff has reviewed the applicant's description in PSP Section 17 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(m), and is, therefore, acceptable.*

During the review of the Levy Nuclear Plant, Units 1 and 2, COLA, the staff raised concerns in LNP RAI 13.06.01-1 regarding how the LNP applicant, once licensed, would analyze and identify changes in the site-specific conditions related to the AP1000's structures, systems, and components (SSCs) (described in certain technical reports), resulting from changes made to the LNP Units 1 and 2 COL between issuance of the COL and the security program implementation milestones provided in LNP FSAR Table 13.4-201 to ensure that the security plan continues to meet 10 CFR 73.55(b)(4). This LNP RAI also requested that the applicant clarify how the applicant, once licensed, will ensure that the as-built plant continues to meet all physical protection program design and performance criteria in 10 CFR 73.55 at the time the physical protection program is implemented.

In the staff's safety review of LNP Units 1 and 2 COL FSAR Section 13.4.1.18, the staff noted the applicant's responses and proposed changes to their application acceptable as follows:

In the Duke Energy Florida (DEF) response letter, "Revised Response to NRC RAI Letter 119 – Related to Standard Review Plan Section 13.6, Physical Security, for the Levy Nuclear Plant, Units 1 and 2, Combined License Application," dated August 7,

2014, (ADAMS Accession Number ML14220A433), the applicant stated that a future revision of the LNP COL application will reflect the changes discussed in this response.

Associated LNP COL Application Revisions:

COLA Part 2, FSAR Chapter 13 will be revised to add text to Section 13.5.1, "Administrative Procedures" under the statement: "The plant administrative procedures provide procedural instructions for the following: ," 19th bullet as shown below. The left-hand margin annotation for this added text will be "LNP COL 13.5-1."

A process for implementing the safety/security interface requirements of 10 CFR 73.58.

A process is in effect at the time of issuance of the combined license and was developed using NRC endorsed industry guidance. This process is used to manage safety/security interface while the security procedures and emergency plan implementing procedures are being developed and implemented.

The staff finds that the response to RAI 13.06.01 meets the requirements of 10 CFR 73.55(b)(4), and is acceptable, because it provides a commitment to implement administrative procedures to manage the safety/security interface during the construction phase and throughout the operational phase.

The staff reviewed the applicant's description in PSP Section 17 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. As set forth above, the applicant's description in the PSP meets the requirements of 10 CFR 73.55(b)(4), and 10 CFR 73.55(m), and therefore is acceptable. The staff confirmed that the applicant incorporated the proposed changes to the LNP COL FSAR Section 13.5.1 in Revision 7 of the FSAR.

In November 13, 2014, letter, the WLS applicant endorsed the above response and changes to the LNP Units 1 and 2 COL application. The staff verified these same changes in the WLS Units 1 and 2 COL application and finds them acceptable.

**13.6.4.1.18 Response Requirements**

The provisions of 10 CFR 73.55(k) require, in part, that the applicant establish and maintain a properly trained, qualified, and equipped security force required to interdict and neutralize threats up to and including the DBT defined in 10 CFR 73.1, to prevent significant core damage and spent fuel sabotage. To meet this objective, the applicant must ensure that necessary equipment is in supply, working, and readily available. The applicant must ensure training has been provided to all armed members of the security organization who will be available onsite to implement the applicant's protective strategy as described in the facility procedures and 10 CFR Part 73, Appendix C. The applicant must have facility procedures to reconstitute armed response personnel and have established working agreement(s) with LLEA. The applicant must have implemented a threat warning system to accommodate heightened security threats and coordination with NRC representatives.

PSP Section 18 describes an armed response team, as well as its responsibilities, training, and equipment, and the number of armed response force personnel required to be immediately available at all times to implement each site's protective strategy. The PSP provides for training in accordance with the requirements of 10 CFR Part 73, Appendix B that will ensure implementation of the site protective strategy in accordance with 10 CFR Part 73, Appendix C. Procedures are in place to reconstitute the armed response personnel as are agreements with LLEA. The PSP also describes procedures to manage the threat warning system.

In RAI 97, Question 13.06-44, the staff requested that the applicant clarify PSP Section 18, which details the minimum number of armed responders continuously in the protected area. The staff also requested that the applicant explain how this number correlates with the expected number detailed in Westinghouse TR 94, AP1000 Safeguards Assessment Report.

In a July 6, 2011, letter, the applicant provided an explanation of how they determined the minimum numbers of armed responders needed for the WLS site. The applicant also provided a metric showing the staffing relationship between Westinghouse TR 94, AP1000 Safeguards Assessment Report, and staffing positions and responsibility for WLS Site Units 1 and 2.

On the basis of its review, the staff finds the response to RAI 97, Question 13.06-44 acceptable. The applicant's metric provided the needed clarification on the minimum number of armed responders continuously in the protected area and the expected number detailed in Westinghouse TR 94, AP1000 Safeguards Assessment Report.

The staff reviewed the applicant's description in PSP Section 18 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(k) and is, therefore, acceptable.

#### **13.6.4.1.19 Special Situations Affecting Security**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1.19:

##### **13.6.4.1.19 Special Situations Affecting Security**

*The provisions of 10 CFR 73.58 require that each operating nuclear power reactor applicant with a license issued under 10 CFR Part 50 shall comply with the following requirements: the applicant shall assess and manage the potential for adverse effects on safety and security, including the site emergency plan, before implementing changes to plant configurations, facility conditions, or security; the scope of changes to be assessed and managed must include planned and emergent activities (such as, but not limited to, physical modifications, procedural changes, changes to operator actions or security assignments, maintenance activities, system reconfiguration, access modification or restrictions, and changes to the security plan and its implementation); where potential conflicts are identified, the applicant shall communicate them to appropriate personnel and take compensatory and/or mitigative actions to*

*maintain safety and security under applicable Commission regulations, requirements, and license conditions.*

*Section 19 of the PSP includes requirements for assessments to manage increased risk of special situations affecting security.*

#### *Refueling/Major Maintenance*

*Section 19.1 of the PSP describes that, for refueling or major maintenance activities, the PSP describes that security procedures identify measures for implementation of actions prior to refueling or major maintenance activities. These measures include controls to ensure that a search is conducted prior to revitalizing an area, that protective barriers and alarms are fully operational, and post-maintenance performance testing to ensure operational readiness of equipment in accordance with 10 CFR 73.55(n)(8).*

#### *Construction and Maintenance*

*Section 19.2 of the PSP describes that during periods of construction and maintenance when temporary modifications are necessary, that the applicant will implement measures that provide for equivalency in the physical protective measures and features impacted by the activities, such that physical protection measures are not degraded. The process for making such changes or modifications is included in the facility procedures.*

*The NRC staff has reviewed the applicant's description in PSP Sections 19, 19.1, and 19.2 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(n)(8) and 10 CFR 73.58, and are, therefore, acceptable.*

#### **13.6.4.1.20 Maintenance, Testing and Calibration**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1.20:

#### **13.6.4.1.20 Maintenance, Testing and Calibration**

*In accordance with 10 CFR 73.55(n), the applicant is required to establish, maintain, and implement a maintenance, testing, and calibration program to ensure that security systems and equipment, including secondary and uninterruptible power supplies, are tested for operability and performance at predetermined intervals, maintained in operable condition, and have the capability of performing their intended functions. The regulation requires that the applicant describe their maintenance testing and calibrations program in the PSP, and that the implementing procedures describe the details and intervals for conducting these activities. Applicant procedures must identify criteria for documenting deficiencies in the corrective action program and ensuring data*



*protection in accordance with 10 CFR 73.21. The applicant must conduct periodic operability testing of the intrusion alarm system and must conduct performance testing in accordance with the PSP and implementing procedures. Communication equipment must be tested not less than daily, and search equipment must also be tested periodically. Procedures must be established for testing equipment located in hazardous areas, and procedures must be established for returning equipment to service after each repair.*

*Sections 20.1 through 20.6 of the PSP describe the maintenance, testing and calibration program for security-related equipment. Section 20.1 states that the applicant shall conduct intrusion detection testing in accordance with recommended testing procedures described in RG 5.44," Perimeter Intrusion Alarm System." Each operational component required for the implementation of the security program is at a minimum, tested in accordance with 10 CFR 73.55(n), the PSP and implementing procedures.*

*The NRC staff has reviewed the applicant's description in PSP 20 and 20.1 through 20.6 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(n), and are, therefore, acceptable.*

#### **13.6.4.1.21 Compensatory Measures**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1.21:

#### **13.6.4.1.21 Compensatory Measures**

*The provisions of 10 CFR 73.55(o) require, in part, that the applicant shall identify criteria and measures to compensate for degraded or inoperable equipment, systems, and components to meet the requirements of this section. Compensatory measures must provide a level of protection that is equivalent to the protection that was provided by the degraded or inoperable, equipment, system, or components. Compensatory measures must be implemented within specific time frames necessary to meet the appropriate portions of 10 CFR 73.55(b) and described in the security plans.*

*Section 21 of the PSP identifies measures and criteria required to compensate for degraded or inoperable equipment, systems, and components in accordance with 10 CFR 73.55(o) to assure that the effectiveness of the physical protection system is not reduced by failure or other contingencies affecting the operation of the security-related equipment or structures. Sections 21.1 through 21.12 of the PSP address PA and vital area barriers, intrusion detection and alarm systems, lighting, fixed and non-fixed closed circuit television, play-back and recorded video systems, computer systems, access control devices, vehicle barrier systems, channeling barrier systems, and other security-related equipment.*

*The NRC staff has reviewed the applicant's description in PSP Sections 21 and 21.1 through 21.12, for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(o), and are, therefore, acceptable.*

#### **13.6.4.1.22 Records**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1.22:

#### **13.6.4.1.22 Records**

*The provisions of 10 CFR Part 26, 10 CFR 73.55(q), 10 CFR 73.56(k) and (o), 10 CFR Part 73, Appendix B, Section VI.H., Appendix C, Section II.C and 10 CFR 73.70, require that the applicant must retain and maintain all records required to be kept by the Commission regulations, orders, or license conditions until the Commission terminates the license for which the records were developed, and shall maintain superseded portions of these records for at least three years after the record is superseded, unless otherwise specified by the Commission. The applicant is required to keep records of contracts with any contracted security force that implements any portion of the onsite physical protection program for the duration of the contract. The applicant must make all records, required to be kept by the Commission, available to the Commission and the Commission may inspect, copy, retain and remove all such records, reports and documents, whether kept by the applicant or a contractor. Review and audit reports must be maintained and available for inspection for a period of three years.*

*Section 22.0 of the PSP addresses the requirements to maintain records. Sections 22.1 through 22.13 address each kind of record that the applicant will maintain and the duration of retention for each record. The following types of records are maintained in accordance with the above mention regulations: access authorization records; suitability, physical and psychological qualification records for security personnel; PA and vital area access control records; PA visitor access records; PA vehicle access; vital area access transaction records; vitalization and de-vitalization records; vital area access list reviews; security plans and procedures; security patrols, inspections and tests; maintenance; CAS and SAS alarm annunciation and security response records; local law enforcement agency records; records of audits and reviews; access control devices; security training and qualification records; firearms testing and maintenance records; and engineering analysis for the vehicle barrier system.*

*The NRC staff has reviewed the applicant's description in PSP Sections 22 and 22.1 through 22.13 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent*

*with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(q), 10 CFR 73.55(o) and 10 CFR 73.70, and are, therefore, acceptable.*

#### **13.6.4.1.23 Digital Systems Security**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1.23:

##### **13.6.4.1.23 Digital Systems Security**

*Section 23 of the PSP addresses digital systems security. The applicant stated in its PSP that it has implemented the requirements of 10 CFR 73.54 and maintains a cyber security plan that describes how it has provided high assurance that safety, security, and emergency preparedness functions are protected against the DBT.*

*The NRC staff's review of the cyber security plan is found Section 13.8 of this SER.*

#### **13.6.4.1.24 Temporary Suspension if Security Measures**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1.24:

##### **13.6.4.1.24 Temporary Suspension if Security Measures**

*The provisions of 10 CFR 73.55(p) allow the applicant to “suspend implementation of affected requirements of this section under the following conditions: In accordance with 10 CFR 50.54(x) and 50.54(y) of this chapter, the licensee may suspend any security measures under this section in an emergency when this action is immediately needed to protect the public health and safety and no action consistent with license conditions and technical specifications that can provide adequate or equivalent protection is immediately apparent. This suspension of security measures must be approved as a minimum by a licensed senior operator before taking this action. During severe weather when the suspension of affected security measures is immediately needed to protect the personal health and safety of security force personnel and no other immediately apparent action consistent with the license conditions and technical specifications can provide adequate or equivalent protection. This suspension of security measures must be approved, as a minimum, by a licensed senior operator, with input from the security supervisor or manager, before taking this action.”*

##### **Suspension of Security Measures in Accordance with 10 CFR 50.54(x) and (y)**

*Section 24.1 of the PSP addresses suspension of security measures in accordance with 10 CFR 50.54(x) and 10 CFR 50.54(y). Specifically, the plan provides a description of the conditions under which suspension is permissible,*

*the authority for suspension, and the requirements for reporting such a suspension.*

**Suspension of Security Measures during Severe Weather or Other Hazardous Conditions**

*As required in 10 CFR 73.55(p), suspension of security measures are reported and documented in accordance with the provisions of 10 CFR 73.71. This suspension of security measures must be approved, as a minimum, by a licensed senior operator, with input from the security supervisor or manager, before taking this action. Suspended security measures must be reinstated as soon as conditions permit.*

*Section 24.2 of the PSP provides that certain security measures may be temporarily suspended during circumstances such as imminent, severe or hazardous weather conditions, but only when such action is immediately needed to protect the personal health and safety of security force personnel and no other immediately apparent action consistent with the security measures can provide adequate or equivalent protection. Under the PSP, suspended security measures shall be restored as soon as practical.*

*The NRC staff has reviewed the applicant's description in PSP Sections 24, 24.1, and 24.2 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the PSP meets the requirements of 10 CFR 73.55(p), and are, therefore, acceptable.*

**13.6.4.1.25 Appendix A Glossary of Terms and Acronyms**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1.25:

**13.6.4.1.25 Appendix A Glossary of Terms and Acronyms**

*Appendix A, "Glossary of Terms and Acronyms," was reviewed and found to be consistent with the NRC endorsed NEI 03-12, Revision 6 template.*

**13.6.4.1.26 Conclusions on the Physical Security Plan**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.1.26:

**13.6.4.1.25 Conclusions on the Physical Security Plan**

*On the basis of the NRC staff's review described in Sections 13.6.4.1.1 through 13.6.4.1.25 of this SER, the PSP meets the requirements of 10 CFR 73.55(a) through (r). The target sets, Target Set Analysis and Site Protective Strategy are in the facility implementing procedures, which were not*

*subject to NRC staff review as part of this COL application and are, therefore, subject to future NRC inspection in accordance with 10 CFR 73.55(c)(7)(iv) and 10 CFR Part 73, Appendix C, Section II.B.5(iii). The NRC staff concludes that complete and procedurally correct implementation of the PSP will provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety.*

#### **13.6.4.2 Appendix B Training and Qualification Plan**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.2:

#### **13.6.4.2 Appendix B Training and Qualification Plan**

##### **13.6.4.2.1 Introduction**

##### **13.6.4.2.1 Introduction**

*The provisions of 10 CFR 73.55(c)(4) state that the applicant establish, maintain, implement, and follow a T&QP that describes how the criteria set forth in 10 CFR Part 73, Appendix B will be implemented.*

*The provisions of 10 CFR 73.55(d)(3) state that the applicant may not permit any individual to implement any part of the physical protection program unless the individual has been trained, equipped, and qualified to perform their assigned duties and responsibilities in accordance with 10 CFR Part 73, Appendix B and the T&QP. Non-security personnel may be assigned duties and responsibilities required to implement the physical protection program and shall:*

- (i) Be trained through established applicant training programs to ensure each individual is trained, qualified, and periodically requalified to perform assigned duties.*
- (ii) Be properly equipped to perform assigned duties.*
- (iii) Possess the knowledge, skills, and abilities to include physical attributes, such as sight and hearing, required to perform their assigned duties and responsibilities.*

*In addition, 10 CFR Part 73, Appendix B, Section VI.D.2(a) states armed and unarmed individuals shall be requalified at least annually in accordance with the requirements of the Commission-approved T&QP.*

*The T&QP describes that it is written to address the requirements found in 10 CFR Part 73, Appendix B, Section VI. The objective of the plan is to provide a mechanism to ensure that members of the security organization, and all others who have duties and responsibilities in implementing the security requirements and protective strategy, are properly trained, equipped and qualified.*

*Deficiencies identified during the administration of T&QP requirements are documented in the site corrective action program.*

*The NRC staff has reviewed the introduction section in the T&QP and has determined that it includes all of the programmatic elements necessary to satisfy the requirements of 10 CFR 73.55 and 10 CFR Part 73, Appendix B, Section VI applicable to the T&QP. Additional section-by-section evaluations and discussions are found in the following paragraphs.*

#### **13.6.4.2.2 Employment Suitability and Qualification**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.2.2:

#### **13.6.4.2.2 Employment Suitability and Qualification**

*The requirements for mental qualifications, documentation, and physical requalification for security personnel (applicant employee and contractor) are described in the following T&QP sections.*

##### Suitability

*The provisions of 10 CFR Part 73, Appendix B, Section VI.B.1(a) require, in part, that before employment, or assignment to the security organization, an individual shall: (1) possess a high school diploma or pass an equivalent performance examination designed to measure basic mathematical, language, and reasoning skills, abilities, and knowledge required to perform security duties and responsibilities; (2) attained the age of 21 for an armed capacity or the age of 18 for an unarmed capacity; (3) not have any felony convictions that reflect on the individual's reliability; and (4) individuals in an armed capacity would not be disqualified from possessing or using firearms or ammunition in accordance with applicable State or Federal law, to include 18 U.S.C. 922. Applicants shall use information that has been obtained during the completion of the individual's background investigation for unescorted access to determine suitability. Satisfactory completion of a firearms background check for the individual under 10 CFR 73.19 of this part will also fulfill this requirement. The provisions of 10 CFR Part 73, Appendix B, Section VI.B.1(b) require the qualification of each individual to perform assigned duties and responsibilities must be documented by a qualified training instructor and attested to by a security supervisor.*

*Section 2.1 of the T&QP details the requirements of qualifications for employment in the security organization that follows the regulation in 10 CFR Part 73, Appendix B, Section VI.B.1(a).*

##### Physical Qualifications

*The provisions of 10 CFR Part 73, Appendix B, Section VI.B.2 require, in part, that individuals whose duties and responsibilities are directly associated with the effective implementation of the Commission-approved security plans, applicant protective strategy, and implementing procedures, may not have any physical*

*conditions that would adversely affect their performance of assigned security duties and responsibilities.*

*Section 2.2 of the T&QP details those individuals that are directly associated with implementation of the security plans. Protective strategy and procedures may not have any physical conditions that would adversely affect their performance of assigned security duties and responsibilities. All individuals that are found on the critical task matrix shall demonstrate the necessary physical qualifications prior to duty.*

### Physical Examination

*It is stated in 10 CFR Part 73, Appendix B, Section VI.B.2(a)(2), that armed and unarmed individuals assigned security duties and responsibilities shall be subject to a physical examination designed to measure the individual's physical ability to perform assigned duties and responsibilities as identified in the Commission-approved security plans, applicant protective strategy, and implementing procedures.*

*The provisions of 10 CFR Part 73, Appendix B, Section VI.B.2(a)(3) state, in part, that the physical examination must be administered by a licensed health professional with the final determination being made by a licensed physician to verify the individual's physical capability to perform assigned duties and responsibilities.*

*The provisions of 10 CFR Part 73, Appendix B, Section VI.B.2(b) through (e) provide the minimum requirements that individuals must meet, and include requirements for vision, hearing, review of existing medical conditions, and examination for potential addictions.*

*The provisions of 10 CFR Part 73, Appendix B, Section VI.B.2(f) address medical examinations before returning to assigned duties following any incapacitation.*

*Section 2.3 of the T&QP describes the physical examinations for armed and unarmed individuals assigned security duties, as well as other individuals that implement parts of the physical protection program. Minimum requirements exist for physical examinations of vision, hearing, existing medical conditions, addiction or other physical requirements.*

*The NRC staff has reviewed the applicant's description in T&QP Sections 2.1, 2.2, and 2.3 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73 Appendix B, Sections VI.B.1 and VI.B.2, and are, therefore, acceptable.*

Medical Examinations and Physical Fitness Qualifications

*The provisions of 10 CFR Part 73, Appendix B, Section VI.B.4(a) require, in part, that armed members of the security organization shall be subject to a medical examination by a licensed physician, to determine the individual's fitness to participate in physical fitness tests, and that the applicant shall obtain and retain a written certification from the licensed physician that no medical conditions were disclosed by the medical examination that would preclude the individual's ability to participate in the physical fitness tests or meet the physical fitness attributes or objectives associated with assigned duties.*

*The provisions of 10 CFR Part 73, Appendix B, Section VI.B.4(b) require, in part, that before assignment, armed members of the security organization shall demonstrate physical fitness for assigned duties and responsibilities by performing a practical physical fitness test. The physical fitness test must consider physical conditions such as strenuous activity, physical exertion, levels of stress, and exposure to the elements as they pertain to each individual's assigned security duties. The physical fitness qualification of each armed member of the security organization must be documented by a qualified training instructor and attested to by a security supervisor.*

*Section 2.4 of the T&QP is explicit in its requirements for medical examinations and physical qualifications.*

*The NRC staff has reviewed the applicant's description in T&QP Section 2.4 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.B.4(a) and 10 CFR Part 73, Appendix B, Section VI.B.4(b), and is, therefore, acceptable.*

Psychological Qualifications

General Psychological Qualifications

*The provisions of 10 CFR Part 73, Appendix B, Section VI.B.3(a) require, in part, that armed and unarmed individuals shall demonstrate the ability to apply good judgment, mental alertness, the capability to implement instructions and assigned tasks, and possess the acuity of senses and ability of expression sufficient to permit accurate communication by written, spoken, audible, visible, or other signals required by assigned duties and responsibilities.*

*Section 2.5.1 of the T&QP details that individuals whose security tasks and jobs directly associated with the effective implementation of the security plan and protective strategy shall demonstrate the qualities in 10 CFR Part 73, Appendix B, Section VI.B.3(a).*



Professional Psychological Examination

*The provisions of 10 CFR Part 73, Appendix B, Section VI.B.3(b) require, in part, that a licensed psychologist, psychiatrist, or physician trained in part to identify emotional instability shall determine whether armed members of the security organization and alarm station operators in addition to meeting the requirement stated in paragraph (a) of this section, have no emotional instability that would interfere with the effective performance of assigned duties and responsibilities.*

*The provisions of 10 CFR Part 73, Appendix B, Section VI.B.3(c) require that a person professionally trained to identify emotional instability shall determine whether unarmed individuals, in addition to meeting the requirement stated in paragraph (a) of this section, have no emotional instability that would interfere with the effective performance of assigned duties and responsibilities.*

*Section 2.5.2 of the T&QP provides for the administration of psychological and emotional determination that will be conducted by appropriately licensed and trained individuals.*

*The NRC staff has reviewed the applicant's description in T&QP Sections 2.5.1 and 2.5.2 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Sections VI.B.3(a), (b) and (c), and are, therefore, acceptable.*

Documentation

*The provisions of 10 CFR Part 73, Appendix B, Section VI.H.1 require, in part, the retention of all reports, records, or other documentation required by Appendix B and 10 CFR 75.55(q).*

*Section 2.6 of the T&QP describes that qualified training instructors create the documentation of training activities and that security supervisors attest to these records as required. Records are retained in accordance with Section 22 of the PSP.*

*The NRC staff has reviewed the applicant's description in T&QP Section 2.6 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.H.1 and is, therefore, acceptable.*

Physical Requalification

*The provisions of 10 CFR Part 73, Appendix B, Section VI.B.5 require that: (a) at least annually, armed and unarmed individuals shall be required to demonstrate*

*the capability to meet the physical requirements of this appendix and the applicant's T&QP; and (b) the physical requalification of each armed and unarmed individual must be documented by a qualified training instructor and attested to by a security supervisor.*

*Section 2.7 of the T&QP describes that physical requalification is conducted at least annually, and documented as described in the PSP.*

*The NRC staff has reviewed the applicant's description in T&QP Section 2.7 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.B.5 and is, therefore, acceptable.*

### **13.6.4.2.3 Individual Training and Qualification**

#### Duty Training

The provisions of 10 CFR Part 73, Appendix B, Section VI.C.1 provide for duty training and qualification requirements. The regulation states, in part, that all personnel who are assigned to perform any security-related duty or responsibility shall be trained and qualified to perform assigned duties and responsibilities to ensure that each individual possesses the minimum knowledge, skills, and abilities required to effectively carry out those assigned duties and responsibilities. Each individual who is performing assigned duties and responsibilities identified in the commission-approved security plans shall be trained before assignment in accordance with the requirements of 10 CFR Part 73, Appendix B, and the T&QP and the PSP. Such personnel must be trained and qualified in the use of all equipment or devices required to effectively perform all assigned duties and responsibilities.

T&QP Section 3.1 details the requirements that individuals assigned duties must be trained in their duties, meet minimum qualifications, and be trained and qualified in all equipment or devices required prior to performing their duties.

The staff reviewed the applicant's description in T&QP Sections 3.0 and 3.1 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.C.1 and is, therefore, acceptable.

#### On-the-job Training

The provisions of 10 CFR Part 73, Appendix B, Sections VI.C.2(a) through (c) provides requirements for on-the-job training. On-the-job training performance standards and criteria must ensure that each individual demonstrates the requisite knowledge, skills and abilities. Individuals who are assigned contingency duties must complete a minimum of 40 hours of on-the-job training.

On-the-job training for contingency activities and drills must include, but is not limited to, hands-on application of knowledge, skills, and abilities related to: (1) response team duties; (2) use of force; (3) tactical movement; (4) cover and concealment; (5) defensive positions; (6) fields-of-fire; (7) re-deployment; (8) communications (primary and alternate); (9) use of assigned equipment; (10) target sets; (11) table top drills; (12) command and control duties; (13) applicant's protective strategy.

The T&QP provides a comprehensive discussion of the applicant's approach to meeting the requirements for on-the-job training.

The staff reviewed the applicant's description in T&QP Section 3.2 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Sections VI.C.2(a) through (c) and is, therefore, acceptable.

#### Critical Task Matrix

The provisions of 10 CFR Part 73, Appendix B, Section VI.C.2(b) require, in part, that each individual who is assigned duties and responsibilities identified in the NRC-approved security plans, licensee protective strategy, and implementing procedures shall, before assignment, demonstrate proficiencies in implementing the knowledge, skills and abilities to perform assigned duties.

The T&QP includes a critical task matrix as T&QP Table 1. This matrix addresses the means through which each individual will demonstrate the required proficiencies. Tasks that individuals must perform are listed in RG 5.75.

The staff reviewed the applicant's description in T&QP Section 3.3 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.C.2(b) and is, therefore, acceptable.

#### Initial Training and Qualification Requirements

The provisions of 10 CFR Part 73, Appendix B, Sections VI.C.1(a) through (b) provide the requirements for duty training.

The provisions of 10 CFR Part 73, Appendix B, Section VI.D.1(a) provide the requirements for demonstration of qualification.

T&QP Section 3.4 details that individuals are trained and qualified prior to performing security-related duties within a security organization and must meet the minimum qualifying standards in T&QP Sections 3.4.1 and 3.4.2.

### Written Examination

The provisions of 10 CFR Part 73, Appendix B, Section VI.D.1(b)(1) included in the PSP provide that written exams must include those elements listed in the Commission-approved T&QP to demonstrate an acceptable understanding of assigned duties and responsibilities, and will include the recognition of potential tampering involving both safety and security equipment and systems.

### Hands on Performance Demonstration

The provisions of 10 CFR Part 73, Appendix B, Section VI.D.1(b)(2) require that armed and unarmed individuals shall demonstrate hands-on performance for assigned duties and responsibilities by performing a practical hands-on demonstration for required tasks. The hands-on demonstration must ensure that theory and associated learning objectives for each required task are considered and each individual demonstrates the knowledge, skills, and abilities required to effectively perform the task.

T&QP Sections 3.4.1 and 3.4.2 describe the measures that are implemented by the applicant that meet the requirements and as has otherwise been described in 10 CFR Part 73, Appendix B, Section VI.D.1(b)(2).

The staff reviewed the applicant's description in T&QP Sections 3.4, 3.4.1, and 3.4.2 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Sections VI.C.1 and D.1 and is, therefore, acceptable.

### Continuing Training and Qualification

The provisions of 10 CFR Part 73, Appendix B, Section VI.D.2 state, in part, that armed and unarmed individuals shall be re-qualified at least annually in accordance with the requirements of this appendix and the NRC-approved T&QP. The results of requalification must be documented by a qualified training instructor and attested by a security supervisor.

T&QP Section 3.5 provides discussion regarding the management of the requalification program to ensure that each individual is trained and qualified. In part, the applicant's plan provides that annual requalification may be completed up to 3 months before or 3 months after the scheduled date. However, the next annual training must be scheduled 12 months from the previously scheduled date rather than the date the training was actually completed.

The staff reviewed the applicant's description in T&QP Section 3.5 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.D.2 and is, therefore, acceptable.

### Annual Written Examination

The provisions of 10 CFR Part 73, Appendix B, Section VI.D.(b)(3) provide that armed individuals shall be administered an annual written exam that demonstrates the required knowledge, skills, and abilities to carry out assigned duties and responsibilities as an armed member of the security organization. The annual written exam must include those elements listed in the NRC-approved T&QP to demonstrate an acceptable understanding of assigned duties and responsibilities.

T&QP Section 3.5.1 provides that each individual will be tested, in part, with an annual written exam that, at a minimum, covers: the role of security personnel; use of deadly force; the requirements in 10 CFR 73.21; authority of private security personnel; power of arrest; search and seizure; offsite law enforcement response; tactics and tactical deployment and engagement.

The staff reviewed the applicant's description in T&QP Section 3.5.1 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.D.1.(3) and is, therefore, acceptable.

### Demonstration of Knowledge Skills and Abilities

The provisions of 10 CFR Part 73, Appendix B, Sections VI, A., B., C., D., (A.4, C.3(d), D.1(a), D.1(b)(2)) state, in part, that an individual must demonstrate required knowledge, skills and abilities, to carry out assigned duties and responsibilities.

T&QP Section 3.5.2 provides that all knowledge, skills and abilities will be demonstrated in accordance with a systematic approach to training (SAT) program as described in RG 5.75.

The staff reviewed the applicant's description in T&QP Section 3.5.2 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Sections VI.A, B, C, and D and is, therefore, acceptable.

### Weapons Training and Qualification

#### General Firearms Training

The provisions of 10 CFR Part 73, Appendix B, Section VI.E provide that armed members of the security organization shall be trained and qualified in accordance with the requirements of this appendix and the NRC-approved T&QP. Training must be conducted by certified firearms instructors who shall be recertified at least every 3 years. Applicants shall conduct annual firearms familiarization, and armed members of the security organization must participate in weapons range activities on a nominal 4 month periodicity.

T&QP Section 3.6.1 of the T&QP addresses the requirements in 10 CFR Part 73, Appendix B, Sections VI.E.1(d)(1) through (11) and includes the requirements for training in the use of deadly force and participation in weapons range activities on a nominal 4 month periodicity. Each armed member of the security organization is trained and qualified by a certified firearms instructor for the use and maintenance of each assigned weapon to include but not limited to, marksmanship, assembly, disassembly, cleaning, storage, handling, clearing, loading, unloading, and reloading, for each assigned weapon.

The staff reviewed the applicant's description in T&QP Section 3.6.1 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.E.1 and is, therefore, acceptable.

#### General Weapons Qualification

The provisions of 10 CFR Part 73, Appendix B, Section VI.F.1 Weapons Qualification and Requalification Program require that qualification firing must be accomplished in accordance with NRC requirements and the NRC-approved T&QP for assigned weapons. The results of weapons qualification and requalification must be documented and retained as a record.

T&QP Section 3.6.2 of the T&QP provides that all armed personnel are qualified and re-qualified with assigned weapons. All weapons qualification and re-qualification will be documented and retained as a record.

The staff reviewed the applicant's description in T&QP Section 3.6.2 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.F.1, and is, therefore, acceptable.

#### Tactical Weapons Qualification

The provisions of 10 CFR Part 73, Appendix B, Section VI.F.2 require that the applicant conduct tactical weapons qualification. The applicant T&QP must describe the firearms used, the firearms qualification program, and other tactical training required to implement the NRC-approved security plans, applicant protective strategy, and implementing procedures. Applicant-developed tactical qualification and requalification courses must describe the performance criteria needed to include the site specific conditions (such as lighting, elevation, fields-of-fire) under which assigned personnel shall be required to carry out their assigned duties.

T&QP Section 3.6.3 provides that a tactical qualification course of fire is used to assess armed security force personnel in tactical situations to ensure they are able to demonstrate required tactical knowledge, skills and abilities remain proficient.

The staff reviewed the applicant's description in T&QP Section 3.6.3 for the implementation of the site-specific physical protection program in accordance with NRC regulations and

NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.F.2 and is, therefore, acceptable.

#### Firearms Qualification Courses

The provisions of 10 CFR Part 73, Appendix B, Section VI.F.3 state, in part, that the applicant shall conduct the following qualification courses for each weapon used: (a) an annual daylight fire qualification course; and (b) an annual night fire qualification course.

#### Courses of Fire

The provisions of 10 CFR Part 73, Appendix B, Section VI.F.4 describe required courses of fire.

T&QP Section 3.6.4 provides a description of the firearms qualification scores for each courses of fire used to ensure armed members of the security organization are properly trained and qualified. Courses of fire are used individually for handguns, and semiautomatic rifles, and enhanced weapons.

The staff reviewed the applicant's description in T&QP Section 3.6.4 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.F.3, and 10 CFR Part 73, Appendix B, Section VI.F.4 and is, therefore, acceptable.

#### Firearms Requalification

The provisions of 10 CFR Part 73, Appendix B, Section VI.F.5 provide that armed members of the security organization shall be re-qualified for each assigned weapon at least annually in accordance with NRC requirements and the NRC-approved T&QP, and the results documented and retained as a record. Firearms requalification must be conducted using the courses of fire outlined in 10 CFR Part 73, Appendix B, Sections VI.F.2, VI.F.3, and VI.F.4.

T&QP Section 3.6.5 describes that armed members of the security organization will re-qualify at least annually with each weapon assigned, using the courses of fire provided in the T&QP.

The staff reviewed the applicant's description in T&QP Section 3.6.5 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.F.5 and is, therefore, acceptable.

#### Weapons, Personal Equipment and Maintenance

The provisions of 10 CFR Part 73, Appendix B, Section VI.G provide the requirements for weapons, personal equipment, and maintenance. These requirements provide that the applicant shall provide armed personnel with weapons that are capable of performing the

function stated in the NRC-approved security plans, applicant protective strategy, and implementing procedures. In addition, the applicant shall ensure that each individual is equipped or has ready access to all personal equipment or devices required for the effective implementation of the NRC-approved security plans, applicant protective strategy, and implementing procedures.

T&QP Section 3.7 describes that personnel are provided with weapons and personal equipment necessary to meet the plans and the protective strategy. The equipment provided is described in T&QP Section 9.0, and maintenance is performed as described in T&QP Section 20.0. The staff's review of T&QP Section 9, "Security Personnel Training," and T&QP Section 20, "Maintenance, Testing, and Calibration," is in Sections 13.6.4.1.9 and 13.6.4.1.20 of this report.

The staff reviewed the applicant's description in T&QP Section 3.7 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.G and is, therefore, acceptable.

#### Documentation

The provisions of 10 CFR Part 73, Appendix B, Section VI.H require that the applicant shall retain all reports, records, or other documentation required by this appendix in accordance with the requirements of 10 CFR 73.55(r). The applicant shall retain each individual's initial qualification record for 3 years after termination of the individual's employment and shall retain each re-qualification record for 3 years after it is superseded. The applicant shall document data and test results from each individual's suitability, physical, and psychological qualification and shall retain this documentation as a record for 3 years from the date of obtaining and recording these results.

T&QP Section 3.8 provides that records are retained in accordance with T&QP Section 22 "Records." The T&QP also describes how the applicant will retain each individual's initial qualification record for 3 years after termination of the individual's employment and shall retain each re-qualification record for 3 years after it is superseded.

The staff reviewed the applicant's description in T&QP Section 3.8 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.H and is, therefore, acceptable.



#### **13.6.4.2.4 Performance Evaluation Program**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.2.4:

#### **13.6.4.2.4 Performance Evaluation Program**

##### 10 CFR Part 73, Appendix B, Section VI.C.3, Performance Evaluation Program

- (a) *Applicants shall develop, implement and maintain a performance evaluation program that is documented in procedures, which describes how the applicant will demonstrate and assess the effectiveness of their onsite physical protection program and protective strategy, including the capability of the armed response team to carry out their assigned duties and responsibilities during safeguards contingency events. The performance evaluation program and procedures shall be referenced in the applicant's T&QP.*
- (b) *The performance evaluation program shall include procedures for the conduct of tactical response drills and force-on-force exercises designed to demonstrate and assess the effectiveness of the applicant's physical protection program, protective strategy and contingency event response by all individuals with responsibilities for implementing the SCP. The performance evaluation program must be designed to ensure, in part, that each member of each shift who is assigned duties and responsibilities required to implement the SCP and applicant protective strategy participates in at least one tactical response drill on a quarterly basis and one force-on-force exercise on an annual basis.*

*Section 4 of the T&QP details the performance evaluation program consistent with the requirements of 10 CFR Part 73, Appendix B, Sections VI.C.3(a) through (m). Additional details of the performance evaluation program are described in the facility procedures.*

*The NRC staff has reviewed the applicant's description in T&QP Section 4 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.C.3 and is, therefore, acceptable.*

#### **13.6.4.2.5 Definitions**

*The provisions of 10 CFR Part 73, Appendix B, Section VI.J state, in part, that terms defined in 10 CFR Part 50, 10 CFR Part 70 and 10 CFR Part 73 have the same meaning when used in this appendix. Definitions are found in the PSP, Appendix A, "Glossary of Terms and Acronyms." [On the basis of its review, the NRC staff finds that the definitions sections of the PSP meet the requirements of 10 CFR 73.2, and are, therefore, acceptable.]*

*Included in this section of the T&QP is the Critical Task Matrix, which is considered SGI and has not been included in this SER.*

*The NRC staff has reviewed the applicant's description in T&QP of the Critical Task Matrix tasks for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the T&QP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, and are, therefore, acceptable.*

#### **13.6.4.2.6 Conclusion on the Training and Qualification Plan**

*On the basis of the NRC staff's review described in Sections 13.6.4.2.1 through 13.6.4.2.5 of this SER, the T&QP meets the requirements of 10 CFR Part 73, Appendix B. The target sets, Target Set Analysis and Site Protective Strategy are in the facility implementing procedures, which were not subject to NRC staff review as part of this COL application and are, therefore, subject to future NRC inspection in accordance with 10 CFR 73.55(c)(7)(iv) and 10 CFR Part 73, Appendix C, Section II.B.5(iii). The NRC staff concludes that complete and procedurally correct implementation will provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety.*

#### **13.6.4.3 Appendix C Safeguards Contingency Plan**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.3.1:

##### **13.6.4.3.1 Background Information**

*This category of information identifies the perceived dangers and incidents that the plan addresses and a general description of how the response is organized.*

##### *Purpose of the Safeguards Contingency Plan*

*The provisions of 10 CFR Part 73, Appendix C, Section II.B.1.b state that the applicant should discuss general goals, objectives and operational concepts underlying the implementation of the SCP.*

*Section 1.1 of the SCP describes the purpose and goals of the SCP, including guidance to security and management for contingency events.*

##### *Scope of the Safeguards Contingency Plan*

*The provisions of 10 CFR Part 73, Appendix C, Section II.B.1.c delineate the types of incidents that should be covered by the applicant in the SCP, how the onsite response effort is organized and coordinated to effectively respond to a safeguards contingency event and how the onsite response for safeguards*

*contingency events has been integrated into other site emergency response procedures.*

*Section 1.2 of the SCP details the scope of the SCP to analyze and define decisions and actions of security force personnel, as well as facility operations personnel, for achieving and maintaining safe shutdown.*

#### Perceived Danger

*The provisions of 10 CFR Part 73, Appendix C, Section II.B.1 require that, consistent with the DBT specified in 10 CFR 73.1(a)(1), the applicant shall identify and describe the perceived dangers, threats, and incidents against which the SCP is designed to protect.*

*Section 1.3 of the SCP outlines the threats used to design the physical protection systems.*

*The applicant adequately addresses perceived danger, provides a purpose of the plan, and describes the scope of the plan.*

#### Definitions

*Section 1.4 of the SCP describes that a list of terms and their definitions used in describing operational and technical aspects of the approved SCP as required by 10 CFR Part 73, Appendix C, Section II.B.1.d is found in Appendix A of the PSP.*

*The NRC staff has reviewed the applicant's description in SCP Sections 1, 1.1, 1.2, 1.3, and 1.4 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the SCP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the SCP meets the requirements of 10 CFR Part 73, Appendix C, Section II.B and are, therefore, acceptable.*

#### **13.6.4.3.2 Generic Planning Base**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.3.2:

*As required in 10 CFR Part 73, Appendix C, Section II.B.2, this section of the plan defines the criteria for initiation and termination of responses to security events, to include the specific decisions, actions, and supporting information needed to respond to each type of incident covered by the approved SCP.*

#### Situations Not Covered by the Contingency Plan

*Section 2.1 of the SCP details the general types of conditions that are not covered in the plan.*

#### Situations Covered by the Contingency Plan

*The provisions of 10 CFR Part 73, Appendix C, Section II.B.2.a require, in part, that the plan identify those events that will be used for signaling the beginning or aggravation of a safeguards contingency according to how they are perceived initially by the applicant's personnel. Applicants shall ensure detection of unauthorized activities and shall respond to all alarms or other indications signaling a security event, such as penetration of a PA, vital area, or unauthorized barrier penetration (vehicle or personnel); tampering, bomb threats, or other threat warnings—either verbal, such as telephoned threats, or implied, such as escalating civil disturbances.*

*The provisions of 10 CFR Part 73, Appendix C, Section II.B.2.b require, in part, that the plan define the specific objective to be accomplished relative to each identified safeguards contingency event. The objective may be to obtain a level of awareness about the nature and severity of the safeguards contingency to prepare for further responses; to establish a level of response preparedness; or to successfully nullify or reduce any adverse safeguards consequences arising from the contingency.*

*The provisions of 10 CFR Part 73, Appendix C, Section II.B.2.c require, in part, that the applicant identify the data, criteria, procedures, mechanisms and logistical support necessary to achieve the objectives identified.*

*Section 2.2 of the SCP describes in detail the specific situations covered by the SCP, including objectives and information required for each.*

*The NRC staff has reviewed the applicant's description in SCP Sections 2, 2.1 and 2.2 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the SCP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the SCP meets the requirements of 10 CFR Part 73, Appendix C Section II.B.2 and are, therefore, acceptable.*

#### **13.6.4.3.3 Responsibility Matrix**

The provisions of 10 CFR Part 73, Appendix C, Section II.B.4 state that this category of information consists of the detailed identification of responsibilities and specific actions to be taken by the applicant's organizations and/or personnel in response to safeguards contingency events. To achieve this result the applicant must address the following.

- The provisions of 10 CFR Part 73, Appendix C, Section II.B.4.a require, in part, that the applicant develop site procedures that consist of matrixes detailing the organization and/or personnel responsible for decisions and actions associated with specific responses to safeguards contingency events. The responsibility matrix and procedures must be referenced in the applicant's SCP.
- The provisions of 10 CFR Part 73, Appendix C, Section II.B.4.b require, in part, that the responsibility matrix procedures shall be based on the events outlined in the applicant's generic planning base and include specific objectives to be accomplished, description of

responsibilities for decisions and actions for each event, and overall description of response actions each responding entity.

- The provisions of 10 CFR Part 73, Appendix C, Section II.B.4.c require, in part, that responsibilities are to be assigned in a manner that precludes conflict of duties and responsibilities that would prevent the execution of the SCP and emergency response plans.
- The provisions of 10 CFR Part 73, Appendix C, Section II.B.4.d require, in part, that the applicant ensure that predetermined actions can be completed under the postulated conditions.

SCP Section 3 includes the responsibility matrix, as required by 10 CFR Part 73, Appendix C, Section II.B.4.a. The responsibility matrix integrates the response capabilities of the security organization (described in SCP Section 4) with the background information relating to decision/actions and organizational structure (described in SCP Section 1) as required by 10 CFR Part 73, Appendix C, Section II.B.4.a. The responsibility matrix provides an overall description of the response actions and their interrelationships, as required by 10 CFR Part 73, Appendix C, Section II.B.4.a. Responsibilities and actions have been predetermined to the maximum extent possible and assigned to specific entities to preclude conflicts that would interfere with or prevent the implementation of the SCP or the ability to protect against the DBT of radiological sabotage as required by 10 CFR Part 73, Appendix C, Section II.B.4.a. In part, the applicant shall ensure that predetermined actions can be completed under the postulated conditions as required by 10 CFR Part 73, Appendix C, Section II.B.4.d.

The staff reviewed the applicant's description in SCP Section 3 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the SCP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the SCP meets the requirements of 10 CFR Part 73, Appendix C, Section II.B.4 and is, therefore, acceptable.

#### **13.6.4.3.4 Licensee Planning Base**

The provisions of 10 CFR Part 73, Appendix C, Section II.B.3 require, in part, that the applicant planning base include factors affecting the SCP specific for each facility.

#### Licensee Organization

The provisions of 10 CFR Part 73, Appendix C, Section II.B.3.a require in part, that the SCP describe the organization's chain of command and delegation of authority during safeguards contingency events, to include a general description of how command and control functions will be coordinated and maintained.

#### Duties/Communication Protocols

SCP Section 4.1.1 details the duties and communications protocols of each member of the security organization responsible for implementing any portion of the applicant's protective strategy, which will allow for coordination and maintenance of command and control functions as required by 10 CFR Part 73, Appendix C, Section II.B.3.a.

### Security Chain of Command/Delegation of Authority

SCP Section 4.1.2 P describes in detail the chain of command and delegation of authority during normal operations is discussed in the PSP. The chain of command and delegation of authority during contingency events is also described in the responsibility matrix portions of the SCP. The chain of command and delegation of authority during normal operations is discussed in the PSP. Accordingly, the staff concludes that the applicant has described the chain of command and delegation of authority during contingency events as required by 10 CFR Part 73, Appendix C, Section II.B.3.a.

### Physical Layout

The provisions of 10 CFR Part 73, Appendix C, Section II.B.3(b) require, in part, that the SCP include a site map depicting the physical structures located on the site, including onsite independent spent fuel storage installations, and a description of the structures depicted on the map. Plans must also include a description and map of the site in relation to nearby towns, transportation routes (e.g., rail, water, and roads), pipelines, airports, hazardous material facilities, and pertinent environmental features that may have an effect upon coordination of response activities. Descriptions and maps must indicate main and alternate entry routes for law enforcement or other offsite response and support agencies and the location for marshaling and coordinating response activities.

SCP Section 4.2 references PSP Section 1.1 for layouts of the OCA, PA, vital areas, site maps, and descriptions of site features. The staff confirmed that these layouts, maps, and descriptions include the detailed information required by 10 CFR Part 73, Appendix C, Section II.B.3.b and described above.

### Safeguards Systems

The provisions of 10 CFR Part 73, Appendix C, Section II.B.3.c require, in part, that the SCP include a description of the physical security systems that support and influence how the applicant will respond to an event in accordance with the DBT described in 10 CFR 73.1(a). The description must begin with onsite physical protection measures implemented at the outermost perimeter, and must move inward through those measures implemented to protect target set equipment.

SCP Section 4.3 describes that safeguards systems are described in PSP Sections 9, 11, 12, 13, 15 and 16, and in facility implementing procedures/documents. SCP Section 8 describes how physical security systems will be used to respond to a threat at the site, as required by 10 CFR Part 73, Appendix C, Section II.B.3.c. As further required by 10 CFR Part 73, Appendix C, Section II.B.3.c, the SCP description begins with physical protection measures proposed at the outermost facility perimeter, and moves inward through those measures proposed protect target set equipment.

### Law Enforcement Assistance

The provisions of 10 CFR Part 73, Appendix C, Section II.B.3.d require, in part, that the applicant provide a listing of available law enforcement agencies and a general description of their response capabilities and their criteria for response and a discussion of working agreements or arrangements for communicating with these agencies.

SCP Section 4.4 states in detail the role of LLEA in the site protective strategy. In accordance with 10 CFR Part 73, Appendix C, Section II.B.3.d, these details include LLEA response capabilities, LLEA criteria for response, and the working agreements or arrangements for communicating with these LLEAs. Additional details regarding LLEA are included in PSP Section 8 and SCP Section 5.6.

#### Policy Constraints and Assumptions

The provisions of 10 CFR Part 73, Appendix C, Section II.B.3.e require, in part, that the SCP include a discussion of State laws, local ordinances, and company policies and practices that govern applicant response to incidents and must include, but is not limited to, the following: (1) use of deadly force; (2) recall of off-duty employees; (3) site jurisdictional boundaries; and (4) use of enhanced weapons, if applicable.

SCP Section 4.5 details the site security policies, including the use of deadly force provisions for the recall of off-duty employees, site jurisdictional boundaries, and authority to request offsite assistance, as required by 10 CFR Part 73, Appendix C, Section II.B.3.e.

#### Administrative and Logistical Considerations

The provisions of 10 CFR Part 73, Appendix C, Section II.B.3.f require, in part, that the applicant provide descriptions of applicant practices, which influence how the security organization responds to a safeguards contingency event to include, but is not limited to, a description of the procedures that will be used for ensuring that equipment needed to facilitate response will be readily accessible, in good working order, and in sufficient supply.

SCP Section 4.6 outlines administrative duties of the Security Manager, Security Shift Team Leader, facility procedures and administrative forms.

The staff reviewed the applicant's description in SCP Sections 4, 4.1, 4.1.1, 4.1.2, and 4.2 through 4.6 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the SCP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the SCP meets the requirements of 10 CFR Part 73, Appendix C, Section II.B.3 and is, therefore, acceptable.

#### **13.6.4.3.5 Response Capabilities**

This section outlines the response by the applicant to threats to the facility. As set forth below, the applicant described in detail how they protect against the DBT with onsite and offsite organizations, consistent with the regulations in 10 CFR 50.54(p)(1) and (hh)(1), 10 CFR 73.55(k), 10 CFR Part 73, Appendix B, Section VI and 10 CFR Part 73, Appendix C, Section II.B.3. In addition, 10 CFR Part 73, Appendix C, "Introduction," states, in part, it is important to note that an applicant's SCP is intended to be complementary to any emergency plans developed pursuant to 10 CFR Part 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities"; and 10 CFR 52.79, "Contents of Applications; Technical Information and Final Safety Analysis Report."

### Response to Threats

SCP Section 5.1 describes how the protective strategy is designed to defend the facility against all aspects of the DBT. Each organization has defined roles and responsibilities.

### Armed Response Team

SCP Section 5.2 notes individuals from the Responsibility Matrix and their role in the site protective strategy. This section also notes the minimum number of individuals and their contingency equipment for implementation of the protective strategy. The applicant described the armed response team consistent with 10 CFR 73.55(k)(4), (5), (6), and (7); 10 CFR Part 73, Appendix B, Section VI; and 10 CFR Part 73, Appendix C, Section II.B.3.

### Supplemental Security Officer

SCP Section 5.3 describes in detail the role of supplemental security officers in the site protective strategy. The applicant described the use of supplemental security officers, consistent with the requirements in 10 CFR 73.55(k)(4).

### Facility Operations Response

SCP Section 5.4 details the role of operations personnel in the applicant's protective strategy, including responsibilities, strategies, and conditions for operator actions as discussed in 10 CFR 50.54(hh).

### Emergency Plan Response

SCP Section 5.5 notes the integration of the Emergency Plan with the site's protective strategy, and gives some examples of how the Emergency Plan can influence the protective strategy as discussed in 10 CFR 73.55(b)(11).

### Local Law Enforcement Agencies (LLEA)

SCP Section 5.6 documents the current agreements with applicable LLEA, and therefore meets the requirements of 10 CFR 73.55(k)(9) and 10 CFR Part 73, Appendix C, Section II.B.3.d and lists the LLEAs that will respond to the site as a part of the protective strategy. Details on the response of the LLEA are located in PSP Section 8.

### State Response Agencies

SCP Section 5.7 documents the current agreements with applicable LLEA and, therefore, meets the requirements of 10 CFR 73.55(k)(9) and 10 CFR Part 73, Appendix C, Section II.B.3.d and lists the State response agencies that will respond to the site as a part of the protective strategy. Furthermore, SCP Section 5.7 provides a general description of the LLEA response capability and meets the corresponding portions of 10 CFR 73.55(k)(9).

### Federal Response Agencies

SCP Section 5.8 documents the current agreements with applicable LLEA and, therefore, meets the requirements of 10 CFR 73.55(k)(9) and 10 CFR Part 73, Appendix C, Section II.B.3.d and



lists the Federal response agencies that will respond to the site as a part of the protective strategy. Furthermore, SCP Section 5.7 provides a general description of the LLEA response capability and meets the corresponding portions of 10 CFR 73.55(k)(9).

#### Response to ISFSI Events

SCP Section 5.9 meets the requirements of 10 CFR 73.55(k)(9) and 10 CFR Part 73, Appendix C, Section II.B.3.d describes the Response Requirements for ISFSI as a part of the protective strategy.

The staff reviewed the applicant's description in SCP Sections 5.0 through 5.9 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the SCP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the SCP meets the requirements of 10 CFR 50.54(p)(1) and (hh); 10 CFR 73.55(k); 10 CFR Part 73, Appendix B, Section VI; and 10 CFR Part 73, Appendix C, Section II.B.3 and is, therefore, acceptable. In addition, Appendix C, "Introduction," states, in part, that it is important to note that an applicant's SCP is intended to be complementary to any emergency plans developed pursuant to 10 CFR Part 50, Appendix E and 10 CFR 52.17.

#### **13.6.4.3.6 Defense in Depth**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.3.6:

##### **13.6.4.3.6 Defense-in-Depth**

*Section 6 of the SCP lists site physical security characteristics, programs, and the strategy elements that illustrate the defense-in-depth nature of the site protective strategy as required in 10 CFR 73.55(b)(3).*

*The NRC staff has reviewed the applicant's description in SCP Section 6 for the implementation of the site-specific physical protection program in accordance with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the SCP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the SCP meets the requirements of 10 CFR 73.55(b)(3) and is, therefore, acceptable.*

#### **13.6.4.3.7 Primary Security Functions**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.3.7:

*Section 7 of the SCP details the primary security functions of the site, and their roles in the site protective strategy. It also notes the development of target sets, and their function in the development of the site's protective strategy.*

*The NRC staff has reviewed the applicant's description in SCP Section 7 for the implementation of the site-specific physical protection program in accordance*

*with Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the SCP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the SCP meets the requirements of 10 CFR 10 CFR 73.55(b) and is, therefore, acceptable.*

#### **13.6.4.3.8 Protective Strategy**

The provisions of 10 CFR Part 73, Appendix C, Section II.B.3.c(v) require that applicants develop, implement and maintain a written protective strategy that shall: (1) be designed to meet the performance objectives of 10 CFR 73.55(a) through (k); (2) identify predetermined actions, areas of responsibilities, and timelines for the deployment of armed personnel; (3) include measures that limit the exposure of security personnel to possible attack; (4) include a description of the physical security systems and measures that provide defense-in-depth; (5) describe the specific structure and responsibilities of the armed response organization; and (6) provide a command and control structure.

SCP Section 8 describes the site protective strategy.

The staff reviewed the applicant's description in SCP Section 8 for the implementation of the site-specific physical protection program in accordance with NRC regulations and NUREG-0800 acceptance criteria. Since the applicant's description in the SCP is consistent with the acceptance criteria in NUREG-0800, Section 13.6.1, the staff finds that the description provided in the SCP meets the requirements of 10 CFR Part 73, Appendix C, Section II.B.3.c(v) and is, therefore, acceptable.

#### **13.6.4.3.9 Conclusions on the Safeguards Contingency Plan**

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.4.3.9:

##### **13.6.4.3.9 Conclusions on the Safeguards Contingency Plan**

*On the basis of the NRC staff's review described in Sections 13.6.4.3.1 through 13.6.4.3.8 of this SER, the SCP meets the requirements of 10 CFR Part 73, Appendix C, in accordance with the DBT of radiological sabotage as stated in 10 CFR 73.1. The target sets, Target Set Analysis and Site Protective Strategy are in the facility implementing procedures, which were not subject to NRC staff review as part of this COL application and are, therefore, subject to future NRC inspection in accordance with 10 CFR 73.55(c)(7)(iv) and 10 CFR Part 73, Appendix C, Section II.B.5(iii). The NRC staff concludes that complete and procedurally correct implementation of the SCP will provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety.*

#### **13.6.5 Post Combined License Activities**

For the reasons discussed in the technical evaluation section above, the staff finds the following license condition acceptable:

- License Condition (13-12) – No later than 12 months after issuance of the COL, the licensee shall submit to the Director of NRO, a schedule that supports planning for and conduct of NRC inspection of the physical security programs. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until the physical security program has been fully implemented.

### **13.6.6 Conclusion**

The staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant addressed the required information relating to physical security, and there is no outstanding information expected to be addressed in the WLS COL FSAR related to this section. The results of the staff's technical evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

The staff concludes that the relevant information presented in the WLS COL FSAR is acceptable based on the applicable regulations specified in Section 13.6.4 of this report. The staff based its conclusion on the following:

- STD COL 13.6-1, as related to the physical protection program, is acceptable based on the following discussion. The staff's review of the WLS Units 1 and 2 PSP, T&QP, and SCP focused on ensuring the necessary programmatic elements are included in these plans to provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety.

The staff determined that these plans include the necessary programmatic elements that, when effectively implemented, will provide the required high assurance. The burden to effectively implement these plans remains with the applicant. Effective implementation is dependent on the procedures and practices the applicant develops to satisfy the programmatic elements of its PSP, T&QP, and SCP. The target set analysis and site protective strategy are in facility implementing procedures which were not subject to staff review as part of this COL application and are, therefore, subject to future NRC inspection in accordance with 10 CFR 73.55(c)(7)(iv) and 10 CFR Part 73, Appendix C, Section II.B.5(iii). As provided by the applicant's PSP Section 3, a performance evaluation program will be implemented that periodically tests and evaluates the effectiveness of the overall protective strategy. This program provides that deficiencies be corrected. In addition, NRC inspectors will conduct periodic force-on-force exercises that will test the effectiveness of the applicant's protective strategy. Based on the results of the applicant's own testing and evaluation, NRC baseline inspections and force-on-force exercises, enhancements to the applicant's PSP, T&QP, and SCP may be necessary to ensure the overall protective strategy can be effectively implemented. As such, the staff approval of the applicant's PSP, T&QP, and SCP is limited to the programmatic elements necessary to provide the required high assurance as stated above. Should deficiencies be identified with the programmatic elements of these plans as a result of the periodic applicant or NRC conducted drills or exercises that test the effectiveness of the overall protective strategy, the applicant shall correct the plans to address these deficiencies in a timely manner and the applicant should notify the NRC of these plan changes in accordance with the requirements of

10 CFR 50.54(p) or 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit."

The COL applicant's security plan information is withheld from public disclosure in accordance with the provisions of 10 CFR 73.21.

### **13.6.A Site-Specific ITAAC for Physical Security**

This section does not exist in either the AP-1000 DCD or the WLS COL FSAR. The staff has added this section to the SER in order to address issues regarding the applicant's site-specific ITAAC for physical security.

#### **13.6.A.1 Introduction**

WLS COLA Part 10, "Proposed License Conditions and ITAAC," Appendix B, "Inspections, Tests, Analysis, and Acceptance Criteria" describes the license conditions for the plant's physical protection systems or features to provide physical protection of the site-specific protective strategy and elements of a site security program. The COL application incorporates by reference AP1000 DCD Tier 1 Section 2.6.9, including plant layout and configurations of barriers, and lists ITAAC related to the site-specific design for achieving detection, assessment, communications, delay, and response for physical protection against potential acts of radiological sabotage and theft of special nuclear material.

The design bases or supporting security analyses and assumptions related to the design descriptions of security-related features incorporated by reference from the AP1000 DCD are in TR-94, APP-GW-GLR-066. Descriptions of site-specific security structures, programs and contingency measures are in the WLS PSP, which includes the site PSP, T&QP, and the SCP.

#### **13.6.A.2 Summary of Application**

WLS COL FSAR, Revision 11, Section 14.3 incorporates by reference AP1000 DCD, Revision 19, Section 14.3. WLS COLA, Part 10, incorporates by reference AP1000 DCD Tier 1, Section 2.6.9, which includes the physical security-inspections, tests, analyses, and acceptance criteria (PS-ITAAC) that are within the scope of the AP1000 standard design. Site-specific PS-ITAAC that are outside the scope of AP1000 DCD Tier 1, Section 2.6.9 are provided in WLS COLA Part 10, Appendix B, Table 2.6.9-2.

In addition, in WLS COL FSAR Section 14.3, the applicant provided the following:

#### **Supplemental Information**

- STD SUP 14.3-1

The applicant provided supplemental information related to physical security in STD SUP 14.3-1 in WLS COL FSAR Section 14.3.2.3.2.

License Condition

- Part 10, License Condition 1

The applicant provided a license condition in WLS COLA, Revision 9, Part 10, which will incorporate the ITAAC identified in the tables in WLS COLA, Part 10, Appendix B. The staff evaluated this license condition in Chapter 1 of this report.

**13.6.A.3 Regulatory Basis**

The regulatory basis of the information incorporated by reference is addressed in NUREG-1793 and its supplements.

In addition, the acceptance criteria associated with the relevant requirements of NRC regulations are given in 10 CFR Part 73. The regulation includes specific security and performance requirements that, when adequately implemented, are designed to protect nuclear power reactors against acts of radiological sabotage, prevent the theft or diversion of special nuclear material, and protect safeguards information against unauthorized release.

The provisions of 10 CFR 52.80, Subpart A require that information submitted for a COL include the proposed ITAAC that the licensee shall perform, and the acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the ITAAC are met, the facility has been constructed and will operate in conformity with the COL, the provisions of the Atomic Energy Act of 1954, as amended, and NRC regulations.

The WLS Units 1 and 2 design descriptions, commitments, and acceptance criteria for the security features, including the plant's layout and determination of vital equipment and areas, for a certified design are based on physical protection systems or hardware provided for meeting requirements of the following NRC regulations:

- 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities" 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants" 10 CFR 73.1(a)(1), "Radiological Sabotage"
- 10 CFR 73.55, "Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage," Appendix B, "General Criteria for Security Personnel"; Appendix C, "Nuclear Power Plant Safeguards Contingency Plans"; Appendix G, "Reportable Safeguards Events"; and Appendix H, "Weapons Qualification Criteria"
- 10 CFR Part 74, "Material control and accounting of special nuclear material"
- 10 CFR 100.21(f), "Non-seismic siting criteria"

Regulatory requirements and acceptance criteria related to physical protection systems or hardware are identified in NUREG-0800, Section 14.3.12.

Regulatory guidance documents that are applicable to this evaluation are:

- RG 1.91, "Evaluations of Explosions Postulated to Occur at Transportation Routes Near Nuclear Power Plants," Revision 1
- RG 1.206, "Combined License Applications for Nuclear Power Plants"
- RG 4.7, "General Site Suitability Criteria for Nuclear Power Stations," Revision 2
- RG 5.7, "Entry/Exit Control for Protected Areas, Vital Areas, and Material Access Areas," Revision 1
- RG 5.12, "General Use of Locks in the Protection and Control of Facilities and Special Nuclear Materials"
- RG 5.44, "Perimeter Intrusion Alarm Systems," Revision 3
- RG 5.62, "Reporting of Safeguards Events," Revision 1
- RG 5.65, "Vital Area Access Controls, Protection of Physical Protection System Equipment and Key and Lock Controls"
- RG 5.66, "Access Authorization Program for Nuclear Power Plants"
- Information Notice 86-83, "Underground Pathways into Protected Areas, Vital Areas, and Controlled Access Areas," September 19, 1986
- Regulatory Information Summary (RIS) 2005-04, "Guidance on the Protection of Unattended Openings that Intersect a Security Boundary or Area," April 14, 2005. (Exempt from public disclosure in accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding.")

The COL applicant is required to describe commitments for establishing and maintaining a physical protection system (engineered and administrative controls), organization, programs, and procedures for implementing a site-specific strategy that, if adequately implemented, provide high assurance for protection of the plant against the DBT. The site-specific physical protection system described must be reliable and available and implement the concept of defense-in-depth protection in order to provide a high assurance of protection. The security operational programs and the physical protection system are required to meet the specific performance requirements of 10 CFR Part 26, "Fitness for Duty Programs"; 10 CFR 73.54, "Protection of Digital Computer and Communication Systems and Networks"; 10 CFR 73.55; 10 CFR 73.56, "Personnel access authorization requirements for nuclear power plants"; 10 CFR 73.57, "Requirements for criminal history records checks of individuals granted unescorted access to a nuclear power facility or access to Safeguards Information"; and 10 CFR 73.58. Physical protection hardware within the scope of the AP1000 design is addressed in the AP1000 DCD.

#### **13.6.A.4      *Technical Evaluation***

The staff reviewed WLS COL FSAR Section 14.3 and checked the referenced DCD to ensure that the combination of the DCD and the COL application represents the complete scope of

information relating to this review topic.<sup>1</sup> The staff's review confirmed that the information in the application and incorporated by reference addresses the required information relating to ITAAC for physical security. The results of the staff's evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

Section 1.2.3 of this report provides a discussion of the strategy used by the staff to perform one technical review for each standard issue outside the scope of the DC and use this review to evaluate subsequent COL applications. To ensure that the staff's findings on standard content that were documented in the SER for the reference COL application (VEGP Units 3 and 4) were equally applicable to the WLS Units 1 and 2 COL application, the staff undertook the following reviews:

- The staff compared the VEGP COL FSAR, Revision 5 to the WLS COL FSAR. In performing this comparison, the staff considered changes made to the WLS COL FSAR (and other parts of the COL application, as applicable) resulting from responses to RAIs.
- The staff confirmed that all responses to RAIs identified in the corresponding standard content evaluation were endorsed.
- The staff verified that the site-specific differences were not relevant.

The staff completed its review and concluded that the evaluation performed for the standard content is directly applicable to the WLS COL application. This standard content material is identified in this report by use of italicized, double-indented formatting. The staff confirmed that the July 6, 2011, WLS Letter No. 097 contained the same technical information provided in the June 11, 2010, VEGP letter discussed in the standard content material below.

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.6.A.4:

*Supplemental Information*

- *STD SUP 14.3-1*

*STD SUP 14.3-1 adds the following after DCD Section 14.3.2.2 as new Section 14.3.2.3.2:*

*Generic PS-ITAAC have been developed in a coordinated effort between the NRC and the Nuclear Energy Institute (NEI) as outlined in Appendix C.II.1-C of Regulatory Guide 1.206. These generic ITAAC have been tailored to the AP1000 design and site-specific security requirements.*

*In Part 10, Appendix B of the VEGP Units 3 and 4 COL application, SNC describes the ITAAC for the plant's physical protection systems or features to provide physical protection of the site-specific protective strategy and elements of a site security program. The COL application incorporates by reference Tier 1 Section 2.6.9 of the AP1000 DCD, including plant layout and configurations of barriers, and listed ITAAC related to the site-specific design for achieving detection, assessment, communications, delay, and response for physical*

*protection against potential acts of radiological sabotage and theft of special nuclear material. DCD Tier 1 Section 2.6.9 includes the physical security ITAAC that are in the scope of the AP1000 standard design. Site-specific physical security ITAAC that are outside the scope of AP1000 DCD Tier 1 Section 2.6.9 are provided in Table 2.6.9-2 of Appendix B to Part 10 of the VEGP COL application.*

*The NRC staff's evaluation of the PS-ITAAC (STD SUP 14.2-1) is documented in the Sections 13.6.A.4.1 through 13.6.A.4.3 of this SER.*

#### **13.6.A.4.1 Detection and Assessment Hardware**

*The applicant submitted the following ITAAC for detection and assessment hardware in their letter dated June 11, 2010, "Response to Request for Additional Information Letter No. 047, Supplement 2, Physical Security Inspections, Tests, Analyses, and Acceptance Criteria," This letter was used to complete the evaluation below.*

1. *The external walls, doors, ceiling, and floors in the location within which the last access control function for access to the protected area is performed are bullet resistant to at least Underwriters Laboratory Ballistic Standard 752, Level 4. (Item 6 in Appendix A to Section 14.3.12 of NUREG-0800.)*
2. *Physical barriers for the protected area perimeter are not part of vital area barriers. (Item 2.a in Appendix A to Section 14.3.12 of NUREG-0800.)*
3.
  - a) *Isolation zones exist in outdoor areas adjacent to the physical barrier at the perimeter of the protected area that allows 20 feet of observation on either side of the barrier. (Item 3.a in Appendix A to Section 14.3.12 of NUREG-0800.)*
  - b) *Where permanent buildings do not allow a 20-foot observation distance on the inside of the protected area, the building walls are immediately adjacent to, or an integral part of, the protected area barrier. (Item 3.c in Appendix A to Section 14.3.12 of NUREG-0800.) The isolation zones are monitored with intrusion detection equipment that provides the capability to detect and assess unauthorized persons. (Item 3.b in Appendix A to Section 14.3.12 of NUREG-0800.)*
4. *The intrusion detection and assessment equipment at the protected area perimeter:*
  - a) *Detects penetration or attempted penetration of the protected area barrier and concurrently alarms in both the Central Alarm Station and Secondary Alarm Station. (Item 4.a in Appendix A to Section 14.3.12 of NUREG-0800.)*



- b) *The intrusion detection and assessment equipment at the protected area perimeter remains operable from an uninterruptible power supply in the event of the loss of normal power. (Item 4.c in Appendix A to Section 14.3.12 of NUREG-0800.)*
- 6. *An access control system with numbered picture badges is installed for use by individuals who are authorized access to protected areas without escort. (Item 9 in Appendix A to Section 14.3.12 of NUREG-0800.)*
- 8.
  - a) *Penetrations through the protected area barrier are secured and monitored. (Item 2.b in Appendix A to Section 14.3.12 of NUREG-0800.)*
  - b) *Unattended openings (such as underground pathways) that intersect the protected area boundary or vital area boundary will be protected by a physical barrier and monitored by intrusion detection equipment or provided surveillance at a frequency sufficient to detect exploitation. (Item 2.c in Appendix A to Section 14.3.12 of NUREG-0800.)*

*On the basis of its review the NRC staff determined that the applicant has adequately revised Table 2.6.9-2 for Part 10 to the VEGP COL application PS-ITAAC items 2(a), 2(b), 2 (c), 3(a), 3(b), 3(c), 4(a), 4(c), 6(partially), and 9 identified in Appendix A to Section 14.3.12 of NUREG-0800.*

*The VEGP COL application references the AP1000 DCD, which addressed NUREG-0800, Section 14.3.12 PS-ITAAC 4(b), 5, 6 (partially), 10, 11(a), 11(b), 11(c) and 14. The staff has determined that PS-ITAAC 6, described in NUREG-0800, Section 14.3.12 has been fully addressed between the VEGP submission and the AP1000 DCD.*

*In a supplemental response to RAI 14.3.12-1, the applicant stated:*

*The information contained in SRP ITAAC number 11(d) is redundant to existing ITAAC in the AP1000 Design Certification Document (DCD). AP1000 DCD security ITAAC numbers 1, 4, 5(a), 5(b), 5(c), 13(a), 13(b), 13(c), and 15(b) demonstrate that the central and secondary alarm stations are equal and redundant, by being constructed, located, protected, and equipped to the standards for the central alarm station.*

*In RAI SRP 14.3.12-NSIR-7, Revision 1, Westinghouse stated:*

*No corresponding ITAAC has been provided for SRP 14.3.12 ITAAC number 11(d). The information contained in SRP ITAAC number 11(d) is redundant to existing ITAACs. AP1000 security ITAAC numbers 1, 4, 5(a), 5(b), 5(c), 13, and 15(b) demonstrate that the central and secondary alarm stations are constructed, located, protected, and equipped to the standards for the central alarm station.*

*On the basis of its review, the NRC staff determined that the applicant has adequately shown that NUREG-0800, Section 14.3.12 detection and assessment hardware ITAAC 11(d) is addressed.*

#### **13.6.A.4.2 Delay or Barrier Design**

*The applicant submitted the following ITAAC for Delay or Barrier Design in their "Response to Request for Additional Information Letter No. 047, Supplement 2, Physical Security Inspections, Tests, Analyses, and Acceptance Criteria," Dated June 11, 2010. This letter was used to complete the evaluation below.*

5. *Access control points are established to:*
  - a) *Control personnel and vehicle access into the protected area. (Item 8.a in Appendix A to Section 14.3.12 of NUREG-0800.)*
  - b) *Detect firearms, explosives, and incendiary devices at the protected area personnel access points. (Item 8.b in Appendix A to Section 14.3.12 of NUREG-0800.)*
  
7. *Access to vital equipment physical barriers requires passage through the protected area perimeter barrier. (Item 1.b in Appendix A to Section 14.3.12 of NUREG-0800.)*

*On the basis of its review, the NRC staff determined that the applicant has adequately addressed NUREG-0800, Section 14.3.12 delay or barrier design PS-ITAC 1(b)(partially), 8(a) and 8(b).*

*The VEGP COL application references the AP1000 DCD, which addressed NUREG-0800, Section 14.3.12 PS-ITAC 1(a), 1(b)(partially), 7, 13(a) and 13(b). The staff has determined that PS-ITAC 1(b) described in NUREG-0800, Section 14.3.12 has been fully addressed between the VEGP submission and the AP1000 DCD.*

#### **13.6.A.4.3 Systems, Hardware, or Features Facilitating Security Response and Neutralization**

*The applicant submitted the following ITAAC for Systems, Hardware, or Features Facilitating Security Response and Neutralization in their "Response to Request for Additional Information Letter No. 047, Supplement 2, Physical Security Inspections, Tests, Analyses, and Acceptance Criteria," Dated June 11, 2010. This letter was used to complete the evaluation below.*

9. *Emergency exits through the protected area perimeter are alarmed and secured with locking devices to allow for emergency egress. (Item 15 in Appendix A to Section 14.3.12 of NUREG-0800.)*

*On the basis of its review, the NRC staff determined that the applicant has adequately addressed NUREG-0800, Section 14.3.12 delay or barrier design PS-ITAC 15(partially).*

*The VEGP COL application references the AP1000 DCD, which addressed NUREG-0800, Section 14.3.12 PS-ITAAC 12, 15(partially) 16(a), 16(b) and 16(c). The staff has determined that PS-ITAAC 15 described in NUREG-0800, Section 14.3.12 has been fully addressed between the VEGP submission and the AP1000 DCD.*

On the basis of its review, the staff finds that since the applicant revised WLS COL FSAR Part 10 to incorporate the requirements for PS-ITAAC, the response to RAI 14.03.12-1, 2 and 3 has adequately addressed NUREG-0800, Section 14.3.12, and is, therefore, acceptable.

### **13.6.A.5 Post Combined License Activities**

For the reasons discussed in the technical evaluation section above, the staff proposes to include the following ITAAC for physical security:

- The licensee shall perform and satisfy the ITAAC defined in Table 13.6A-1, "Site Specific Physical Security."

### **13.6.A.6 Conclusion**

The staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant addressed the required information relating to PS-ITAAC, and there is no outstanding information expected to be addressed in the WLS COL FSAR related to this section. The results of the staff's technical evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

The staff concludes that the relevant information presented in WLS COL FSAR and the additional information received in the July 6, 2011, letter is acceptable based on the applicable regulations specified in Section 13.6.A.4 of this report. The staff based its conclusion on the following:

- STD SUP 14.3-1, as related to PS-ITAAC, is acceptable based on the following discussion. The staff finds that the applicant adequately describes the physical security systems or provides and/or facilitates the implementation of the site-specific protective strategy and security programs. The applicant adequately describes the site-specific PS-ITAAC for meeting the requirements of 10 CFR 73.55 and provides the technical bases for establishing a PS-ITAAC for the protection against acts of radiological sabotage and theft of special nuclear material. The applicant includes systems and features as stated in WLS COL FSAR Chapter 13 and referenced TRs. The applicant provided adequate descriptions of objectives, prerequisites, test methods, data required, and acceptance criteria for security related ITAAC for the approval of the WLS COL.

**Table 13.6.A 1 – Site Specific Physical Security Inspections, Tests, Analyses, and Acceptance Criteria**

Design Commitment	Inspections, Tests, and Analyses	Acceptance Criteria
<p>1. The external walls, doors, ceiling, and floors in the location within which the last access control function for access to the protected area is performed are bullet- resistant to at least Underwriters Laboratory Ballistic Standard 752, level 4.</p>	<p>Type test, analysis, or a combination of type test and analysis will be performed for the external walls, doors, ceilings, and floors in the location within which the last access control function for access to the protected area is performed.</p>	<p>The external walls, doors, ceilings, and floors in the location within which the last access control function for access to the protected area is performed are bullet- resistant to at least Underwriters Laboratory Ballistic Standard 752, level 4.</p>
<p>2. Physical barriers for the protected area perimeter are not part of vital area barriers.</p>	<p>An inspection of the protected area perimeter barrier will be performed.</p>	<p>Physical barriers at the perimeter of the protected area are separated from any other barrier designated as a vital area barrier.</p>
<p>3.</p> <p>a) Isolation zones exist in outdoor areas adjacent to the physical barrier at the perimeter of the protected area that allows 20 feet of observation on either side of the barrier. Where permanent buildings do not allow a 20-foot observation distance on the inside of the protected area, the building walls are immediately adjacent to, or an integral part of, the protected area barrier.</p>	<p>Inspections will be performed of the isolation zones in outdoor areas adjacent to the physical barrier at the perimeter of the protected area.</p>	<p>Isolation zones exist in outdoor areas adjacent to the physical barrier at the perimeter of the protected area and allow 20 feet of observation and assessment of the activities of people on either side of the barrier. Where permanent buildings do not allow a 20-foot observation and assessment distance on the inside of the protected area, the building walls are immediately adjacent to, or an integral part of, the protected area barrier and the 20-foot observation and assessment distance does not apply.</p>

<p>b) The isolation zones are monitored with intrusion detection equipment that provides the capability to detect and assess unauthorized persons.</p>	<p>Inspections will be performed of the intrusion detection equipment within the isolation zones.</p>	<p>The isolation zones are equipped with intrusion detection equipment that provides the capability to detect and assess unauthorized persons.</p>
<p>4. The intrusion detection and assessment equipment at the protected area perimeter:</p> <p>a) detects penetration or attempted penetration of the protected area barrier and concurrently alarms in both the central alarm station and secondary alarm station, and</p> <p>b) remains operable from an uninterruptible power supply in the event of the loss of normal power.</p>	<p>Tests, inspections or a combination of tests and inspections of the intrusion detection and assessment equipment at the protected area perimeter and its uninterruptible power supply will be performed.</p>	<p>The intrusion detection and assessment equipment at the protected area perimeter:</p> <p>a) detects penetration or attempted penetration of the protected area barrier and concurrently alarms in the central alarm station and secondary alarm station, and</p> <p>b) remains operable from an uninterruptible power supply in the event of the loss of normal power.</p>

<p>5. Access control points are established to:</p> <p>a) control personnel and vehicle access into the protected area.</p> <p>b) detect firearms, explosives, and incendiary devices at the protected area personnel access points.</p>	<p>Tests, inspections, or combination of tests and inspections of installed systems and equipment at the access control points to the protected area will be performed.</p>	<p>The access control points for the protected area:</p> <p>a) are configured to control personnel and vehicle access.</p> <p>b) include detection equipment that is capable of detecting firearms, incendiary devices, and explosives at the protected area personnel access points.</p>
<p>6. An access control system with numbered picture badges is installed for use by individuals who are authorized access to protected areas and vital areas without escort.</p>	<p>A test of the access control system with numbered picture badges will be performed.</p>	<p>The access authorization system with numbered picture badges can identify and authorize protected area and vital area access only to those personnel with unescorted access authorization.</p>
<p>7. Access to vital equipment physical barriers requires passage through the protected area perimeter barrier.</p>	<p>Inspection will be performed to confirm that access to vital equipment physical barriers requires passage through the protected area perimeter barrier.</p>	<p>Vital equipment is located within a protected area such that access to vital equipment physical barriers requires passage through the protected area perimeter barrier.</p>

<p>8.</p> <p>a) Penetrations through the protected area barrier are secured and monitored.</p> <p>b) Unattended openings (such as underground pathways) that intersect the protected area boundary or vital area boundary will be protected by a physical barrier and monitored by intrusion detection equipment or provided surveillance at a frequency sufficient to detect exploitation.</p>	<p>Inspections will be performed of penetrations through the protected area barrier.</p> <p>Inspections will be performed of unattended openings that intersect the protected area boundary or vital area boundary.</p>	<p>Penetrations and openings through the protected area barrier are secured and monitored.</p> <p>Unattended openings (such as underground pathways) that intersect the protected area boundary or vital area boundary are protected by a physical barrier and monitored by intrusion detection equipment or provided surveillance at a frequency sufficient to detect exploitation.</p>
<p>9. Emergency exits through the protected area perimeter are alarmed and secured with locking devices to allow for emergency egress.</p>	<p>Tests, inspections, or a combination of tests and inspections of emergency exits through the protected area perimeter will be performed.</p>	<p>Emergency exits through the protected area perimeter are alarmed and secured by locking devices that allow prompt egress during an emergency.</p>

## 13.7 Fitness for Duty

### 13.7.1 Introduction

Pursuant to 10 CFR 52.79(a)(44), COL applications must include a description of the fitness for duty program required by 10 CFR Part 26, "Fitness for Duty Programs," and its implementation. The FFD program is designed to provide reasonable assurance that: (1) individuals are trustworthy and reliable as demonstrated by the avoidance of substance abuse; (2) individuals are not under the influence of any substance, legal or illegal, or mentally or physically impaired from any cause, which in any way adversely affects their ability to safely and competently perform their duties; (3) measures are established and implemented for the early detection of individuals who are not fit to perform their duties; (4) the construction site is free from the presence and effects of illegal drugs and alcohol; (5) the work places are free from the presence and effects of illegal drugs and alcohol; and (6) the effects of fatigue and degraded alertness on

an individual's ability to safely and competently perform his or her duties are managed commensurate with maintaining public health and safety.

### **13.7.2 Summary of Application**

WLS COL FSAR Section 13.7 is a new section added after AP1000 DCD Section 13.6. The references that are currently in AP1000 DCD Section 13.7 have been redistributed to other WLS COL FSAR sections. There is no information associated with the FFD program incorporated by reference from the AP1000 DCD.

In addition, in WLS COL FSAR Section 13.7, the applicant provided the following:

#### Supplemental Information

- STD SUP 13.7-1

The applicant provided standard supplemental information in WLS COL FSAR Section 13.7 describing the FFD program for both the construction phase and the operating phase of the units. The construction phase program will be consistent with NEI 06-06, "Fitness for Duty Program Guidance for New Nuclear Power Plant Construction Sites," and the construction phase program will be implemented prior to onsite construction of safety- and security-related SSCs. The operations phase program will be consistent with 10 CFR Part 26.

#### License Conditions

- Part 10, License Condition 6

The applicant proposed a license condition to provide a schedule to support NRC inspection of operational programs included in WLS COL FSAR Table 13.4-201 including the FFD program.

### **13.7.3 Regulatory Basis**

The applicable regulatory requirements for STD SUP 13.7-1 are as follows:

- 10 CFR Part 26, "Fitness for Duty Programs"
- 10 CFR 52.79(a)(44)

### **13.7.4 Technical Evaluation**

The staff reviewed WLS COL FSAR Section 13.7 to ensure that the COL application represents the complete scope of information relating to this review topic.<sup>1</sup> The staff's review confirmed that the information in the application addresses the required information relating to the FFD program.

Section 1.2.3 of this report provides a discussion of the process used by the staff to perform one technical review for each standard issue outside the scope of the DC and use this review to evaluate subsequent COL applications. To ensure that the staff's findings on standard content that were documented in the SER for the reference COL application (VEGP Units 3 and 4) were



equally applicable to the WLS Units 1 and 2 COL application, the staff undertook the following reviews:

- The staff compared the VEGP COL FSAR, Revision 5 to the WLS COL FSAR. In performing this comparison, the staff considered changes made to the WLS COL FSAR (and other parts of the COL application, as applicable) resulting from responses to RAIs.
- The staff confirmed that all responses to RAIs identified in the corresponding standard content evaluation were endorsed.
- The staff verified that the site-specific differences were not relevant.

The staff completed its review and concluded that the evaluation performed for the standard content is directly applicable to the WLS COL application. This standard content material is identified in this report by use of italicized, double-indented formatting. Instead of confirming that all responses to RAIs identified in the corresponding standard content evaluation were endorsed by the WLS applicant (which is a typical step when comparing the two applications), the staff provides its evaluation of similar RAIs issued to WLS, following the standard content material. The one confirmatory item in the standard content material retains the number assigned in the VEGP SER, and is also addressed following the standard content material.

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.7.4:

Supplemental Information

- *STD SUP 13.7-1*

*The applicant provided a new Section 13.7 in the VEGP COL FSAR describing the FFD program. STD SUP 13.7-1 added the following text to Section 13.7:*

*The Fitness for Duty (FFD) Program (Program) is implemented and maintained in two phases; the construction phase program and the operating phase program. The construction and operations phase programs are implemented as identified in [FSAR] Table 13.4-201.*

*The construction phase program is consistent with NEI 06-06 ([FSAR] Reference 201). The workforce population subject to random testing during construction is determined on a weekly basis by averaging the total number of active construction badges over each preceding seven-day period. The random selection from each week's workforce population is identified by a standard computer-generated random number generator using this number of active badges as the range of numbers considered in the weekly random testing selection.*

*The operations phase program is consistent with 10 CFR Part 26.*

*The staff notes that Reference 201 in the above text refers to Revision 4 of NEI 06-06.*

*The NRC staff's review of STD SUP 13.7-1 included the following: (1) the adequacy of the FFD program for the construction phase; (2) the adequacy of the FFD program for the operations phase; and (3) the implementation schedule proposed by the applicant for both the construction phase and operations phase FFD operational programs.*

*The NRC staff issued three RAIs to obtain further clarification on the applicant's FFD Program. The first two RAIs discussed below are associated with the resolution of STD SUP 13.7-1.*

*In RAI 13.6-33, the staff asked how the applicant intends to update its FFD program for the construction phase. NEI 06-06 provides examples of the FFD program that is required and, if this guidance is endorsed by the NRC, will provide an acceptable method of complying with the NRC's regulations. If the NRC endorses NEI 06-06, does the applicant intend to update its FFD program for the construction phase to comply with NEI 06-06? If future revisions to NEI 06-06 are endorsed by the NRC, does the applicant intend to update its FFD program for the construction phase to comply with certain clarifications, additions, and exceptions in these future, endorsed revisions, as necessary?*

*The applicant replied that it submitted an FFD Program for NRC approval as part of the Limited Work Authorization (LWA) request, and that the program is now being implemented as part of the construction activities. If NEI 06-06 is endorsed by the NRC, SNC plans to transition to a program that follows the guidance in NEI 06-06. The COL application currently commits to NEI 06-06, Revision 4, and will be changed in a future revision to commit to NEI 06-06, Revision 5. The applicant will evaluate substantial changes in subsequent revisions to NEI 06-06 and modify the construction phase FFD program to incorporate those substantial changes determined to be appropriate.*

*The applicant's response to RAI 13.6-33, as well as its supplemental response, revises Section 13.7 to address the issues discussed above. The relevant portion of the proposed revised text, to be included in a future revision of the VEGP COL FSAR, is included below:*

*The Fitness for Duty Program (FFD) is implemented and maintained in multiple and progressive phases dependent on the activities, duties, or access afforded to certain individuals at the construction site. In general, two different FFD programs will be implemented: a construction FFD program and an operations FFD program. The construction and operations phase programs are illustrated in [FSAR] Table 13.4-201.*

*The construction FFD program is consistent with NEI 06-06 ([FSAR] Reference 201). NEI 06-06 applies to persons constructing or directing the construction of safety- and*

*security-related structures, systems, or components performed onsite where the new reactor will be installed and operated. Management and oversight personnel, as further described in NEI 06-06, and security personnel prior to the receipt of special nuclear material in the form of fuel assemblies (with certain exceptions) will be subject to the operations FFD program that meets the requirements of 10 CFR Part 26, Subparts A through H, N, and O. At the establishment of a protected area, all persons who are granted unescorted access will meet the requirements of an operations FFD program. Prior to issuance of a Combined License, the construction FFD program at a new reactor construction site for those subject to Subpart K will be reviewed and revised as necessary should substantial revisions occur to either NEI 06-06 following NRC endorsement or the requirements of 10 CFR Part 26.*

*The staff notes that Reference 201 in the above text refers to Revision 5 of NEI 06-06.*

*In RAI 13.6-34, the staff asked the applicant to: (1) describe how FSAR Table 13.4-201, Item 15, related to the security operational program, comports with 10 CFR 26.3, "Scope," and 10 CFR 26.4, and the guidance provided in the NRC's letter to NEI dated December 2, 2009, entitled "Status of U.S. Nuclear Regulatory Commission Review and Endorsement of NEI 06-06, 'Fitness for Duty Program Guidance for New Nuclear Power Plant Construction Sites,'" and (2) provide site-specific information to clearly and sufficiently describe the applicant's FFD program. This information would include, but is not limited to, any deviations or exceptions to the requirements of 10 CFR Part 26 as further described in NEI 06-06.*

*The applicant stated that the response to RAI 13.6-33 provided the changes to the COL application that will describe the FFD program required by 10 CFR Part 26. Site-specific information is also provided in that response to clarify which program will be used to cover the various classifications of workers that must be covered in accordance with 10 CFR Part 26. The applicant's response to RAI 13.6-35 (below) revises FSAR Table 13.4-201, Item 20 to address the guidance provided in the NRC's December 2, 2009 letter. The proposed revision to Item 20 of FSAR Table 13.4-201, to be included in a future revision of the VEGP COL FSAR, is included below.*

William States Lee III Nuclear Station  
Units 1 and 2

Item	Program Title	Program Source (required by)	FSAR Section	Implementation	
				Milestone	Requirements
20.	<i>Fitness for Duty (FFD) Program for Construction (workers and first-line supervisors)</i>	10 CFR 26.4(f)	13.7	<i>Prior to initiating 10 CFR Part 26 construction activities</i>	10 CFR Part 26, Subpart K
	<i>FFD Program for Construction (management and oversight personnel)</i>	10 CFR 26.4(e)	13.7	<i>Prior to initiating 10 CFR Part 26 construction activities</i>	10 CFR Part 26, Subparts A - H, N, and O
	<i>FFD Program for Security Personnel</i>	10 CFR 26.4(e)(1)	13.7	<i>Prior to initiating 10 CFR Part 26 construction activities</i>	10 CFR Part 26, Subparts A - H, N, and O
		10 CFR 26.4(a)(5) or 26.4(e)(1)		<i>Prior to the earlier of: A. Licensee's receipt of SNM in the form of fuel assemblies, or B. Establishment of a protected area, or C. The 10 CFR 52.103(g) finding</i>	10 CFR Part 26, Subparts A - I, N, and O
	<i>FFD Program for FFD Program personnel</i>	10 CFR 26.4(g)	13.7	<i>Prior to initiating 10 CFR Part 26 construction activities</i>	10 CFR Part 26, Subparts A, B, D - H, N, O, and C per licensee's discretion
	<i>FFD Program for persons required to physically report to the Technical Support Center (TSC) or Emergency Operations Facility (EOF)</i>	10 CFR 26.4(c)	13.7	<i>Prior to the conduct of the first full-participation emergency preparedness exercise under 10 CFR Part 50, App. E, Section F.2.a</i>	10 CFR Part 26, Subparts A - I, N, and O, except for §§ 26.205 - 209

William States Lee III Nuclear Station  
Units 1 and 2

Item	Program Title	Program Source (required by)	FSAR Section	Implementation	
				Milestone	Requirements
	FFD Program for Operation	10 CFR 26.4(a) and (b)	13.7	Prior to the earlier of:  A. Establishment of a protected area, or B. The 10 CFR 52.103(g) finding	10 CFR Part 26, Subparts A - I, N, and O, except for individuals listed in § 26.4(b), who are not subject to §§ 26.205 – 209

*In its December 2, 2009, letter to NEI, the NRC stated that during the review and approval process for NEI 06-06, the applicant should provide the following statements in its application:*

- *NEI 06-06, Revision 5 was used in the development of the construction site FFD program.*
- *The applicant will review and revise its construction site FFD program as necessary to ensure that it comports with the NRC-endorsed version of NEI 06-06.*
- *If the NRC staff's review of NEI 06-06 results in substantive changes to the most recent, docketed FFD program description provided by the applicant, the applicant must amend its application to reflect the changes.*

*The applicant's proposed revisions to FSAR Section 13.7 satisfactorily address the three items described above. The December 2, 2009, letter also provided implementation milestones for consideration by applicants. The staff confirmed that the proposed revisions to FSAR Table 13.4-201, Item 20, include all of the implementation milestones in the December 2, 2009, letter.*

*Therefore, based on the staff's acceptance of the proposed revisions to FSAR Section 13.7 and to FSAR Table 13.4-201, Item 20, as noted above, the NRC staff concludes that the applicant has satisfactorily addressed STD SUP 13.7-1 by providing sufficient information on the FFD program for both the construction phase and the operating phase of the units. The inclusion of this information in a future revision of the VEGP COL FSAR is **Confirmatory Item 13.7-1**.*

*Resolution of VEGP Site-Specific Confirmatory Item 13.7-1*

*Confirmatory Item 13.7-1 is an applicant commitment to revise its FSAR Section 13.7 and Table 13.4-201 regarding the FFD program for the construction phase and the operating phase of the units. The staff verified that the VEGP COL FSAR was appropriately revised. As a result, Confirmatory Item 13.7-1 is now closed.*

### License Conditions

*In RAI 13.6-35, the staff asked the applicant if proposed License Condition 3, A.1, and G.7, described in Part 10 of the COL application comports with FSAR Table 13.4-201, Item 15, which itemizes the aspects of the security operational program.*

*The staff further evaluated the need for License Condition 3, A.1 and G.7, for the VEGP COL application and determined it was not needed because the implementation milestones for FFD are governed by 10 CFR Part 26. The staff communicated this information to SNC, which then submitted Supplement 1 to its response to this RAI, removing this license condition for FFD.*

- *Part 10, License Condition 6*

*The applicant proposed a license condition in Part 10 of the VEGP COL application to provide a schedule to support the NRC's inspection of operational programs, including the FFD program.*

*The proposed license condition is consistent with the policy established in SECY 05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," for operational programs and is acceptable.*

### Evaluation of WLS RAI Responses

The staff issued one RAI to the WLS applicant that mirrored the RAI 13.6-33 issued to the VEGP applicant, and one RAI that was not common to VEGP was issued.

The staff's evaluation of the responses provided by the WLS applicant to the two RAIs related to the FFD program is discussed below. The applicant responded to RAI 98, Question 13.07-1 on September 21, 2011, and to RAI 99, Question 13.07-2.

In RAI 98, Question 13.07-1, the staff requested that the applicant the following:

Under 10 CFR 52.79(a)(44), the Applicant's FSAR must contain a description of the fitness for duty (FFD) program required by 10 CFR Part 26 and its implementation. How does the Applicant intend to update its FFD program for the construction phase? NEI 06-06 provides examples of the FFD program that is required and, if this guidance is endorsed by the NRC, will provide an acceptable method of complying with the NRC's regulations. If the NRC endorses NEI 06-06, does the Applicant intend to update its FFD program for the construction phase to comply with NEI 06-06? If future revisions to NEI 06-06 are endorsed by the NRC, does the Applicant intend to update its FFD program for the construction phase to comply with certain clarifications, additions, and exceptions in these future, endorsed revisions, as necessary?

In a September 22, 2011, response to RAI 98, Question 13.07-1, the applicant stated that its FFD Program will be developed based on the guidance given in NEI 06-06, Revision 5, and that subsequent revisions to NEI 06-06 would be subject to review by the applicant at that time for

incorporation of any changes determined to be appropriate. The relevant portion of the revised text is included below:

The Fitness for Duty Program (FFD) is implemented and maintained in multiple and progressive phases dependent on the activities, duties, or access afforded to certain individuals at the construction site.

In general, two different FFD programs will be implemented: a construction FFD program and an operations FFD program. The construction and operations phase programs are outlined in Table 13.4-201.

The construction FFD program is consistent with NEI 06-06 ([FSAR] Reference 201). NEI 06-06 applies to persons constructing or directing the construction of safety- and security-related structures, systems, or components performed onsite where the new reactor will be installed and operated. Management and oversight personnel, as further described in NEI 06-06 and security personnel prior to the receipt of special nuclear material in the form of fuel assemblies (with certain exceptions) will be subject to the operations FFD program that meets the requirements of 10 CFR Part 26, Subparts A through H, N, and O. At the establishment of a protected area, all persons who are granted unescorted access will meet the requirements of an operations FFD program.

The operations phase program is consistent with 10 CFR Part 26.

The staff considers RAI 98, Question 13.07-1 resolved by submittal of WLS COL FSAR, Revision 4.

In RAI 99, Question 13.07-2, the staff requested that applicant “provide site-specific information to clearly and sufficiently describe your FFD program in terms of the scope and level of detail to enable the staff to make a decision of acceptability.”

In a November 22, 2011, response to RAI 99, Question 13.07-2, the applicant stated they “have not entered into a contract with a specific contractor for engineering, construction, and procurement at this time for the Lee site. Thus, the site-specific details for FFD programs have not been fully organized down to the details at the contractor level at this time. FSAR Section 13.7 has been updated to reflect the current plan for FFD programs in scope and level of detail for the Lee site known at this time.” The following is the applicant’s response to RAI 99, Question 13.07-2:

This update is supplementing the previous changes made per Duke Energy's Response to Letter 098, RAI 13.7-1, dated September 21, 2011

The Fitness for Duty Program (FFD) is implemented and maintained in multiple and progressive phases dependent on the activities, duties, or access afforded to certain individuals at the construction site.

In general, two different FFD programs will be implemented: a construction FFD program and an operations FFD program. The construction and operations phase programs are outlined in Table 13.4-201.

The construction FFD program is consistent with NEI 06-06 ([FSAR] Reference 201). NEI 06-06 applies to persons constructing or directing the construction of safety- and security-related structures, systems, or components performed onsite where the new reactor will be installed and operated. Management and oversight personnel, as further described in NEI 06-06, and security personnel prior to the receipt of special nuclear material in the form of fuel assemblies (with certain exceptions) will be subject to the operations FFD program that meets the requirements of 10 CFR Part 26, Subparts A through H, N, and O.

At the establishment of a protected area, all persons who are granted unescorted access will meet the requirements of an operations FFD program. Prior to issuance of a Combined License, the Duke-approved construction FFD program (elements Subpart K) will be reviewed and revised, as necessary, should substantial revisions occur to NEI 06-06 following NRC endorsement of the requirements of 10 CFR Part 26.

The following site-specific information is provided:

- The construction site is defined in the Physical Security Plan, Appendix E, and is under control of the Primary Site Contractor. The 10 CFR Part 26 requirements are implemented for the construction site area based on the description provided in Table 13.4-201.
- Construction Workers and First Line Supervisors (Primary Site Contractor employees and subcontractors) are covered by a Duke-approved Construction FFD Program (elements Subpart K).
- Duke employees and Duke subcontractor's construction management and oversight personnel are covered by a Duke Operations FFD Program and the Primary Site Contractor's employees and the Primary Site Contractor's subcontractors, construction management, and oversight personnel are covered by a Duke-approved FFD Program (elements Subpart A-H, N, and O).
- Duke security personnel are covered by a Duke Operations FFD Program and the Primary Site Contractor's security personnel are covered by a Duke-approved FFD Program (elements Subpart A-H, N, and O). This coverage is applicable from the start of construction activities to the earlier of (1) the receipt of SNM in the form of fuel assemblies, (2) The establishment of a protected area, or (3) the 10 CFR 52.103(g) finding.
- The Duke FFD Program personnel are covered by a Duke Operations FFD program and the Primary Site Contractor's FFD Program personnel are covered by a Duke-approved FFD Program (elements Subpart A, B, D-H, N, O, and C per licensee's discretion).
- Duke security personnel protecting fuel assemblies are covered by a Duke Operations FFD Program (Elements Subpart A-I, N and O).



- Personnel required to physically report to the Technical Support Center (TSC) or Emergency Operations Facility (EOF), when that requirement is in effect, are covered by a Duke Operations FFD program (elements Subpart A- I, N, and O, except for -§ 26.205 - 209)

The applicant stated that site-specific information would be reflected in a future revision to the WLS COL FSAR. The staff confirmed that the applicant has made the appropriate changes in Revision 9 of the WLS COL FSAR and considers this issue resolved.

### **13.7.5 Post Combined License Activities**

For the reasons discussed in the technical evaluation section above, the staff finds the following license condition acceptable:

- License Condition (13-13) – The licensee shall submit to the Director of NRO, a schedule, no later than 12 months after issuance of the COL, that supports planning for and conduct of NRC inspection of the FFD operational program. The schedule shall be updated every 6 months until 12 months before scheduled fuel load, and every month thereafter until the FFD operational program has been fully implemented.

### **13.7.6 Conclusion**

The staff reviewed WLS COL FSAR Section 13.7 along with the applicant's proposed revision to this section. The staff's review confirmed that the applicant's proposed revision to WLS COL FSAR Section 13.7 has adequately addressed the required information related to the FFD portion of the WLS COL FSAR Section 13.7 and is consistent with the applicable requirements of 10 CFR Part 26 and 10 CFR 52.79(a)(44). In addition, the applicant provided a commitment to NEI "Fitness for Duty Program Guidance for New Nuclear Power Plant Construction Sites," NEI 06-06, Revision 5, August 2009, therefore the staff, finds it acceptable.

## **13.8 Cyber Security**

This section does not exist in either the AP1000 DCD or the WLS COL FSAR. The staff has added this section to this report to address issues regarding cyber security.

### **13.8.1 Introduction**

In a July 29, 2011, letter to the NRC, Duke submitted Revision 2 of the Cyber Security Plan (CSP) for WLS Units 1 and 2. The CSP applies to all critical digital assets (CDAs) required for WLS operation. In the submittal, the applicant described how the requirements of 10 CFR 73.54, "Protection of Digital Computer and Communication Systems and Networks," will be implemented to protect digital computer and communications systems and networks associated with the following functions from those cyber attacks, up to and including the DBT described in 10 CFR 73.1, "Purpose and Scope." The scope of 10 CFR 73.54 includes CDAs associated with the following:

- safety-related and important-to-safety functions

- security functions
- emergency preparedness functions, including offsite communications
- support systems and equipment which, if compromised, would adversely impact safety, security, or emergency preparedness functions

### **13.8.2 Summary of Application**

The applicant addresses cyber security in WLS COL FSAR Section 13. WLS COL FSAR, Revision 11, Section 13.6 incorporates by reference AP1000 DCD, Revision 19, Section 13.6. The applicant's CSP includes deviations from RG 5.71, "Cyber Security Programs for Nuclear Facilities." The staff evaluated these deviations.

In addition, in WLS COL FSAR Section 13.6, the applicant provided the following:

#### AP1000 COL Information Item

- STD COL 13.6-5

The applicant provided additional information in STD COL 13.6-5 to address COL Information Item 13.6-5, which provides information related to the cyber security program.

#### License Conditions

- Part 10, License Condition 3, Item G.10

The applicant proposed a license condition in WLS COLA Part 10, which requires the applicant to implement the cyber security program prior to initial fuel load.

- Part 10, License Condition 6

The applicant proposed a license condition in WLS COLA Part 10 to provide a schedule to support NRC inspection of operational programs included in WLS COL FSAR Table 13.4-201 including the cyber security program.

### **13.8.3 Regulatory Basis**

The regulatory basis of the information incorporated by reference is addressed in NUREG-1793 and its supplements.

The applicable regulatory requirements for cyber security are as follows:

- 10 CFR 73.1, "Purpose and scope"
- 10 CFR 73.54, "Protection of digital computer and communication systems and networks"
- 10 CFR 73.55, "Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage," paragraphs (a)(1), (b)(8), and (m)

- 10 CFR 73.58, “Safety/security interface requirements for nuclear power reactors”
- 10 CFR Part 73, “Physical protection of plants and materials,” Appendix G, “Reportable Safeguards Events”

The applicable regulatory guidance for cyber security is RG 5.71.

#### **13.8.4 Technical Evaluation**

The staff reviewed WLS COL FSAR Section 13.6 and checked the referenced DCD to ensure that the combination of the DCD and the COL application represents the complete scope of information relating to this review topic.<sup>1</sup> The staff’s review confirmed that the information in the application and incorporated by reference addresses the required information relating to cyber security. The results of the staff’s evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

The staff’s review of the WLS CSP focused on ensuring that the necessary programmatic elements are included in this plan to provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety. The staff reviewed the WLS CSP to ensure the necessary programmatic elements that, when effectively implemented, will provide the required high assurance of adequate protection. Effective implementation is dependent on the procedures and practices the applicant develops to satisfy the programmatic elements of its CSP. The facility implementing procedures are subject to future NRC inspection.

Section 1.2.3 of this report provides a discussion of the strategy used by the NRC to perform one technical review for each standard issue outside the scope of the DC and use this review to evaluate subsequent COL applications. To ensure that the staff’s findings on standard content that were documented in the SER for the reference COL application (VEGP Units 3 and 4) were equally applicable to the WLS Units 1 and 2 COL application, the staff undertook the following reviews:

- The staff compared the VEGP COL FSAR, Revision 5 to the WLS COL FSAR. In performing this comparison, the staff considered changes made to the WLS COL FSAR (and other parts of the COL application, as applicable) resulting from responses to RAIs.
- The staff confirmed that the July 29, 2011, WLS submittal transmitting its CSP was identical to the June 14, 2010, VEGP submittal transmitting its CSP, with the only exceptions being to the title of the units and the identification of the position charged with oversight of the program.
- The staff verified that the site-specific differences were not relevant.

The staff completed its review and concluded that the evaluation performed for the standard content is directly applicable to the WLS COL application. This finding included verifying that the difference in the position charged with oversight of the program (the General Manager, Organizational Effectiveness at WLS and Vice President of Nuclear Operations Support at VEGP) does not affect the staff’s conclusions regarding the applicant’s CSP. This standard content material is identified in this SER by use of italicized, double-indented formatting. The

one confirmatory item in the standard content material retains the number assigned in the VEGP SER.

The following portion of this technical evaluation section is reproduced from VEGP SER Section 13.8.4:

AP1000 COL Information Item

- STD COL 13.6-5

*The NRC staff reviewed STD COL 13.6-5 related to COL Information Item 13.6-5, which identifies the need for a COL applicant to address cyber security. STD COL 13.6-5 supplemented Section 13.6 of the VEGP COL FSAR by stating the following text is to be added after Section 13.6 of the VEGP ESP SSAR:*

*The Cyber Security Plan is submitted to the Nuclear Regulatory Commission as a separate licensing document to fulfill the requirements contained in 10 CFR 52.79(a)(36) and 10 CFR 73.54. The Cyber Security Plan will be maintained in accordance with the requirements of 10 CFR 52.98. The Plan is withheld from public disclosure pursuant to 10 CFR 2.390.*

*Section 13.6 of the VEGP COL FSAR also refers to FSAR Table 13.4-201, "Operational Programs Required by NRC Regulations," as providing the milestone for implementing the cyber security program.*

*The VEGP applicant submitted its Revision 0 of its CSP in a letter dated June 14, 2010, to demonstrate that the cyber security program will provide high assurance that digital computer and communication systems and networks are adequately protected against cyber attacks, up to and including the DBT as described in 10 CFR 73.1. The CSP has been withheld from public disclosure pursuant to 10 CFR 2.390(d)(1). In its review of this plan, the NRC staff used the guidance in RG 5.71 to determine if the regulatory requirements described in Section 13.8.3 of this SER are satisfied.*

*The applicant described the cyber security program based on 10 CFR 73.54, including the audit of the effectiveness of the cyber security program as required by 10 CFR 73.55(m), submittal of CSPs and the establishment, maintenance and implementation of a cyber security program required by 10 CFR 73.55(a)(1) and 10 CFR 73.55(b)(8) and reporting requirements in 10 CFR Part 73, Appendix G. The implementation milestones for this program are included in VEGP COL FSAR Table 13.4-201.*

*As detailed in the remainder of this SER section, the CSP has been reviewed by the NRC staff for format and content utilizing the NRC CSP template in RG 5.71, and found to include all features considered essential for such a program, and is acceptable. In particular, it has been found to comply with the Commission's regulations including 10 CFR 73.54, 10 CFR 73.55(a)(1), 10 CFR 73.55(b)(8),*

10 CFR 73.55(m), and 10 CFR Part 73, Appendix G and conforms to the NRC CSP template set forth in RG 5.71.

The applicant has committed to incorporate this CSP into a future revision of the VEGP COL application to address NRC requirements in 10 CFR 73.54. This action will be tracked as **Confirmatory Item 13.8-1**.

Resolution of VEGP Site-Specific Confirmatory Item 13.8-1

Confirmatory Item 13.8-1 is an applicant commitment to include the CSP into a future revision of the VEGP COL application. The staff verified that the VEGP COL application was appropriately revised. As a result, Confirmatory Item 13.8-1 is now closed.

**13.8.4.1 Establishment of Cyber Security Program**

The VEGP CSP describes how SNC will establish a cyber security program to achieve high assurance that the VEGP digital computer and communication systems and networks associated with safety, security, and emergency preparedness, including offsite communications and support systems and equipment which if compromised would adversely impact safety, security and/or emergency preparedness (SSEP) functions, and their digital assets, hereafter defined as CDAs, are adequately protected against cyber attacks up to and including the DBT. RG 5.71 provides a method that the staff considers acceptable for complying with this regulation. SNC complies with the requirements of 10 CFR 73.54 by providing a CSP that follows the template in Appendix A of RG 5.71, except as noted in Attachment A, "Vogtle Electric Generating Plant Units 3 and 4 Cyber Security Plan Deviations from Regulatory Guide RG 5.71." The VEGP CSP included:

*Within the scope of the NRC's cyber security rule at 10 CFR 73.54, systems or equipment that perform important to safety functions include structures, systems, and components (SSCs) in the balance of plant (BOP) that could directly or indirectly affect reactivity at a nuclear power plant and could result in an unplanned reactor shutdown or transient. Additionally, these SSCs are under the licensee's control and include electrical distribution equipment out to the first inter-tie with the offsite distribution system.*

The VEGP CSP included a deviation from the guidance to clarify that systems or equipment that perform important to safety functions include SSCs in the balance of plant (BOP) that could directly or indirectly affect reactivity and could result in an unplanned reactor shutdown or transient. This deviation is consistent with Commission policy.

The NRC staff reviewed the VEGP CSP against the template in RG 5.71 and the staff requirements memorandum (SRM), CMWCO-10-0001, "Regulation of Cyber Security at Nuclear Power Plants," dated October 21, 2010.

The applicant states in the VEGP CSP that its security program complies with 10 CFR 73.54 by:

- 1) *establishing and implementing defensive strategies consistent with the defensive model, described in Section 3.1.5, including the security controls described in Sections 3.1, 3.2, and 3.3.*
- 2) *maintaining the program, as described in Section 4.*

*Based on the above review, the NRC staff finds that establishment of a cyber security program described in Section 1 of the VEGP CSP is acceptable.*

*The following SER Sections 13.8.4.2 through 13.8.4.23 correlate to specific sections in Appendix A to RG 5.71. These SER sections use the same headings as the corresponding Appendix A sections, and include the Appendix A numbering system in the titles. SER Section 13.8.4.24 addresses each of the deviations identified in the applicant's CSP.*

**13.8.4.2      *Security Assessment and Authorization (Section A.3.1.1 of Appendix A to RG 5.71)***

*Section 3.1.1 of the VEGP CSP states that the following will be reviewed every 24 months:*

- *A formal documented security planning, assessment, and authorization policy that describes the purpose, scope, roles, responsibilities, management commitments, and coordination among departments and the implementation of the security program and the controls applied in accordance with Section 3.1.6*
- *A formal documented procedure to facilitate the implementation of the cyber security program and the security assessment*

*The NRC staff reviewed the above and found that evaluation of the program elements every 24 months is not consistent with Section C.3.1.1 of RG 5.71. The time period between evaluations is 12 months longer than the time period provided in brackets in RG 5.71. However, this 24-month time period conforms to 10 CFR 73.54(g), requiring the applicant to review the cyber security program as a component of the physical security program in accordance with the requirements of 10 CFR 73.55(m), including the periodicity requirements. The requirement of 10 CFR 73.55(m) is that at minimum the applicant review each element of the physical protection program at least every 24 months.*

*Based on the above review, the NRC staff finds that the security assessment and authorization described in Section 3.1.1 of the VEGP CSP is acceptable.*

#### **13.8.4.3 Cyber Security Team (Section A.3.1.2 of Appendix A to RG 5.71)**

Section 3.1.2 of the VEGP CSP states that a cyber security team, composed of individuals with broad knowledge, will be established and maintained and that the broad knowledge of the team will include the following areas:

- *Information and digital system technology; this includes cyber security, software development, offsite communications, computer system administration, computer engineering, and computer networking.*
- *Nuclear facility operations, engineering, and safety; this includes overall facility operations and plant technical specification compliance.*
- *Physical security and emergency preparedness; this includes the site's physical security and emergency preparedness systems and programs.*

*This section of the VEGP CSP also enumerates the roles and responsibilities of the cyber security team. Aside from the deviations discussed below, this section of the VEGP CSP conforms to the CSP template wording provided in Section A.3.1.2 of RG 5.71.*

*The VEGP CSP includes several deviations from the text of RG 5.71:*

- 1) *The first deviation clarifies that the cyber security team (CST) will be responsible for “overseeing” preparation of documentation of cyber security controls and that, in fact, non-team members (such as vendor personnel) may perform some of these actions, under the supervision of the CST. This clarification is acceptable to the staff since the responsibility to ensure compliance with 10 CFR 73.54 remains with the CST.*
- 2) *The second deviation changes the CST responsibility from “assuring the retention” of assessment documentation to “establishing the retention policy” for assessment documentation. Again, the deviation is acceptable to the staff since the responsibility to ensure compliance with 10 CFR 73.54 remains with the CST.*
- 3) *The third and final deviation seeks to change the basis for CST determinations being made in a free and objective manner. The RG 5.71 wording states that the CST should be free to make determinations that are not constrained by “operational goals.” The deviation changes the respective sentence to say “...by business goals.” Again, the deviation is acceptable to the staff since it maintains the same objective of keeping financial considerations out of decision making regarding cyber security.*

*Based on the above review, the NRC staff finds that the CST described in Section 3.1.2 of the VEGP CSP is acceptable.*

**13.8.4.4 Identification of Critical Digital Assets (Section A.3.1.3 of Appendix A to RG 5.71)**

*Section 3.1.3 of the VEGP CSP states that to identify the critical systems (CSs) at VEGP, the CST identified and documented plant systems, equipment, communication systems, and networks that are associated with the SSEP functions described in 10 CFR 73.54(a)(1), as well as the support systems associated with these SSEP functions in accordance with the approved plant licensing basis.*

*The VEGP CSP also states that the CST identified and documented CDAs that have a direct, supporting, or indirect role in the proper functioning of CSs.*

*The steps outlined in the VEGP CSP essentially match the corresponding steps described in RG 5.71 for this same activity. The only difference between the corresponding section in RG 5.71 and the VEGP CSP is the addition of the modifying phrase: "...and defined in the approved plant licensing basis."*

*10 CFR 73.54(a)(1) requires that the licensee protect digital computer and communication systems and networks associated with: (i) safety-related and important-to-safety functions; (ii) security functions; (iii) emergency preparedness functions, including offsite communications; and (iv) support systems and equipment which, if compromised, would adversely impact SSEP functions.*

*This deviation is acceptable because SNC proposes to use its licensing basis to identify CSs that are associated with SSEP functions, as 10 CFR 73.54 requires. This statement includes the first step in RG 5.71 to analyze digital computer and communication systems and networks to determine if they include CDAs.*

*Based on the above review, the NRC staff finds the applicant's proposal, described in Section 3.1.3 of the VEGP CSP, to use 10 CFR 73.54(a)(1) and its licensing basis to identify CDAs to be acceptable.*

**13.8.4.5 Reviews and Validation Testing (Section A.3.1.4 of Appendix A to RG 5.71)**

*Section 3.1.4 of the VEGP CSP states that the VEGP CST will be responsible for conducting a review, performing validation activities, and for each CDA, the CST determined:*

- *its direct and indirect connectivity pathways*
- *infrastructure interdependencies*
- *the application of defensive strategies, including defensive models, security controls, and other defensive measures*



- *The CSP also requires that the CST validate the above activities through comprehensive walkdowns, which include a range of activities that conform to those activities specified in RG 5.71 for this purpose.*

*The CSP also requires that the CST validate the above activities through comprehensive walkdowns, which include a range of activities that conform to those activities specified in RG 5.71 for this purpose.*

*The requirements, processes and procedures described in this section of the VEGP CSP conform to, and encompass all of the same specifications, outlined in the comparable section of RG 5.71.*

*Based on the above review, the NRC staff finds that reviews and validation testing described in Section 3.1.4 of the VEGP CSP is acceptable.*

#### **13.8.4.6      *Defense-In-Depth Protective Strategies (Section A.3.1.5 of Appendix A to RG 5.71)***

*Section 3.1.5 of the VEGP CSP states that the defensive strategy consists of the defensive model described in Section C.3.2 of RG 5.71, and the detailed defensive architecture of Appendix C, Section 6, defense-in-depth controls in Appendix C, Section 7, and security controls applied in accordance with Section 3.1.6 of the VEGP CSP with one deviation to its defensive architecture. The VEGP defensive architecture, including the deviation is consistent with the security model described in RG 5.71, which provides for isolation of safety-related and security CDAs.*

*Based on the above review, the NRC staff finds that the defense-in-depth protective strategies described in Section 3.1.5 of the VEGP CSP are acceptable.*

#### **13.8.4.7      *Application of Security Controls (Section A.3.1.6 of Appendix A to RG 5.71)***

*Section 3.1.6 of the VEGP CSP states that VEGP Units 3 and 4 established defense-in-depth protective strategies by applying and documenting the following:*

- *the defensive model described in Section 3.2 of RG 5.71 (discussed in SER Section 13.8.4.6)*
- *the physical and administrative security controls established by the VEGP Units 3 and 4 Physical Security Program and physical barriers, such as locked doors, locked cabinets, and locating CDAs in the VEGP Units 3 and 4 protected area or vital areas, which are part of the overall security controls used to protect CDAs from attacks*

- *verification of the effectiveness of the implemented operational and management controls described in Appendix C to RG 5.71 and implemented alternatives to the Appendix C controls for each CDA*
- *the technical controls described in Appendix B to RG 5.71 and the operational and management controls described in Appendix C to RG 5.71, consistent with the process described below*

*The VEGP CSP deviates from RG 5.71, Section C.3.3 Security Controls and Appendix A.3.1.6, by stating that when a control from Appendices B and C of RG 5.71 is not implemented, the licensee will implement alternate control(s) that “do not provide less protection than the corresponding” control in the appendix. This deviation is consistent with the method used in RG 5.71, which states that controls should provide equal or better protection,*

*The VEGP CSP also deviates from RG 5.71 by stating that when a control can be proved to be unnecessary, the applicant will perform an analysis demonstrating that the control is not necessary, and will provide a documented justification. Although RG 5.71 specifically calls for an attack vector analysis, and the VEGP CSP does not specifically commit to performing an attack vector analysis, the VEGP CSP does commit to justifying the non-applicability of a control by demonstrating that the attack vector does not exist. This provides for the same outcome as RG 5.71.*

*Based on the above review, the NRC staff finds that the application of security controls described in Section 3.1.6 of the VEGP CSP is acceptable.*

#### ***13.8.4.8 Incorporating the Cyber Security Program into the Physical Protection Program (Section A.3.2 of Appendix A to RG 5.71)***

*Section 3.2 of the VEGP CSP states that the licensee will provide the management interfaces necessary to appropriately coordinate physical and cyber security activities, as follows:*

- *establish an organization that is responsible for cyber security and is independent from operations*
- *document physical and cyber security interdependencies*
- *develop policies and procedures to coordinate management of physical and cyber security controls*
- *incorporate unified policies and procedures to secure CDAs from attacks up to and including the DBT*
- *coordinate acquisition of physical or cyber security services, training, devices, and equipment*

- *coordinate interdependent physical and cyber security activities and training with physical and cyber security personnel*
- *integrate and coordinate incident response capabilities with physical and cyber incident response personnel*
- *train senior management regarding the needs of both disciplines*
- *periodically exercise the entire security organization using realistic scenarios combining both physical and cyber simulated attacks*

*The VEGP CSP deviates from RG 5.71 by not creating a unified security organization. The commitment to provide for appropriate management interfaces to coordinate the physical and cyber security organizations provides for a level of integration equivalent to a unified organization.*

*Based on the above review, the NRC staff finds that the incorporation of the cyber security program into the physical protection program described in Section 3.2 of the VEGP CSP is acceptable.*

#### **13.8.4.9      *Policies and Implementing Procedures (Section A.3.3 of Appendix A to RG 5.71)***

*Section 3.3 of the VEGP CSP states that the licensee will develop policies and procedures to address the security controls in Appendices B and C to RG 5.71 and review and approve issues and uses, and revise the same according to Section 4 of the CSP. The CSP will also establish specific responsibilities for the positions described in Section 10.10 of Appendix C to RG 5.71, with the following deviation.*

*The CSP states that this will occur “in accordance with the security control application process in Section 3.1.6 of this Plan.” This process requires the applicant to justify and demonstrate that any deviation from the controls in RG 5.71 provide no less protection than the corresponding control in Appendices B and C; therefore, the VEGP CSP will require the same level of protection as the corresponding commitment in RG 5.71.*

*Based on the above review, the NRC staff finds that the policies and implementing procedures described in Section 3.3 of the VEGP CSP are acceptable.*

#### **13.8.4.10      *Maintaining the Cyber Security Program (Section A.4 of Appendix A to RG 5.71)***

*Section 4 of the VEGP CSP states that the applicant will establish the programmatic elements necessary to maintain security throughout the life cycle of the CDAs, and that the applicant has implemented these elements. For new assets, SNC commits to follow the process described in Section 4.2.*

Section 4 of the VEGP CSP is nearly identical to Section C.4 of RG 5.71, with the deviation of replacing the bracketed text [Licensee/Applicant] with VEGP Units 3 and 4, and by including the caveat that the operational and management controls are applied following the process described in Section 3.1.6. The process described in Section 3.1.6 allows the licensee/applicant to not apply a control if it can demonstrate that the control is not necessary by justifying that the attack vector associated with the control does not exist. This approach is consistent with the method used in RG 5.71, and does not reduce the protection to the plant.

Based on the above review, the NRC staff finds that the maintenance of the cyber security program described in Section 4 of the VEGP CSP is acceptable.

**13.8.4.11 Continuous Monitoring and Assessment (Section A.4.1 of Appendix A to RG 5.71)**

Section 4.1 of the VEGP CSP states that the licensee will continue to monitor security controls for effectiveness; will ensure that they remain in place throughout the life cycle of the CDA; and will verify that rogue assets are not connected to the infrastructure.

The VEGP CSP includes a single deviation from Section A.4.1 of RG 5.71. The RG states that “[Licensee/Applicant] continuously monitors security controls consistent with Appendix C to RG 5.71,” whereas the VEGP CSP states that “VEGP Units 3 and 4 continues to monitor security controls consistent with Appendix C to RG 5.71.”

This deviation is consistent with the method in RG 5.71, which calls for periodic assessments, which is consistent with the statement “continues to monitor.”

Based on the above review, the NRC staff finds that the ongoing monitoring and assessment described in Section 4.1 of the VEGP CSP is acceptable.

**13.8.4.12 Periodic Assessment of Security Controls (Section A.4.1.1 of Appendix A to RG 5.71)**

Section 4.1.1 of the VEGP CSP states that the licensee will periodically assess that security controls implemented for each CDA remain robust, resilient, and effective in place throughout the life cycle, at least every 24 months.

The NRC staff reviewed the above and found that this period of assessment is not consistent with RG 5.71. The time period between evaluations is 12 months longer than the time period provided in RG 5.71. However, this 24-month time period conforms to 10 CFR 73.54(g) requiring the licensee/applicant to review the cyber security program as a component of the physical security program in accordance with the requirements of 10 CFR 73.55(m), including the periodicity requirements. The requirements of 10 CFR 73.55(m) are that, at a minimum, the licensee/applicant review each element of the physical protection program, which includes the cyber security program, at least every 24 months.

*Furthermore, the VEGP CSP states that controls will be reviewed according to the requirements of the security controls if that period of review occurs more often. This is also consistent with the method provided in RG 5.71.*

*Based on the above review, the NRC staff finds that the periodic assessment of security controls described in Section 4.1.1 of the VEGP CSP is acceptable.*

**13.8.4.13 Effectiveness Analysis (Section A.4.1.2 of Appendix A to RG 5.71)**

*Section 4.1.2 of the VEGP CSP states that the licensee will monitor and measure the effectiveness of the cyber security program and its security controls to ensure that both are implemented correctly, operating as intended, and continuing to provide high assurance that CDAs are protected against cyber attacks. The licensee commits to verifying the effectiveness of the security controls every 24 months, or in accordance with the specific requirements of the implemented security controls, whichever is more frequent.*

*The NRC staff reviewed the above and found that this period of verification is inconsistent with RG 5.71. The time period between evaluations is 12 months longer than the time period provided in RG 5.71. However, this 24-month time period conforms to 10 CFR 73.54(g) requiring the applicant to review the cyber security program as a component of the physical security program in accordance with the requirements of 10 CFR 73.55(m), including the periodicity requirements. The requirements of 10 CFR 73.55(m) are that, at a minimum, the applicant review each element of the physical protection program, which includes the cyber security program, at least every 24 months.*

*Furthermore, the VEGP CSP states that verification will also occur according to the requirements of the security controls if that period of verification occurs more often. This is also consistent with the method provided in RG 5.71.*

*Based on the above review, the NRC staff finds that the effectiveness analysis described in Section 4.1.2 of the VEGP CSP is acceptable.*

**13.8.4.14 Vulnerability Assessments and Scans (Section A.4.1.3 of Appendix A to RG 5.71)**

*Section 4.1.3 of the VEGP CSP states vulnerability assessments will be performed as specified in the security controls in Appendices B and C of RG 5.71 to identify new vulnerabilities that have the potential to impact the effectiveness of the cyber security program and the security of the CDAs. The applicant also commits to address vulnerabilities that could cause CDAs to become compromised or could have an adverse impact on SSEP functions. Section 13.1 of Appendix C of RG 5.71 provides that vulnerability assessments should occur no less frequently than once a quarter, at random intervals, and when new potential vulnerabilities are reported and identified.*

*Section A.4.1.3 of RG 5.71 states that vulnerability assessments will occur no less frequently than quarterly, whereas the VEGP CSP states that this will occur,*

*“as specified in the implemented security controls in Appendices B and C to RG 5.71 and implemented alternatives to the Appendices B and C controls.” The process SNC has committed to in Section 3.1.6 of the VEGP CSP requires SNC, if it does not implement the controls in Appendices B and C, to demonstrate that an alternate control does not provide less protection than the corresponding control in Appendices B and C.*

*Therefore, if SNC does not implement the security control in Section 13.1, or deviates from the requirement for a quarterly vulnerability assessment, it will ensure that this deviation does not provide less protection than performing quarterly vulnerability assessments, and will provide an analysis that demonstrates that the attack vector does not exist and will document this justification for inspection.*

*Based on the above review, the NRC staff finds that the vulnerability assessments and scans described in Section 4.1.3 of the VEGP CSP are acceptable.*

#### **13.8.4.15 Change Control (Section A.4.2 of Appendix A to RG 5.71)**

*Section 4.2 of the VEGP CSP states that the licensee will systematically plan, approve, test, and document changes to the environment of the CDAs, the addition of CDAs to the environment, and changes to existing CDAs in a manner that provides a high level of assurance that the SSEP functions are protected from cyber attacks. The CSP also commits that the program establish that changes made to CDAs use the design control and configuration management procedures or other procedural processes to ensure that the existing security controls are effective and that any pathway that can be exploited to compromise a CDA is protected from cyber attacks.*

*The VEGP CSP does not deviate from Section A.4.2 of RG 5.71.*

*Based on the above review, the NRC staff finds that the change control process described in Section 4.2 of the VEGP CSP is acceptable.*

#### **13.8.4.16 Configuration Management (Section A.4.2.1 of Appendix A to RG 5.71)**

*Section 4.2.1 of the VEGP CSP states that the licensee will implement and document a change management process as described in Section 4.2 of the VEGP CSP. Further, it commits to implement and document the applied configuration management controls described in Appendix C, Section 11 to RG 5.71 following the process described in Section 3.1.6 of the CSP.*

*The VEGP CSP does not specifically commit to apply the security controls in Section 11 of Appendix C of RG 5.71; however, it does commit to apply the process in Section 3.1.6 of the CSP. The commitment in Section 4.2.1 is consistent with Section A.4.2.2 of RG 5.71 as the applicant has committed, if it does not implement the security controls in Section 11 of RG 5.71, either to*

*implement alternative controls that do not provide less protection than what is in Section 11, or to demonstrate that this control is unnecessary by demonstrating that the attack vectors associated with Section 11 to Appendix C of RG 5.71 do not exist for VEGP.*

*Based on the above review, the NRC staff finds that the configuration management process described in Section 4.2.1 of the VEGP CSP is acceptable.*

**13.8.4.17 Security Impact Analysis of Changes and Environment  
(Section A.4.2.2 of Appendix A to RG 5.71)**

*Section 4.2.2 of the VEGP CSP states that the applicant will perform a security impact analysis in accordance with Section 4.1.2 before implementing a design or configuration change to a CDA or, when changes to the environment occur, to manage potential risks introduced by the changes. The CSP also commits to evaluate, document, and incorporate into the security impact analysis safety and security interdependencies of other CDAs or systems, as well as updates, and documents the following:*

- the location of the CDA and connected assets*
- connectivity pathways (direct and indirect)*
- infrastructure interdependencies*
- application of defensive strategies, including defensive models, security controls, and others*
- defensive strategy measures*
- plant-wide physical and cyber security policies and procedures that secure CDAs from a cyber attack, including attack mitigation and incident response and recovery*

*The VEGP CSP commits to perform these impact analyses as part of the change approval process to assess the impacts of the changes on the security posture of CDAs and security controls, as described in Section 4.1.2 of the VEGP CSP, and to address any identified gaps to protect CDAs from cyber attack, up to and including the DBT as described in Section 4.2.6.*

*Finally, Section 4.2.2 states that the licensee will manage CDAs for the cyber security of SSEP functions through an ongoing evaluation of threats and vulnerabilities and implementation of each of the applied security controls provided in Appendix B or C of RG 5.71 and implement alternatives to the Appendices B and C controls during all phases of the life cycle. Additionally, SNC has established and documented procedures for screening, evaluating, mitigating, and dispositioning threat and vulnerability notifications received from credible sources. Dispositioning includes implementation of security controls to mitigate newly reported or discovered threats and vulnerabilities.*

*The language in Section 4.2.2 of the VEGP CSP is identical to that in Section A.4.2.2 of RG 5.71 and includes no deviations.*

*Based on the above review, the NRC staff finds that the security impact analysis of changes and environment described in Section 4.2.2 of the VEGP CSP is acceptable.*

**13.8.4.18 Security Reassessment and Authorization (Section A.4.2.3 of Appendix A to RG 5.71)**

*Section 4.2.3 of the VEGP CSP states that the licensee will have implemented, documented, and maintained a process that ensures that modifications to CDAs are evaluated before implementation so that security controls remain effective and that any pathway that can be exploited to compromise the modified CDA is addressed to protect CDAs and SSEP functions from cyber attacks. This section further states that the VEGP cyber security program establishes that additions and modifications are evaluated, using a proven and accepted method, before implementation to provide high assurance of adequate protection against cyber attacks, up to and including DBTs, using the process described in Section 4.1.2 of the VEGP CSP.*

*The licensee also commits to disseminate, review, and update the following when a CDA modification is conducted:*

- *a formal, documented security assessment and authorization policy, which addresses the purpose, scope, roles, responsibilities, management commitment, coordination among entities, and compliance to reflect all modifications or additions*
- *a formal, documented procedure to facilitate the implementation of the security reassessment and authorization policy and associated controls*

*The VEGP CSP does not deviate from Section A.4.2.3 of RG 5.71.*

*Based on the above review, the NRC staff finds that the security reassessment and authorization described in Section 4.2.3 of the VEGP CSP is acceptable.*

**13.8.4.19 Updating Cyber Security Practices (Section A.4.2.4 of Appendix A to RG 5.71)**

*Section 4.2.4 of the VEGP CSP states that the licensee reviews, updates and modifies cyber security policies, procedures, practices, existing cyber security controls, detailed descriptions of network architecture (including logical and physical diagrams), information on security devices, and any other information associated with the state of the cyber security program or the applied security controls provided in Appendices B and C to RG 5.71 and implemented alternatives to the Appendices B and C controls when changes occur to CDAs or the environment.*



*This information includes the following:*

- *plant- and corporate-wide information on the policies, procedures, and current practices related to cyber security*
- *detailed network architectures and diagrams*
- *configuration information on security devices or CDAs*
- *new plant- or corporate-wide cyber security defensive strategies or security controls being developed and policies, procedures, practices, and technologies related to their deployment*
- *the site's physical and operational security program*
- *cyber security requirements for vendors and contractors*
- *identified potential pathways for attacks*
- *recent cyber security studies or audits (to gain insight into areas of potential vulnerabilities); and identified infrastructure support systems (e.g., electrical power; heating, ventilation, and air conditioning; communications; fire suppression) whose failure or manipulation could impact the proper functioning of CSs*

*The VEGP CSP does not deviate from Section A.4.2.4 of RG 5.71.*

*Based on the above review, the NRC staff finds that updating of cyber security practices described in Section 4.2.4 of the VEGP CSP is acceptable*

***13.8.4.20 Review and Validation Testing of a Modification or Addition of a Critical Digital Asset (Section A.4.2.5 of Appendix A to RG 5.71)***

*The VEGP CSP Section 4.2.5 states the licensee will conduct and document the results of reviews and validation tests of each CDA modification and addition using the process described in Section 3.1.4 of the VEGP CSP.*

*The VEGP CSP does not deviate from Section A.4.2.5 of RG 5.71.*

*Based on the above review, the NRC staff finds that the Review and Validation Testing of Modifications or Additions of a Critical Digital Asset described in Section 4.2.5 of VEGP CSP is acceptable.*

***13.8.4.21 Application of Security Controls Associated with a Modification or Addition (Section A.4.2.6 of Appendix A to RG 5.71)***

*Section 4.2.6 of the VEGP CSP states that when new CDAs are introduced into the environment of VEGP, the licensee:*

- *deploys the CDA into the appropriate level of the defensive model described in Section 3.1.5 of this plan;*
- *applies the technical controls identified in Appendix B to RG 5.71 and the operational and management controls described in Appendix C to RG 5.71 in a manner consistent with the process described in Section 3.1.6 of this plan*
- *confirms that the implemented operational and management controls described in Appendix C to RG 5.71, and implemented alternatives to the Appendix C controls, are effective for the CDA*

*The plan also commits that when CDAs are modified, the licensee:*

- *verifies that the CDA is deployed into the proper level of the defensive model described in Section 3.1.5 of this plan*
- *performs a security impact analysis, as described in Section 4.2.2 of this plan*
- *verifies that the technical controls identified in Appendix B to RG 5.71 and the operational and management controls described in Appendix C to RG 5.71 are addressed in a manner consistent with the process described in Section 3.1.6 of this plan*
- *verifies that the applied security controls discussed above are implemented effectively, consistent with the process described in Section 4.1.2 of this plan*
- *confirms that the implemented operational and management controls discussed in Appendix C to RG 5.71 and implemented alternatives to the Appendix C controls are effective for the CDA*

*The VEGP CSP deviates from Section 4.2.6 of RG 5.71 by modifying the phrase “applies the technical controls identified in Appendix B to RG 5.71 in a manner consistent with the process described in Section 3.2 of RG 5.71,” to read “applies the technical controls identified in Appendix B to RG 5.71 and the operational and management controls described in Appendix C to RG 5.71 in a manner consistent with the process described in Section 3.1.6 of this plan.” This is consistent with RG 5.71 as the VEGP CSP commits to following the process in Section 3.1.6 of the VEGP CSP, which requires that controls are applied, an alternative that provides equivalent protection is provided, or the licensee demonstrates that the control is not necessary.*

*The VEGP CSP also deviates from Section A.4.2.6 of RG 5.71 with the modification of this phrase, “verifies that the security controls discussed above are implemented effectively, consistent with the process described in Section 4.1.2 of this plan” to read “verifies that the applied security controls*

*discussed above are implemented effectively, consistent with the process described in Section 4.1.2 of this plan.”*

*This deviation is consistent with the method used in RG 5.71. RG 5.71 assumes that all the controls in Appendices B and C will be applied; whereas, the VEGP CSP commits that if a control is not applied, there will be no reduction in protection as compared to the corresponding control. This method is also captured in RG 5.71 and, therefore, the VEGP CSP is consistent with RG 5.71.*

*Based on the above review, the NRC staff finds that the application of security controls associated with a modification or addition described in Section 4.2.6 of the VEGP CSP is acceptable.*

#### **13.8.4.22 Cyber Security Program Review (Section A.4.3 of Appendix A to RG 5.71)**

*Section 4.3 of the VEGP CSP states that the applicant has established the necessary measures and governing procedures to implement periodic reviews of applicable program elements, in accordance with the requirements of 10 CFR 73.55(m). Specifically, the VEGP CSP calls for a review of the program’s effectiveness at least every 24 months. In addition, reviews are to be conducted as follows:*

- within 12 months following initial implementation of the program*
- as necessary, based upon site-specific analyses, assessments, or other performance indicators*
- as soon as reasonably practical, but no longer than 12 months after changes occur in personnel, procedures, equipment, or facilities that potentially could adversely affect cyber security*
- by individuals independent of those personnel responsible for program management, and any individual who has direct responsibility for implementing the program*

*This deviates from RG 5.71 in the specific wording, but includes the same commitments. Specifically, RG 5.71 states that the licensee reviews the program’s effectiveness at least every 24 months. In addition, reviews are conducted as follows:*

- within 12 months of the initial implementation of the program*
- within 12 months of a change to personnel, procedures, equipment, or facilities that potentially could adversely affect security*
- as necessary based upon site-specific analyses, assessments, or other performance indicators*

- *by individuals independent of those personnel responsible for program implementation and management*

*Based on the above review, the NRC staff finds that the cyber security program review described in Section 4.3 of the VEGP CSP is acceptable.*

#### **13.8.4.23 Document Control and Records Retention and Handling (Section A.5 of Appendix A to RG 5.71)**

*Section 5 of the VEGP CSP states the necessary measures and governing procedures to ensure that sufficient records of items and activities affecting cyber security are developed, reviewed, approved, issued, used, and revised to reflect completed work. VEGP will retain records and supporting technical documentation required to satisfy the requirements of 10 CFR 73.54 and 10 CFR 73.55, "Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors against Radiological Sabotage," until the NRC terminates the facility's operating license. Records are retained to document access history, as well as to discover the source of cyber attacks or other security-related incidents affecting CDAs or SSEP functions, or both. VEGP Units 3 and 4 will retain superseded portions of these records for at least three years after the record is superseded, unless otherwise specified by the NRC.*

*This deviates from RG 5.71 by not specifically detailing the types of records, but instead describes that records will be retained to document access history and information needed to discover the source of cyber attacks and incidents. This is consistent with what is included in RG 5.71, Section 5, and includes all the performance-based characteristics and commitments of that section.*

*Based on the above review, the NRC staff finds that the document control and records retention handling described in Section 5 of the VEGP CSP is acceptable.*

#### **13.8.4.24 Deviations Taken to RG 5.71, Sections C.1 Through C.5**

*The VEGP CSP states that the plan deviates from Regulatory Positions C.1 through C.5 of RG 5.71, as noted in Attachment A to the CSP. It also deviates from Section A.1 of Appendix A of RG 5.71. For that reason, the staff considers that the full evaluation of the CSP must include a review of the deviations taken to those sections of RG 5.71 as listed in the VEGP CSP. This section of the SER lists those 69 specific deviations and their evaluated security impact. The following deviations were provided in a table, as part of Attachment A to the CSP.*

##### **13.8.4.24.1 RG 5.71, Section C.2, fourth paragraph, first sentence (page 8)**

*SNC added the term "adequately" to the phrase "...systems and equipment are protected from cyber attack." Since 10 CFR 73.54 specifically makes that same statement, the staff found no reason to object to that clarification. The objective is to provide adequate protection to the identified CDAs.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.2 RG 5.71, Section C.2, fourth paragraph, twelfth bullet, third sub-bullet (page 8)**

*SNC clarifies that its overall design is based on the Westinghouse AP1000 design and states that the AP1000 DCD commits to Revision 1 of RG 1.152, "Criteria for Digital Computers in Safety Systems of Nuclear Power Plants." Since the applicant is required to have a cyber security program that meets the performance objectives outlined in 10 CFR 73.54 and is not obliged to achieve that requirement exclusively through the example provided by RG 5.71, this clarification, in and of itself, was not considered by the staff as deviating from the requirements established by the rule,*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.3 RG 5.71, Section C.2, fifteenth bullet (page 8)**

*The deviation states that the required policies and procedures have not yet been written, reviewed, and approved, and, thus, are not currently available for inspection and review.*

*The NRC requires that these policies and procedures be completed and available for review by the completion of the CSP implementation schedule proposed by the applicant, since CSP inspections would not occur until that time. The requirements of 10 CFR 73.55(a)(4) and proposed License Condition 6 provide the necessary controls associated with developing the required policies and procedures of the CSP.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.4 RG 5.71, Section C.3, Figure 1 (Page 10)**

*The deviation changes the arrows on the left side of Figure 1 from "Continuous Monitoring" to "Ongoing Monitoring."*

*The NRC intended monitoring to occur periodically, and when required, based on certain inputs into the process. SNC states that "continuous" might imply that monitoring was perpetual and not event driven. This was not the staff's intent with the term "continuous." The staff accepts the use of the term "ongoing" to better reflect the intent of this diagram.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.5 RG 5.71, Section C.3, third paragraph, first sentence (Page 10)**

The VEGP CSP changes the statement, "An acceptable method to establish a cyber security program at a facility is by performing the following, (1) analyze the digital computer and communication systems and networks, ..." to "An acceptable method to establish a cyber security program at a facility is by performing the following: (1) identify critical systems and critical digital assets as described in Section C.3.1.3, (2) analyze the digital computer and communication systems and networks..."

This deviation is acceptable because SNC proposes to use its licensing basis to identify CSs that are associated with SSEP functions, as 10 CFR 73.54 requires. This statement includes the first step in RG 5.71 to analyze digital computer and communication systems and networks to determine if they include CDAs.

Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.

**13.8.4.24.6 RG 5.71, Section C.3.1, first paragraph, first sentence (page 11)**

The VEGP CSP changes the statement, "Consistent with the requirements of 10 CFR 73.54(b)(1), a licensee must conduct a site-specific analysis of digital computer and communication systems and networks to identify CDAs, which are those assets that, if compromised, could adversely impact the SSEP functions of nuclear facilities." to "Consistent with the requirements of 10 CFR 73.54(b)(1), a licensee must conduct a site-specific analysis of digital computer and communication systems and networks to identify CDAs, which are those assets that, if compromised, could adversely impact the CSs of nuclear facilities."

SNC defines a CS as:

*An analog or digital technology-based system in or outside of the plant that performs or is associated with a safety-related, important-to-safety, security, or emergency preparedness function. These critical systems include, but are not limited to, plant systems, equipment, communication systems, networks, offsite communications, or support systems or equipment, that perform or are associated with a safety-related, important-to-safety, security, or emergency preparedness function as defined by the approved plant licensing basis.*

This definition ties CSs to SSEP functions; therefore, the change is consistent with the method used in RG 5.71, as this means that CSs are all those assets associated with SSEP functions, and, therefore, could adversely impact those SSEP functions.

Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.

**13.8.4.24.7 RG 5.71, Section C.3.1, first paragraph, second bullet (page 11)**

The VEGP CSP includes a deviation to correct an editorial omission in RG 5.71. Page 11 of RG 5.71 states that:

*An acceptable method for identifying and documenting CDAs is as follows:*

- *obtain authorization for security assessment*
- *define roles and responsibilities cyber personnel and form the cyber security team*
- *identify and document CDAs at the facility*
- *review and validate configurations of CDAs*

The VEGP CSP corrects the second bullet to read:

- *define roles and responsibilities of cyber personnel and form the cyber security team*

*This deviation which supplies the omitted “of” is consistent with the intent of the referenced bullet.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.8 RG 5.71, Section C.3.1.2, third paragraph, second bullet (page 13)**

The VEGP CSP changes the second bullet on Page 13 of RG 5.71 from:

*documenting all key observations, analyses, and findings during the assessment process so that this information can be used as a basis for applying security controls;*

to:

*documenting all key observations, analyses, and findings during the assessment process so that this information can be used as a basis for addressing security controls;*

*This deviation is acceptable because RG 5.71 allows a licensee to address, as opposed to apply, security controls if it follows the process in Appendix A, Section 3.1.6 of RG 5.71, which is to apply the control, apply an alternative that provides no less protection than the corresponding security control, or to demonstrate that the control is not necessary because the attack vector, root cause, or vulnerability associated with the control does not exist.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.9 RG 5.71, Section C.3.1.2, third paragraph, sixth bullet (page 13)**

The VEGP CSP changes the sixth bullet on Page 13 from:

- *preparing documentation and overseeing implementation of the cyber security controls provided in Appendices B and C to this guide, documenting the basis for not implementing certain cyber security controls provided in Appendix B, or documenting the basis for the implementation of alternate or compensating measures in lieu of any cyber security controls provided in Appendix B; and*

to:

- *overseeing documentation and implementation of the cyber security controls provided in Appendices B and C to this guide, documenting the basis for not implementing certain cyber security controls provided in Appendix B and C, or documenting the basis for the implementation of alternate or compensating measures in lieu of any cyber security controls provided in Appendix B and C; and*

*This deviation is acceptable because overseeing the documentation and implementation of security controls by qualified personnel is an approved method. Further, the extension of this method in Appendix C is also acceptable as the licensee has committed to follow the process in Appendix A, Section 3.1.6 of RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.10 RG 5.71, Section C.3.1.2, third paragraph, seventh bullet (page 13)**

The VEGP CSP includes a deviation from RG 5.71 that changes bullet 7 from:

*assuring the retention of all assessment documentation, including notes and supporting information, in accordance with 10 CFR 73.54(h) and the record retention and handling requirements specified in Section C.5 of this guide.*

to:

*establishing the retention policy of all assessment documentation, including notes and supporting information, in accordance with 10 CFR 73.54(h) and the record retention and handling requirements specified in Section C.5 of this guide.*

*This deviation is acceptable as the licensee has committed to establish the retention policy. Although this may be done by a different team, and not the CST, it is consistent with the intent of RG 5.71.*



*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.11 RG 5.71, Section C.3.1.2, fourth paragraph, first sentence (page 13)**

*The VEGP CSP deviates from RG 5.71 by changing this sentence:*

*The licensee's CST needs to have the authority to conduct an objective assessment, make determinations that are not constrained by operational goals (e.g., cost),*

*to:*

*The licensee's CST needs to have the authority to conduct an objective assessment, make determinations that are not constrained by business goals (e.g., cost),*

*This deviation is acceptable because the intent of this statement in RG 5.71 is to ensure that cost is not used as a factor in making determinations about the adequacy of security controls, vulnerabilities, identifying CSs and CDAs, and carrying out other assessment functions of the CST.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.12 RG 5.71, Section C.3.1.3, second paragraph (page 14)**

*The VEGP CSP deviates from RG 5.71 by changing the identification process from CDAs to CSs. This deviation is acceptable because the VEGP CSP commits to continue identifying CSs by identifying digital computers, networks, communication systems and support systems that perform and are associated with SSEP functions, as well as support systems and equipment that, if compromised, would adversely impact the plant's SSEP functions.*

*This is consistent with the process in RG 5.71, which identifies CDAs through the same process. The licensee further describes CDAs as a CS or part of a CS; therefore, the use of the term CS as opposed to CDA is also consistent with the method used in RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.13 RG 5.71, Section C.3.1.3, fifth paragraph, first sentence (page 15)**

*The VEGP CSP deviates from RG 5.71 by making an editorial correction to RG 5.71. This involves changing:*

*With the identification of the all the CSs ...*

to:

*With the identification of all the CSs ...*

*This change is acceptable because it accomplishes the intent of this phrase in RG 5.71 eliminating the unnecessary "the."*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.14 RG 5.71, Section C.3.1.3, fifth paragraph, second sentence (page 15)**

*The VEGP CSP deviates from RG 5.71 by changing the following statement from:*

*A CDA may be a component of a CS ...*

to:

*A CDA may be a complete CS or component of a CS, ...*

*This deviation is acceptable because this statement is factually true. A CDA may be a complete CS and the deviation does not change the level of protection provided by the method outlined in RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.15 RG 5.71, Section C.3.1.3, fifth paragraph, fifth sentence (page 15)**

*The VEGP CSP deviates from RG 5.71 by including additional documentation to help identify CSs and CDAs. Specifically VEGP includes "other licensing basis" documents to identify CSs and CDAs.*

*This deviation is in line with the intent of using existing documentation to identify CSs and CDAs. This section of RG 5.71 describes "helpful information sources for identifying CSs and CDAs" and is not an exhaustive list, nor is it the only method SNC has committed to use to identify CSs and CDAs. Specifically, SNC has committed to identify all digital computers, networks and communication systems associated with SSEP functions, which is what 10 CFR 73.54 requires.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.16 RG 5.71, Section C.3.1.3, eighth paragraph, first bullet (page 16)**

*The VEGP CSP deviates from RG 5.71 by stating that CDAs may be an entire CS. As previously discussed in Section 13.8.4.24.14 of this SER, it is true that a CDA may be an entire CS; therefore, this definition does not adversely impact either the method used in RG 5.71 or the protection that RG 5.71 provides.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.17 RG 5.71, Section C.3.1.3, eighth paragraph, second bullet (page 16)**

*The VEGP CSP deviates from RG 5.71 by stating that CDAs may be an entire CS. As previously discussed in Sections 13.8.4.24.14 and 13.8.4.24.16 of this SER, it is true that a CDA may be an entire CS; therefore, this definition does not adversely impact either the method used in RG 5.71 or the protection that RG 5.71 provides.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.18 RG 5.71, Section C.3.2, first paragraph, first sentence (page 18)**

*The VEGP CSP deviates from RG 5.71 by providing an editorial correction to RG 5.71. Specifically, the VEGP CSP changes the following sentence from:*

*As stated in 10 CFR 73.54(c)(2), the licensee must design its cyber security program to apply and maintain integrate defense-in-depth protective strategies to ensure the capability to detect, prevent, respond to, mitigate, and recover from cyber attacks.*

*to:*

*As stated in 10 CFR 73.54(c)(2), the licensee must design its cyber security program to apply and maintain integrated defense-in-depth protective strategies to ensure the capability to detect, prevent, respond to, mitigate, and recover from cyber attacks.*

*This deviation captures the intent of this sentence in RG 5.71 by correcting “integrate” to “integrated.”*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.19 RG 5.71, Section C.3.2, second paragraph, fourth sentence (page 18)**

*The VEGP CSP deviates from RG 5.71 by pointing to an editorial error in RG 5.71. Specifically, the VEGP CSP changes the following sentence from:*

*Therefore, defense-in-depth is achieved not only by implementing multiple security boundaries, but also by instituting and maintaining a robust program of security controls that assess, protect, respond, prevent, detect, and mitigates an attack on a CDA and with recovery.*

to:

*Therefore, defense-in-depth is achieved not only by implementing multiple security boundaries, but also by instituting and maintaining a robust program of security controls that assess, protect, respond, prevent, detect, and mitigate an attack on a CDA and with recovery.*

*This deviation captures the intent of this sentence in RG 5.71 by correcting “mitigates” to “mitigate.” Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.20 RG 5.71, Section C.3.2, third paragraph, first sentence (page 18)**

*The VEGP CSP deviates from RG 5.71 by pointing to an editorial error in RG 5.71. Specifically, the VEGP CSP changes the following sentence from:*

*For example, if a failure in prevention were to occur (e.g., a violation of policy) or if protection mechanisms were to be bypassed (e.g., by a new virus that is not yet identified as a cyber attack), mechanisms would still in place to detect and respond to an unauthorized alteration in an impacted CDA, mitigate the impacts of this alteration, and recover normal operations of the impacted CDA before an adverse impact.*

to:

*For example, if a failure in prevention were to occur (e.g., a violation of policy) or if protection mechanisms were to be bypassed (e.g., by a new virus that is not yet identified as a cyber attack), mechanisms would still be in place to detect and respond to an unauthorized alteration in an impacted CDA, mitigate the impacts of this alteration, and recover normal operations of the impacted CDA before an adverse impact.*

*This is acceptable because the change to add the word “be” to the phrase “would still be in place to detect” captures the intent of this sentence by supplying the “be” omitted from RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.21 RG 5.71, Section C.3.2.1, Figure 5 (Page 19)**

*The VEGP CSP includes a defensive architecture, which deviates from the example provided in RG 5.71. The proposed architecture is acceptable because it provides defense-in-depth, communication isolation for safety and security systems, and multiple nondeterministic boundaries for nonsafety/nonsecurity CDAs. This provides adequate protection for CDAs and ensures that appropriate isolation and boundary protection exists for all CDAs where appropriate.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.22 RG 5.71, Section C.3.2.1, third paragraph (page 19)**

*The VEGP CSP deviates from RG 5.71 by modifying the characteristics of an acceptable defensive architecture by stating that the architecture includes CSs and CDAs configured in accordance with Section 5 of Appendix B, and Sections 6 and 7 of Appendix C in accordance with the security control application process described in Section 3.3. As previously discussed in Section 13.8.4.24.9 of this SER, the use of the security control application process to address controls is consistent with RG 5.71.*

*SNC has committed to apply the security control, demonstrate that alternative controls provide no less protection than the corresponding control, or demonstrate through analysis that the attack vector the control addresses does not exist; therefore, the control is not necessary.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.23 RG 5.71, Section C.3.2.1, third paragraph, first bullet (page 19)**

*The VEGP CSP deviates from RG 5.71 by modifying the example defensive architecture to match the architecture to be used in the AP1000. This deviation is acceptable because it provides the appropriate isolation of safety and security CDAs, and adequate boundaries for nonsafety/nonsecurity CDAs.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.24 RG 5.71, Section C.3.2.1, third paragraph, second bullet (page 19)**

*The VEGP CSP deviates from RG 5.71 by modifying the example defensive architecture to match the architecture to be used in the AP1000. As previously discussed in Section 13.8.4.6, this deviation is acceptable because it provides the appropriate isolation of safety and security CDAs, and adequate boundaries for nonsafety/nonsecurity CDAs. This is consistent with the defensive model in RG 5.71, as the VEGP defensive architecture provides boundaries for safety systems that are deterministic.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.25 RG 5.71, Section C.3.2.1, third paragraph, third bullet (page 19)**

*The VEGP CSP deviates from RG 5.71 regarding communications from digital assets at lower security levels to digital assets at higher security levels. This deviation is acceptable because the defensive architecture prevents specific*

*communication from lower security levels to specific higher security levels. This is consistent with the defensive model in RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

***13.8.4.24.26 RG 5.71, Section C.3.2.1, third paragraph, new second bullet (page 19)***

*The VEGP CSP deviates from RG 5.71 regarding remote access. This is consistent with the guidance in Section C.7 of RG 5.71, which also states that remote access to CDAs at the highest level be prevented.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

***13.8.4.24.27 RG 5.71, Section C.3.2.1, third paragraph, new sixth bullet (page 19)***

*The VEGP CSP deviates from RG 5.71 by including in its defensive architecture a statement from Section C.7 of RG 5.71 for validating data (software updates, new firmware, etc.) using a method at or above the level of security the CDA that will have data transferred to it. This concept is already acceptable in RG 5.71 and is also included in the defensive architecture, although in a different section of the document. This is consistent with the method used in RG 5.71 and does not adversely impact the protection provided.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable*

***13.8.4.24.28 RG 5.71, Section C.3.2.1, third paragraph, seventh bullet (page 19)***

*The VEGP CSP deviates from RG 5.71 by changing the commitment to eliminate applications, services and protocols not necessary to support the design-basis function of the CDAs to eliminate, disable, or render these inoperable. This is consistent with the method in RG 5.71, because in some cases these elements cannot be eliminated, but rather may have to be disabled or otherwise rendered inoperable. In each case, the result is the same. The asset is only configured to perform its design-based function and nothing more, which produces no less protection than the method in RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable. RG 5.71, Section C.3.2.1, third paragraph, new sixth bullet (page 19)*

***13.8.4.24.29 RG 5.71, Section C.3.2.1, third paragraph, eighth bullet (page 19)***

*The VEGP CSP deviates from RG 5.71 by eliminating the requirement to configure CDAs and boundary protection systems in accordance with Section 5 of Appendix B and Sections 6 and 7 of Appendix C. However, the VEGP CSP does commit to this in the preamble statement as described in*

Section 13.8.4.24.22 of this SER. Therefore, the VEGP CSP provides the same commitment to perform this as does RG 5.71, albeit in a different part of the same section.

Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.

**13.8.4.24.30 RG 5.71, Section C.3.2.1, fourth paragraph (page 19)**

The VEGP CSP deviates from RG 5.71 by deleting the paragraph that commits to applying the security controls. However, the VEGP security plan commits, in Section 3.1.6, to address these controls and is, therefore, consistent with the method used in RG 5.71. The deleted paragraph is, therefore, unnecessary in the VEGP CSP to achieve the same commitment.

Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.

**13.8.4.24.31 RG 5.71, Section C.3.2.1, Prior to fifth paragraph (page 19)**

The VEGP CSP deviates from the RG 5.71 defensive architecture. The VEGP architecture is described in Section 13.8.4.6 of this SER.

Based on the review and assessment in Section 13.8.4.6, the NRC staff finds that this deviation is acceptable.

**13.8.4.24.32 RG 5.71, Section C.3.3, first paragraph, second sentence (page 20)**

The VEGP CSP deviates from RG 5.71 by changing the following sentence:

*A cyber compromise of CDAs would adversely impact nuclear facilities' SSEP functions that are necessary for protecting public health and safety.*

to:

*A cyber compromise of CDAs could adversely impact nuclear facilities' SSEP functions that are necessary for protecting public health and safety.*

This deviation is consistent with the intent of RG 5.71, which implies that a compromise could lead to adverse impact and possible radiological sabotage. The intent of the paragraph is to establish the impact that could occur if a CDA were compromised. The security controls are designed around worst case scenarios, and the change in the VEGP CSP from "would" to "could" maintains this logic.

Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.

**13.8.4.24.33 RG 5.71, Section C.3.3, third paragraph, fourth sentence (page 20)**

The VEGP CSP deviates from RG 5.71 by making an editorial correction to RG 5.71. This involves changing the statement:

*Thus to provide high assurance that CDAs are protected from cyber attacks, potential cyber risks of these CDAs must be addressed known potential cyber risks.*

to:

*Thus to provide high assurance that CDAs are protected from cyber attacks, potential cyber risks of these CDAs must be addressed for known potential cyber risks.*

*This is acceptable because the change captures the intent of this sentence by supplying the “for” omitted from RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.34 RG 5.71, Section C.3.3, third paragraph, first sentence (page 20)**

*The VEGP CSP deviates from RG 5.71 by adding Appendix C to the list of controls that may be addressed using the method in Section 3.1.6 of Appendix A. This is consistent with the intent of RG 5.71, which assumes that all the controls in Appendix C can be implemented as written. However, if the controls can be addressed to demonstrate that an alternative control provides no less protection than the comparable control in Appendix C, or that the control is not necessary by demonstrating that the attack vector does not exist, this would meet the intent of RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.35 RG 5.71, Section C.3.3, third paragraph, first bullet (page 20)**

*The VEGP CSP deviates from RG 5.71 by adding Appendix C to the list of controls that may be addressed using the method in Section 3.1.6 of Appendix A. This is consistent with the intent of RG 5.71, which assumes that all the controls in Appendix C can be implemented as written. However, if the controls can be addressed to demonstrate that an alternative control provides no less protection than the comparable control in Appendix C, or that the control is not necessary by demonstrating that the attack vector does not exist, this would meet the intent of RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*



**13.8.4.24.36 RG 5.71, Section C.3.3, third paragraph, second bullet (page 20)**

*The VEGP CSP deviates from RG 5.71 by stating that alternative controls will not provide equal or better protection to the corresponding control, but rather that they will not provide less protection than the corresponding control. This is consistent with the method used in RG 5.71; providing an alternative that does not provide less protection, and does not adversely impact the security program. Therefore, this change in commitment will provide an adequate level of protection and is consistent with the method used in RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.37 RG 5.71, Section C.3.3, third paragraph, second bullet, second sub-bullet (page 20)**

*The VEGP CSP deviates from RG 5.71 by changing the statement:*

*performing and documenting the attack vector and attack tree analyses of the CDA and alternative countermeasures to confirm that the countermeasures provide the same or greater protection as the corresponding security control in Appendix B.*

*to:*

*performing and documenting an attack vector and attack tree analysis of the CDA and alternative countermeasures to confirm countermeasures provide no decrease in the effectiveness of protection as compared to the corresponding security control identified in Appendix B or C.*

*This deviation is acceptable because whether the licensee performs a single analysis or multiple analyses, the method is comparable provided that it will demonstrate that there is no decrease in protection. Further, the modification of the second part of the sentence is also acceptable because the intent of this method in RG 5.71 is to ensure that alternative controls do not provide less protection than the corresponding control. Therefore, a commitment to ensure that alternatives do not provide less protection produces a comparable level of protection as stating that the alternatives provide equal or better protection. Finally, the addition of the Appendix C controls to this method is acceptable because the licensee has committed to apply the control, apply an alternative that provides no less protection than the comparable control or not to apply the control and demonstrate that the attack vector does not exist.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.38 RG 5.71, Section C.3.3, third paragraph, second bullet, third sub-bullet (page 20)**

*The VEGP CSP deviates from RG 5.71 in a similar manner to deviations in Section 13.8.4.24.37 of this SER by changing the commitment to implement alternative countermeasures that provide at least the same degree of protection as the corresponding security control in Appendix B, to implementing alternative controls to provide no decrease in the effectiveness of protection as compared to the corresponding security control identified in Appendices B and C of RG 5.71.*

*This method is consistent with the method in RG 5.71 as it also meets the criteria for the performance based characteristics of 10 CFR 73.54. As long as the implemented alternative control does not provide less protection than the corresponding control in RG 5.71, the intent of this section of RG 5.71 has been met. Alternative controls are considered to be adequate only if they provide equivalent protection, and the VEGP CSP commits to that minimum standard.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.39 RG 5.71, Section C.3.3, third paragraph, third bullet (page 20)**

*The VEGP CSP deviates from RG 5.71 by not stating that SNC will specifically perform an attack vector and attack tree analysis to demonstrate that one of the specific security controls is not necessary. SNC does commit to performing an analysis to demonstrate that the attack vector does not exist (i.e., is not applicable), thereby obviating the need for a specific security control.*

*This method is consistent with the method in RG 5.71 as it commits to demonstrating a conclusion, specifically, that the attack vector does not exist. If the licensee can demonstrate this, and not use an attack vector or attack tree analysis, the results are still the same and, therefore, the method would produce a result that does not provide less protection than the method in RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.40 RG 5.71, Section C.3.3, fourth paragraph, second sentence (page 20)**

*The VEGP CSP deviates from RG 5.71 by making an editorial correction to RG 5.71. This involves changing the statement:*

*When a security control is determined to have an adverse affect, alternate controls should be used by the licensee to protect the CDA from cyber attack up to and including the DBT consistent with the process described above.*

to:

*When a security control is determined to have an adverse effect, alternate controls should be used by the licensee to protect the CDA from cyber attack up to and including the DBT consistent with the process described above.*

*This is acceptable because the change captures the intent of this sentence in RG 5.71, by correcting “affect” to “effect.”*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.41 RG 5.71, Section C.3.3, fifth paragraph, second sentence (page 21)**

*The VEGP CSP deviates from RG 5.71 by making an editorial correction to RG 5.71. This involves changing the statement:*

*If these effectiveness or vulnerability analyses identify a gap in the cyber security program, the licensee may need to implement additional security measures and controls not provided in Appendixes B and C.*

to:

*If these effectiveness or vulnerability analyses identify a gap in the cyber security program, the licensee may need to implement additional security measures and controls not provided in Appendices B and C.*

*This change is acceptable because it captures the intent of this sentence in RG 5.71, by correcting “Appendixes” to “Appendices.”*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.42 RG 5.71, Sections C.3.3.1.1 through C.3.3.1.5, first paragraph and last bullet (pages 21 and 22)**

*The VEGP CSP deviates from RG 5.71 by stating that it will not apply all of the security controls in RG 5.71, but rather will address them. The VEGP CSP already commits to the RG 5.71 process, which is:*

- a) *applying controls;*
- b) *applying an alternative control that does not provide less protection than the corresponding control; or*
- c) *not applying a control, but demonstrating that the corresponding attack vector does not exist.*

*The intent of RG 5.71 is to address the controls in Appendices B and C. This can be accomplished in accordance with Section 3.1.6 of Appendix A, to which SNC has committed.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

***13.8.4.24.43 RG 5.71, Section C.3.3.1.1, first paragraph, second bullet, fourth sub-bullet (page 21)***

*The VEGP CSP deviates from RG 5.71 by committing to audit CDAs at an interval defined for the CDA, or within 5 days following revocation of an individual's unescorted access, due to a lack of trustworthiness or reliability, or as soon as reasonably practical upon changes in personnel. Although this method uses a different frequency than the method in RG 5.71, which calls for annual assessments, or assessments immediately upon changes in personnel, this frequency does meet the requirements of 10 CFR 73.55(m), which allows the licensee to define these intervals based on its own assessments of need.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

***13.8.4.24.44 RG 5.71, Sections C.3.3.2.1 through C.3.3.2.5, first paragraph and last bullet (pages 23 and 24)***

*The VEGP CSP deviates from RG 5.71 in a fashion similar to the deviation cited in Section 13.8.4.24.42 of this SER by committing not to apply the controls, but rather to address them. As previously stated, this deviation is consistent with the method in RG 5.71, and also meets the intent of the RG, provided that the licensee follows the process in Section 3.1.6 of Appendix A, to which SNC has committed.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

***13.8.4.24.45 RG 5.71, Sections C.3.3.2.6 through C.3.3.2.9, first paragraph and last bullet (pages 24-26)***

*The VEGP CSP deviates from RG 5.71 in a fashion similar to the deviation cited in Sections 13.8.4.24.42 and 13.8.4.24.44 of this SER by committing to apply the controls, but rather to address them. As previously stated, this deviation is consistent with the method in RG 5.71, and also meets the intent of the RG, provided that the licensee follows the process in Section 3.1.6 of Appendix A, to which SNC has committed.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.46 RG 5.71, Section C.3.3.2.9, first paragraph, first bullet (page 25)**

The VEGP CSP deviates from RG 5.71 by making an editorial correction to RG 5.71. This involves changing the first bullet:

- *develop, disseminate, and annually review and update the configuration management policy and program which defines the purpose of the nuclear facility's configuration management policy, scope, roles, requirements, responsibilities, and management commitments necessary to provide, with high assurance, that (1) when a modification to a CDA does not reduce the existing security and (2) any unauthorized or inadvertent modification of a CDA is prevented.*

to:

- *develop, disseminate, and annually review and update the configuration management policy and program which defines the purpose of the nuclear facility's configuration management policy, scope, roles, requirements, responsibilities, and management commitments necessary to provide, with high assurance, that (1) a modification to a CDA does not reduce the existing security and (2) any unauthorized or inadvertent modification of a CDA is prevented.*

*This is acceptable because it captures the intent of this sentence in RG 5.71, by striking the word "when" after "(1)." This editorial mistake will be corrected in a future revision.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.47 RG 5.71, Section C.3.3.3.1, first paragraph and last bullet (page 26)**

*The VEGP CSP deviates from RG 5.71 in a fashion similar to the deviations cited in Sections 13.8.4.24.42, 13.8.4.24.44 and 13.8.4.24.45 of this SER, and by committing not to apply the controls, but rather to address them. As previously stated, this deviation is consistent with the method in RG 5.71, and also meets the intent of RG 5.71, provided that the licensee follows the process in Section 3.1.6 of Appendix A, to which SNC has committed.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.48 RG 5.71, Section C.3.3.3.1, second paragraph (page 26)**

*The VEGP CSP deviates from RG 5.71 by committing to Revision 1 of RG 1.152 and not Revision 2 of RG 1.152 as stated in RG 5.71. The results of the NRC*

*staff's technical evaluation of the digital instrumentation and controls design of the AP1000 are documented in Chapter 7 of NUREG-1793 and its supplements. SNC's use of the defensive architecture as discussed in Section 13.8.4.6 is acceptable to the staff.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

***13.8.4.24.49 RG 5.71, Section C.3.3.3.2, first paragraph, second sentence (page 26)***

*The VEGP CSP deviates from RG 5.71 by committing to provide adequate protection of high assurance against cyber attacks. Although this commitment is worded differently than the commitment provided in RG 5.71, it does meet the requirement of 10 CFR 73.54(a), which states that licensees "shall provide high assurance that digital computer and communication systems and networks are adequately protected against cyber attacks, up to and including the design basis threat as described in 10 CFR 73.1."*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

***13.8.4.24.50 RG 5.71, Section C.3.4, second paragraph, first sentence (page 26)***

*The VEGP CSP deviates from RG 5.71 as described in Section 13.8.4.8 of this SER by committing not to integrate management of physical and cyber security, but rather to provide the management interfaces necessary to appropriately coordinate the physical and cyber security activities. The VEGP CSP includes a commitment to establish an organization that is responsible for cyber security and is independent of operations. The combination of an independent organization responsible for cyber security, and management coordination between physical and cyber security meets the requirements of the rule and does not provide less protection than the method described in RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

***13.8.4.24.51 RG 5.71, Section C.3.4, second paragraph, first bullet (page 27)***

*The VEGP CSP deviates from RG 5.71 as also described in Section 13.8.4.8 of this SER by committing not to form a unified security organization, but rather to establish a cyber security organization that is responsible for cyber security and is independent from operations. The combination of an independent organization responsible for cyber security, and management coordination as described in Section 13.8.4.24.50 of this SER between physical and cyber security meets the requirements of the rule, and does not provide less protection than the method described in RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.52 RG 5.71, Section C.4, first paragraph, first sentence (page 27)**

The VEGP CSP deviates from RG 5.71 by changing the phrase:

*Once the security program is in place...*

to:

*Once the cyber security program is in place...*

*This deviation is acceptable because the CSP only applies to the applicant's cyber security program.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.53 RG 5.71, Section C.4, first paragraph, first bullet (page 28)**

*The VEGP CSP deviates from RG 5.71 as previously described in Section 13.8.4.11 of this SER by changing the phrase "continuous monitoring and assessment" to "ongoing monitoring and assessment." This description is consistent with the method in RG 5.71 by establishing intervals for these assessments, which include the same elements as in RG 5.71, and meeting the periodicity requirements of 10 CFR 73.55(m).*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.54 RG 5.71, Section C.4.1, section heading and first paragraph, first sentence (page 28)**

*The VEGP CSP deviates from RG 5.71 as previously described in Sections 13.8.4.11 and 13.8.4.24.53 of this SER by changing the phrase "continuous monitoring and assessment" to "ongoing monitoring and assessment." This description is consistent with the method in RG 5.71 by establishing intervals for these assessments, which include the same elements in RG 5.71 and meeting the periodicity requirements of 10 CFR 73.55(m).*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.55 RG 5.71, Section C.4.1, second paragraph, first sentence (page 28)**

*The VEGP CSP deviates from RG 5.71 as previously described in Sections 13.8.4.11, 13.8.4.24.53 and 13.8.4.24.54 of this SER by changing the phrase "continuous monitoring and assessment" to "ongoing monitoring and assessment." This description is consistent with the method in RG 5.71 by establishing intervals for these assessments, which include the same elements as in RG 5.71 and meeting the periodicity requirements of 10 CFR 73.55(m).*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.56 RG 5.71, Section C.4.1, second paragraph, first bullet (page 28)**

*The VEGP CSP deviates from RG 5.71 by making an editorial correction to RG 5.71. This involves changing the phrase:*

*ongoing assessments of verify that the security controls...*

*to:*

*ongoing assessments to verify that the security controls.”*

*This change is acceptable because it captures the intent of this sentence in RG 5.71, by substituting “to” for “of.”*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.57 RG 5.71, Section C.4.1, third paragraph, first and second sentences (page 28)**

*The VEGP CSP deviates from RG 5.71 as previously described in Sections 13.8.4.11, 13.8.4.24.53, 13.8.4.24.54 and 13.8.4.24.55 of this SER by changing the phrase “continuous monitoring and assessment” to “ongoing monitoring and assessment.” This description is consistent with the method in RG 5.71 by establishing intervals for these assessments, which include the same elements as in RG 5.71, and meeting the periodicity requirements of 10 CFR 73.55(m).*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.58 RG 5.71, Section C.4.1.1, first paragraph, second sentence (page 28)**

*Section 3.1.1 of the VEGP CSP states that status of security controls will be verified in accordance with the requirements of 10 CFR 73.55(m).*

*The NRC staff reviewed the above and found that reviewing security controls in accordance with 10 CFR 73.55(m) is in accordance with RG 5.71. The time period between evaluations may be longer than the time period provided in RG 5.71. However, this period cannot exceed 24 months, which conforms to 10 CFR 73.54(g), requiring the applicant to review the cyber security program as a component of the physical security program in accordance with the requirements of 10 CFR 73.55(m), including the periodicity requirements. The requirements of 10 CFR 73.55(m) are that, at minimum, the applicant review each element of the physical protection program at least every 24 months.*



*The licensee has also committed to address C.13 of Appendix C to RG 5.71, "Security Assessment and Risk Management," which calls for vulnerability assessments on a quarterly basis. SNC commits to apply this control, apply an alternative that provides no less protection than C.13, or demonstrate that any attack vectors associated with vulnerabilities that may be discovered through quarterly assessments do not exist. The VEGP CSP also includes addressing controls that specifically include defined verification periods and that detect when some controls are not working correctly.*

*This, coupled with the CSP conforming to requirements of 10 CFR 73.55(m), which includes an initial assessment within 12 months of the program inception, and as necessary based on site-specific analyses, assessments, or other performance indicators, provides a level of protection consistent with the method in RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

***13.8.4.24.59 RG 5.71, Section C.4.1.2, first paragraph, third sentence  
(page 29)***

*Section 3.1.1 of the VEGP CSP states that effectiveness of security controls will be verified in accordance with the requirements of 10 CFR 73.55(m). As previously discussed in Section 13.8.4.12 of this SER, the NRC staff reviewed the above and found that the period of effectiveness analysis is comparable with that of RG 5.71.*

*The time period between evaluations is 12 months longer than the time period provided in RG 5.71. However, this 24-month time period conforms to 10 CFR 73.54(g) requiring the applicant to review the cyber security program as a component of the physical security program in accordance with the requirements of 10 CFR 73.55(m), including the periodicity requirements. The requirements of 10 CFR 73.55(m) are that, at minimum, the applicant review each element of the physical protection program, which includes the cyber security program, at least every 24 months and within 12 months of the implementation of the program, or within 12 months when changes that may adversely impact the security program occur.*

*Furthermore, the VEGP CSP states that controls will be reviewed according to the requirements of the security controls if that period of review occurs more often. This is also consistent with the method provided in RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.60 RG 5.71, Section C.4.1.3, first paragraph, second sentence  
(page 29)**

VEGP CSP Section 4.1.3 deviates from RG 5.71 by stating that vulnerability assessments will occur periodically. RG 5.71, Section C.4.1.3 states that vulnerability assessments will occur no less frequently than on a quarterly basis.

As previously described in Section 13.8.4.14 of this SER, the VEGP CSP states vulnerability assessments will be performed as specified in the security controls in Appendices B and C of RG 5.71, and when new vulnerabilities that could affect the effectiveness of the cyber security program and the security of the CDAs are identified. The licensee also commits to addressing vulnerabilities that could cause CDAs to become compromised or could have an adverse impact on SSEP functions. Section 13.1 of Appendix C of RG 5.71, which VEGP commits to address in accordance with the process in Section 3.1.6 of Appendix A, provides that vulnerability assessments should occur no less frequently than once a quarter, at random intervals, and when new potential vulnerabilities are reported and identified. SNC has not deviated from the interval.

The process the applicant has committed to in Section 3.1.6 of the VEGP CSP requires SNC, if it does not implement Section 13.1 of Appendix C, to implement an alternate control that does not provide less protection than the corresponding control in Appendices B and C, or to demonstrate that any attack vectors associated with vulnerabilities that may be discovered through quarterly assessments do not exist.

Therefore, if SNC does not implement the security control in Appendix C, Section 13.1 of RG 5.71, or deviates from the guidance for a quarterly vulnerability assessment, it will ensure that this deviation does not provide less protection than performing quarterly vulnerability assessments, and will provide an analysis that demonstrates that the attack vector does not exist and will document this justification for inspection.

Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.

**13.8.4.24.61 RG 5.71, Section C.4.2, first paragraph, second sentence  
(page 30)**

The VEGP CSP deviates from RG 5.71 by committing not to implement the security controls in Section 11 of Appendix C of RG 5.71, but rather to address those controls in accordance with Section C.3.3 of RG 5.71.

As previously described in Section 13.8.4.7 of this SER, the VEGP CSP deviates from RG 5.71 by committing to address security controls rather than committing to apply them. The VEGP CSP states that when a control from Appendices B and C of RG 5.71, such as Section 11 of Appendix C, is not implemented that the licensee will implement alternate control(s) that “do not provide less protection than the corresponding” control in the appendix. This

*deviation is consistent with the method used in RG 5.71, which states that controls should provide equal or better protection.*

*As also previously discussed in Section 13.8.4.7 of this SER, the VEGP CSP deviates from RG 5.71 by stating that when a control can be proven to be unnecessary, the applicant will perform an analysis demonstrating that the control is not necessary, and will provide a documented justification. Therefore, SNC commits that in addressing the security controls in Appendix C, Section 11 of RG 5.71 that it will either apply the control, apply an alternative that does not provide less protection or will demonstrate that the control is not necessary because the attack vectors do not exist. This method is consistent with the method used in RG 5.71, which also allows for controls to be addressed.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

***13.8.4.24.62 RG 5.71, Section C.4.2.1, first paragraph, third sentence (page 30)***

*The VEGP CSP deviates from RG 5.71 in a manner similar to the previous deviation in Section 13.8.4.24.61 of this SER. Specifically, that configuration management will be used to ensure that each of the controls is addressed in Appendices B and C of RG 5.71, as opposed to implemented. This method is consistent with the method in RG 5.71, as the applicant commits to follow the process in Section C.3.3 of RG 5.71, which requires that the applicant implement the control, apply an alternative control that does not provide less protection than the corresponding control in RG 5.71, or demonstrate that the attack vector associated with the control does not exist. Therefore, the VEGP CSP method will provide no less protection than the method provided for in RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

***13.8.4.24.63 RG 5.71, Section C.4.2.1, second paragraph, third sentence (page 30)***

*The VEGP CSP deviates from RG 5.71 by including the statement, "in accordance with the process described in Section C.3.3 of this guide." As previously discussed in Section 13.8.4.14 of this SER, the method in Section C.3.3 is consistent with the method in RG 5.71, which requires that the licensee either implement the control, apply an alternative control that does not provide less protection than the corresponding control in RG 5.71, or demonstrate that the attack vector associated with the control does not exist. Therefore, the VEGP CSP method will provide no less protection than the method provided for in RG 5.71.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.64 RG 5.71, Section C.4.3, second paragraph (page 31)**

The VEGP CSP deviates from RG 5.71, as previously discussed in Section 13.8.4.22 of this SER, by stating that the applicant has established the necessary measures and governing procedures to implement periodic reviews of applicable program elements, in accordance with the requirements of 10 CFR 73.55(m). Specifically, the VEGP CSP calls for a review of the program's effectiveness at least every 24 months. In addition, reviews are to be conducted as follows:

- within 12 months following initial implementation of the program
- as necessary based upon site-specific analyses, assessments, or other performance indicators
- as soon as reasonably practical, but no longer than 12 months, after changes occur in personnel, procedures, equipment, or facilities that potentially could adversely affect cyber security
- by individuals independent of those personnel responsible for program management and any individual who has direct responsibility for implementing the program

This deviates from RG 5.71 in the specific wording, but includes the same commitments as RG 5.71. Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.

**13.8.4.24.65 RG 5.71, Section C.5, second paragraph, second and third sentences (page 32)**

As previously discussed in Section 13.8.4.23, the VEGP CSP deviates from RG 5.71 documentation retention commitments. Specifically, VEGP CSP Section 5 states the records are retained to document access history and information needed to discover the source of cyber attacks and incidents. The VEGP CSP deletes the phrase:

*Records required for retention include, but are not limited to, digital records, log files, audit files, and nondigital records that capture, record, and analyze network and CDA events.*

The VEGP CSP commits to retaining all access history records, records to discover the source of cyber attacks or other security-related incidents affecting CDAs or SSEP functions, or both. This is consistent with what is included in RG 5.71 Section 5, as it includes all the performance-based characteristics and commitments of that section.

Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.

**13.8.4.24.66 RG 5.71, Glossary (Page 35)**

The VEGP CSP's definition of a CDA deviates from the definition provided in RG 5.71. Specifically, the VEGP CSP deviates by stating that a CDA can be a CS or a subcomponent of a CS. This definition does not materially change the use of the term, and is correct: A CDA can be a CS. This definition is consistent with the definition in RG 5.71. The VEGP CSP, by the use of this definition, does not provide for less protection than RG 5.71, nor does this reduce the scope of the assets required to be protected under the rule.

Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.

**13.8.4.24.67 RG 5.71, Glossary (Page 35)**

The VEGP CSP deviates from the definition of a CS in RG 5.71 by adding the caveat "as defined by the plant licensing basis." RG 5.71 states that a CS is an analog or digital technology based system in or outside the plant that performs or is associated with a safety-related, important-to-safety, security, or emergency preparedness function. These CSs include, but are not limited to, plant systems, equipment, communication systems, networks, offsite communications, or support systems or equipment, that perform or are associated with safety-related, important-to-safety, security, or emergency preparedness functions.

The addition of the phrase "as defined by the plants' licensing basis," limits the scope of the functions to those that are defined by the licensing basis. As previously discussed in Section 13.8.4.4 of this SER, the staff ~~was concerned that this modifier might cause the licensee to exclude CSs, which ought to be included, according to the rule~~ [found this modification acceptable].

10 CFR 73.51(a)(1) requires that the licensee protect digital computer and communication systems and networks associated with: (i) safety-related and important-to-safety functions; (ii) security functions; (iii) emergency preparedness functions, including offsite communications; and (iv) support systems and equipment, which if compromised would adversely impact SSEP functions. However, further reviews resulted in the staff finding that the VEGP CSP scoping discussion adequately described a process to include all CDAs within the scope of 10 CFR 73.54(a)(1).

Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.

**13.8.4.24.68 RG 5.71, Glossary (Page 35)**

The VEGP CSP deviates from the RG 5.71 definition of cyber attack by replacing the phrase "conducted by threat agents having either malicious or non-malicious intent" with the phrase "conducted by threat agents." The NRC staff finds this deviation to be acceptable because deletion of the intent of a threat agent, be it malicious or non-malicious, still provides a commitment to protect against threats by threat agents.

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

**13.8.4.24.69 RG 5.71, Appendix A, Introduction (Page A-1)**

*The VEGP CSP deviates from the RG 5.71 scope discussion by including within scope systems or equipment that perform important to safety functions including SSCs in the BOP that could directly or indirectly affect reactivity at a nuclear power plant and could result in an unplanned reactor shutdown or transient. Additionally, these SSCs are under the licensee's control and include electrical distribution equipment out to the first inter tie with the offsite distribution system. The NRC staff finds this deviation to be acceptable because it is consistent with Commission policy.*

*Based on the above review and assessment, the NRC staff finds that this deviation is acceptable.*

License Conditions

- *Part 10, License Condition 2, COL Item 13.6-5 and License Condition 3, Item G.10*

*The applicant proposed two license conditions in Part 10 of the VEGP COL application, which will require the applicant to implement the cyber security program prior to initial fuel load.*

*In a letter dated October 22, 2010, the applicant provided supplemental information which proposed to amend the milestone included in Part 2, FSAR Table 13.4-201 to implement the cyber security program prior to receipt of fuel onsite (protected area.) The NRC staff finds the proposed implementation milestone for the cyber security program (security prior to receipt of fuel onsite (protected area)) appropriate and in accordance with the requirement in 10 CFR 73.55(a)(4). Therefore the staff finds that the proposed License Conditions 2 and 3 are not necessary.*

- *Part 10, License Condition 6*

*The applicant proposed a license condition in Part 10 of the VEGP COL application to provide a schedule to support the NRC's inspection of operational programs, including the cyber security program. Although the CSP is not identified as an operational program in SECY-05-0197, the proposed license condition is consistent with the policy established in SECY-05-0197 for operational programs in general, and is acceptable.*

**13.8.5 Post Combined License Activities**

For the reasons discussed in the technical evaluation section above, the staff finds the following license condition proposed by the applicant acceptable:

- License Condition (13-14) – No later than 12 months after issuance of the COL, the licensee shall submit to the Director of NRO a schedule that supports planning for and conduct of NRC inspection of the cyber security program implementation. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until the cyber security program has been fully implemented.

### **13.8.6 Conclusion**

The staff reviewed the WLS COL application and checked the referenced DCD. The staff's review confirmed that the applicant addressed the required information relating to cyber security, and there is no outstanding information expected to be addressed in the WLS COL FSAR related to this section. The results of the staff's technical evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

The staff reviewed the CSP for format and content using the NRC CSP template in RG 5.71, and noted that it includes all features considered essential to such a program. In particular, the staff noted it complies with applicable NRC regulations including 10 CFR 73.1, 10 CFR 73.54, 10 CFR 73.55(a)(1), 10 CFR 73.55(b)(8), 10 CFR 73.55(m), and 10 CFR Part 73, Appendix G.