13.0 CONDUCT OF OPERATIONS

This chapter provides information relating to the preparations and plans for the design, construction, and operation of a nuclear plant. The purpose of this chapter is to provide reasonable assurance that the combined license (COL) applicant will establish and maintain a staff of adequate size and technical competence to ensure that the operating plans the licensee will follow are adequate to protect public health and safety.

13.1 Organizational Structure of Applicant

13.1.1 Introduction

The organizational structure of the applicant, as described in the North Anna 3 COL Final Safety Analysis Report (FSAR), Revision 8, includes the design, construction, preoperational, and operational responsibilities. The management and technical support organization includes a description of the Dominion Virginia Power (Dominion) corporate or home office organization, its functions and responsibilities, and the number and the qualifications of personnel. Its 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 the 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.

The operating organization includes a description of the structure, functions, and responsibilities of the onsite organizations established to operate and maintain the plant. The applicant renumbered Subsection 13.1.1 and added other subsections in FSAR Section 13.1. Several of these subsections are new and differ from the structure in Section 13.1 of Regulatory Guide (RG) 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)."

13.1.2 Summary of Application

Section 13.1 of the North Anna 3 COL FSAR, Revision 8, incorporates by reference Section 13.1 of the Economic Simplified Boiling Water Reactor (ESBWR) design control document (DCD), Revision 10. In addition, in FSAR Section 13.1, the applicant provided the following:

COL Items

- NAPS COL 13.1-1-A Management and Technical Support Organization

NAPS COL 13.1-1-A provides site-specific information to resolve DCD COL 13.1-1-A, which requires the COL applicant to describe the organizational structure. EF3 COL 13.1-1-A describes organizational positions at the nuclear power station and in the owner/applicant corporations, in addition to the associated functions and responsibilities.

- NAPS COL 9.5.1-10-A Fire Brigade

NAPS COL 9.5.1-10-A is the North Anna 3 response to DCD COL 9.5.1-10-A, which requires the COL applicant to provide a milestone for implementing in all plant areas manual firefighting capability provisions.

13.1.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is addressed in NUREG-1966, "Final Safety Evaluation Report Related to the Certification of the Economic Simplified Boiling-Water Reactor Standard Design," (the FSER related to the ESBWR DCD). In addition, the relevant requirements of the Commission regulations for the applicant's organizational structure, and the associated acceptance criteria, are in Subsections 13.1.1 and 13.1.2-13.1.3 of NUREG–0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)," the Standard Review Plan (SRP).

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

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

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

- Title 10 of the *Code of Federal Regulations* (10 CFR) 50.40(b), "Common standards"

- 10 CFR 50.54, "Conditions of licenses" items (i) through (m)

- Regulatory Guide 1.33, Revision 2, "Quality Assurance Program Requirements (Operation)"

13.1.4 Technical Evaluation

As documented in NUREG–1966, U.S. Nuclear Regulatory Commission (NRC or Commission) staff reviewed and approved Section 13.1 of the certified ESBWR DCD, Revision 10. The NRC staff reviewed Section 13.1 of the North Anna 3 COL FSAR, Revision 8, and checked the referenced DCD to ensure that the combination of the DCD and the COL application represent the complete scope of information related to this review topic[1]. The NRC staff's review confirmed that the information contained in the application and incorporated by reference

[1] See *"Finality of Referenced NRC Approvals"* in SER Section 1.2.2 for a discussion on the staff's review related to verification of the scope of information to be included in a COL application that references a design certification.

addresses the required information relating to the management, technical support, and operating organizations.

COL Items

- NAPS COL 13.1-1-A Management and Technical Support Organization

NAPS COL 13.1-1-A is related to the organizational structure of the COL applicant. This COL item describes organizational positions and associated functions and responsibilities at a nuclear power plant and in the corporations of the owner/applicant.

The applicant provided the following additional North Anna 3 site-specific COL information to resolve COL Item 13.1-1-A. DCD COL Item 13.1-1-A states:

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

The applicant provided additional information as part of the North Anna 3 COL FSAR to describe the organizational positions at the nuclear power station, in owner/applicant corporations, and associated functions and responsibilities. The applicant stated that Table 13.1-201, "Generic Position/Site Specific Position Cross Reference" provides the estimated number of positions required for each function. In addition, Table 13.1-201 provides a cross-reference to identify site-specific position titles.

The applicant added new sections and information related to the site-specific organizational structure in Section 13.1 beyond the structure given in RG 1.206. The new section titles are:

13.1.4	"COL Information"
13.1.5	"References"
Table 13.1-201,	"Generic Position/Site-Specific Position Cross-Reference"
Table 13.1-202,	"Minimum Shift Staffing Unit 3"
Figure 13.1-201,	"Construction Organization"
Figure 13.1-202,	"Nominal Plant Staff Hiring and Training Schedule"
Figure 13.1-203,	"Shift Operation"
Figure 13.1-204,	"Operating Organization"
Figure 13.1-205,	"Corporate Organization"

In addition, the applicant added an appendix to Chapter 13, for future designation as historical information, titled "Appendix 13AA Design and Construction Responsibilities." Appendix 13AA describes the applicant's construction experience and the implementation and/or delegation of design and construction responsibilities.

The NRC staff has reviewed North Anna 3 COL 13.1-1-A and concludes that the management, technical support, and operating organizations, as described, are acceptable and meet the requirements of the ESBWR HFE design requirements and complies with the requirements of 10 CFR 50.54 (i) through (m), "Conditions of licenses," 10 CFR 50.40(b), "Common standards," and 10 CFR 50.80, "Transfer of licenses," as applicable. This conclusion is 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. The applicant has described its plans for managing the project and utilizing 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 President and Chief Nuclear Officer; the functions and responsibilities of each major plant staff group; the proposed shift crew complement for operation; the qualification requirements for members of its plant staff; and the qualifications of the technical support organization.

In Table 1.9-203, “Conformance with the FSAR Content Guidance in RG 1.206,” of the North Anna 3 COL FSAR, the applicant noted exceptions to the guidance of RG 1.206:

- Section C.III.I.13.1.2(1) and Section C.III.I.13.1.2(2) state the guidelines of RG 1.33 are met through equivalent administrative controls described in Chapter 17,

- Section C.III.I.13.1.3.2 states that resumes will not be included in the application, but will be available for inspection at corporate headquarters upon request.

The staff finds these exceptions to the guidance of RG 1.206 acceptable because organization charts and a description of the relationship of the nuclear-oriented portion of the organization to the rest of the corporate organization are contained in the Quality Assurance Program Description and resumes for management and principal supervisory and technical positions will be available for review after position vacancies are filled.

The applicant described the Dominion corporate organization, its functions and responsibilities, and the number and qualifications of personnel. The applicant directs attention to activities that include facility design, design review, design approval, construction management, testing, and operation of the plant.

The applicant described the Dominion management, engineering, and technical support organizations. The description includes organizational charts for the current corporate structure and operating organization and any planned modifications and additions to those organizations that reflect the added functional responsibilities associated with the design, construction, and operation of a nuclear power plant.

The applicant described how the added functional responsibilities associated with the addition of the nuclear power plant to the applicant’s power generation capacity are delegated and assigned. The description includes organization charts reflecting the current corporate structure and the organization of units that provide technical support for the operation of the facility.

The applicant provided a description of the management, engineering, technical support, fire protection, and operating organizations; the plans for managing the construction of North Anna 3, the NSSS vendor and AE. The applicant provided a description of the assignment of plant operating responsibilities, the reporting chain up through the chief nuclear officer, the functions

and responsibilities of each major plant staff group, and the proposed shift crew complement for operation.

The applicant provided a description of Dominion's experience in the design, construction, and operation of nuclear generating plants and responsibilities associated with six nuclear units at three sites in Virginia and Connecticut.

The applicant provided a description of the general qualification requirements in terms of educational background and experience for positions depicted in the organization charts.

The applicant provided a description of the qualification requirements in terms of experience and a description of the education, training, and experience requirements established for management, operating, technical, fire protection, and maintenance positions for the operating organization.

The applicant provided Table 13.1-201, "Generic Position/Site Specific Position Cross Reference" and Table 13.1-202, "Minimum Shift Staffing for North Anna 3," that describe the operating organization at North Anna 3 and the associated functions and responsibilities. Table 13.1-201 provides the estimated number of personnel required for each position during the operational phase of North Anna 3, the site-specific Nuclear Plant Position titles, and the associated ANSI/ANS-3.1-1993, "Selection, Qualification, and Training of Personnel for Nuclear Power Plants" section. Table 13.1-202 describes the minimum composition of the operating shift crew for all modes of operation. The applicant also states that minimum shift staffing for the various modes of operation are implemented using plant administrative procedures, work-hour limitations, and shift staffing requirements defined by TMI Action Plan Item I.A.1.3.

In addition, the applicant's operating organization can be characterized as follows:

1. The applicant is technically qualified, as specified in 10 CFR 50.40(b) and 10 CFR 50.80, as applicable.

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(i) – (m).

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.

7. The applicant has satisfied the requirements that a designated organization be responsible for the testing program and for plans to utilize the plant operating and technical staff to develop and conduct the testing program and to review the test results.

FSAR Table 1.9-201, “Conformance with Standard Review Plan,” identifies an exception to NUREG-0800, Section 13.1.1, SRP Acceptance Criterion 1.C, as follows:

> The experience requirements of corporate staff are set by corporate policy and not provided in detail; however, the experience level of Dominion, as discussed in Section 13.1 and Appendix 13AA, in the area of nuclear plant development, construction, and management establishes that Dominion has the necessary capability and staff to ensure that design and construction of the facility will be performed in an acceptable manner.

As part of the guidance in NUREG–0800, Areas of Review Item 1.B.vii in Section 13.1.1 states that the submittal should describe the general education and experience required for identified positions or classes of positions and for management and supervisory positions. The staff found that Dominion has addressed the corporate staff guidance for education and experience as recommended in NUREG–0800, Section 13.1.1 Areas of Review Item 1.B.vii. The applicant also includes in FSAR Subsection 13.1.1.4, qualifications for managers and supervisors in the technical support organization to meet the requirements of education and experience needed to meet requirements in ANSI/ANS-3.1–1993 and RG 1.8.

The FSAR Subsection 13.1.3.1 states that the qualifications for managers, supervisors, operators, and technicians in the operating organization meet the requirements for education and experience as described in ANSI/ANS-3.1-1993 and endorsed and amended in RG 1.8. For reactor operators (RO) and senior reactor operators (SRO), Section 13.2 of the COL FSAR modifies those requirements. In addition, for initial appointees to appropriate management and supervisory positions, Subsection 13.1.3.2 states that résumés and other documentation of qualifications and experience will be available for review after vacant positions are filled. In FSAR Table 13.1-202, “Minimum Shift Staffing for North Anna 3,” the applicant describes the minimum composition of the operating shift crew for unit shutdown and operating modes. Position titles, license requirements, and minimum shift staffing for the various modes of operation are in technical specifications and administrative procedures.

The NRC staff finds that the applicants organizational structure as defined above complies with the requirements of 10 CFR 50.40(b). That is, the applicant is technically qualified to engage in design, construction activities and operation of a nuclear power plant; the applicant will have the necessary managerial and technical resources to support the plant staff in the event of an emergency; and the applicant identifies the organizational positions responsible for fire protection matters and delegates to these positions the authority to implement fire protection requirements.

- NAPS COL 9.5.1-10-A Fire Brigade

NAPS COL 9.5.1-10-A is related to onsite fire operations training and the schedule for implementation of the fire protection program. Based on the information provided in Table 13.4-201, “Operational Programs Required by NRC Regulations,” the staff finds that the applicant’s schedule for implementing the fire protection plan meets the guidance of NUREG-0800 and is therefore acceptable. The technical review for the North Anna 3 COL 9.5.1-10-A, as it relates to the fire protection programmatic requirements, is in Section 9.5 of this SER.

13.1.5 Post-Combined License Activities

There are no post-COL activities related to this section.

13.1.6 Conclusions

The NRC staff's finding related to information incorporated by reference is in NUREG–1966. NRC staff reviewed the application and checked the referenced DCD. The staff's review confirms that the applicant has addressed the required information, and no outstanding information is expected to be addressed in the COL FSAR related to this section. Pursuant to 10 CFR 52.63(a)(5) and 10 CFR Part 52, Appendix E, Section VI.B.1, all nuclear safety issues relating to this section, that were incorporated by reference, have been resolved.

In addition, the staff compared the additional information in the COL application to the relevant NRC regulations, the guidance in Section 13.1 of NUREG–0800, and other NRC RGs. The staff's review concludes that the applicant has provided sufficient information to satisfy the requirements of NRC regulations. The staff determined that the applicant has adequately addressed North Anna 3 COL Item 13.1-1-A involving the management, technical support, and operating organizations; and North Anna 3 COL 9.5.1-10-A as it relates to the implementation of the Fire Protection Program, including the Fire Brigade. In conclusion, the staff determined that the applicant has provided sufficient information to satisfy the requirements of 10 CFR 50.40(b), 10 CFR 50.54(i–m), and 10 CFR 50.80; and no outstanding information is expected to be addressed in the COL FSAR related to this section.

13.2 Training

13.2.1 Introduction

Section 13.2 of the North Anna 3 FSAR Revision 8 includes a description of and schedule for the program to train ROs and SROs (i.e., licensed operators). The discussion addresses the scope of the licensing examinations as well as training requirements. The licensed operator training program also incorporates the requalification programs required in 10 CFR 50.54(i)(i-1) and 10 CFR 55.59, "Requalification."

In addition, this section provides a description of and schedule for the program to train non-licensed plant staff.

13.2.2 Summary of Application

Section 13.2 of North Anna 3 COL FSAR, Revision 8 incorporates by reference Section 13.2 of the certified ESBWR DCD, Revision 10. In addition, in FSAR Section 13.2, the applicant provides the following:

COL Items

- STD COL 13.2-1-A Reactor Operator Training

In FSAR Section 13.2.1, "Reactor Operator Training," the applicant states:

> Descriptions of the training program and licensed operator requalification program for reactor operators and senior reactor operators are addressed in Appendix 13BB. A schedule showing approximate timing of initial licensed operator training relative to fuel loading is addressed in Section 13.1. Requalification training is implemented in accordance with

Section 13.4.

- STD COL13.2-2-A Training for Non-Licensed Plant Staff

In FSAR Section 13.2.2, “Training for Non-Licensed Plant Staff,” the applicant states:

> A description of the training program for non-licensed plant staff is addressed in Appendix 13BB. A schedule showing approximate timing of initial training for non-licensed plant staff relative to fuel load is addressed in Section 13.1.

Supplemental Information

- STD SUP 13.2-1 Training

In FSAR Section 13.2 the applicant states:

> Training programs are discussed in Appendix 13BB. Implementation milestones are discussed in COL FSAR Section 13.4.

13.2.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is in NUREG–1966. In addition, the relevant requirements of the Commission regulations for training, and the associated acceptance criteria, are in Section 13.2 of NUREG–0800.

In particular, the regulatory basis for accepting the applicant’s information in Section 13.2 is in 10 CFR Part 19, “Notices, Instructions and Reports to Workers: Inspection and Investigation”; Part 26, “Fitness for Duty Programs”; Part 50, “Domestic Licensing of Production and Utilization Facilities”; Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants”; and Part 55, “Operator's Licenses”; Appendix E, “Emergency Planning and Preparedness for Production and Utilization Facilities,” of 10 CFR Part 50. Related guidance is found in Regulatory Guide (RG) 1.8, “Qualification and Training of Personnel for Nuclear Power Plants” and RG 1.149, Revision 3, “Nuclear Power Plant Simulation Facilities for Use in Operator Training and License Examinations”; NUREG–1021, “Operator Licensing Examination Standards for Power Reactors”; and NUREG–1220, “Training Review Criteria and Procedures.” The COL and supplemental information items are reviewed using the guidance in NUREG–0800, Section 13.2.1, “Reactor Operator Requalification Program; Reactor Operator Training,” and Section 13.2.2, “Non-Licensed Plant Staff Training.”

Regulations related to the Operational Program for the Non-Licensed Plant Staff Training Program are in 10 CFR 50.120, “Training and qualification of nuclear power plant personnel,” and 10 CFR 52.79(a)(33).

Regulations related to the Operational Program for the Reactor Operator Training Program are in 10 CFR 55.13, “General exemption”; 10 CFR 55.31, “How to apply”; 10 CFR 55.41, “Written examinations: Operators”; 10 CFR 55.43, “Written examinations: Senior operators”; and 10 CFR 55.45, “Operating tests.”

Regulations related to the Operational Program for the Reactor Operator Requalification Program are in10 CFR 52.79(a)(34), 10 CFR 50.54(i), and 10 CFR 55.59.

The relevant criteria for reviewing COL items which relate to the incorporation of operating experience are based on meeting the provisions of Three Mile Island Action Item I.C.5, Appendix 1A, "Feedback of Operating Experience"; and the guidance of NUREG-0800, Section 13.2, "Training."

13.2.4 Technical Evaluation

As documented in NUREG–1966, NRC staff reviewed and approved Section 13.2 of the certified ESBWR DCD, Revision 10. The staff reviewed Section 13.2 of North Anna 3 COL FSAR, Revision 8, and checked the referenced ESBWR DCD to ensure that the combination of the information in the COL FSAR and the information in the ESBWR DCD appropriately represents the complete scope of information relating to this review topic.[1] The staff's review confirmed that the information contained in the application and the information incorporated by reference address the relevant information related to this section.

The staff reviewed the information in the North Anna 3 COL FSAR as follows:

COL Items

- STD COL 13.2-1-A Reactor Operator Training

The applicant provides additional information in STD COL Item 13.2.1-A, which states:

> Descriptions of the training program and licensed operator requalification program for ROs and SROs are addressed in Appendix 13BB. A schedule showing approximate timing of initial licensed operator training relative to fuel loading is addressed in Section 13.1. Requalification training is implemented in accordance with Section 13.4.

In NUREG–0800, Section 13.2.1 states that the application should contain a description of the training program for ROs and SROs. In FSAR Appendix 13BB, the applicant incorporates by reference NEI 06-13A, Revision 1. The staff determined that NEI 06-13A, Revision 1, endorsed by the NRC staff on September 5, 2007, provides an acceptable template for describing licensed operator and non-licensed plant staff training programs because it meets the criteria of NUREG-0800, Section 13.2.1.

Section 13.2.1 of NUREG–0800 states that the application should describe the schedule for the RO and SRO training program. NEI 06-13A, Revision 1, addresses training program schedules in Section 1, "Training Program Description." In FSAR Section 13.1, "Organizational Structure of Applicant," the applicant includes a schedule showing the approximate timing of initial licensed operator training relative to fuel loading, in conformance with NEI-06-13A Revision 1. The staff concluded that the applicant's licensed operator training program schedule contains sufficient information to satisfy the guidance of NUREG-0800, Section 13.2.1 and is therefore acceptable.

Section 13.2.1 of NUREG–0800 states that the application should describe the requalification program for ROs and SROs. NEI 06-13A, Revision 1, Section 1 addresses the requalification program descriptions. In FSAR Section 13.4, "Operational Program Implementation," the applicant describes the licensed operator requalification program in conformance with NEI-06-

13A Revision 1. The staff concluded that the applicant's description of the licensed operator requalification program meets the criteria in NUREG–0800, Section 13.2.1 and is therefore acceptable.

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

The applicant provides additional information to address STD COL 13.2-2-A, which states:

> A description of the training program for non-licensed plant staff is addressed in Appendix 13BB. A schedule showing approximate timing of initial training for non-licensed plant staff relative to fuel load is addressed in Section 13.1.

In NUREG–0800, Section 13.2.2 states that the applicant's training program should meet the guidelines of RG 1.8 for non-licensed personnel. In FSAR Table 13.4-201, the applicant provides a schedule for a milestone of at least 18 months before fuel loading for the requirements of non-licensed plant staff, in accordance with the requirements of 10 CFR 50.120(b). In addition, the applicant will provide a schedule for conducting formal onsite training and on-the-job training, so that the entire plant staff will be qualified before initial fuel loading. In FSAR Table 13.4-201, Operational Program Items 11 through 13 provides additional details on the commitments and applicable requirements to be met. The staff determined that the applicant's approach is acceptable because it will include those subjects that are required by regulations for the training programs and will base the training programs on the systems approach to training (SAT), as required by regulations and in accordance with the guidance of NEI 06-13A, Revision 1. The staff concluded that the applicant has provided sufficient information to satisfy the guidance of NUREG–0800, Section 13.2.2 and is therefore acceptable.

Supplemental Information

- STD SUP 13.2-1 Training

The applicant added the following sentence in Section 13.2, "Training," to supplement the DCD; this text is also identified by the applicant as STD SUP 13.2-1:

> Training programs are addressed in Appendix 13BB. Implementation milestones are addressed in Section 13.4.

The applicant provided the following text to supplement Section 13.2, "Training," Appendix 13BB, "Training Program," to address cold license training program procedures.

> NEI 06-13A (Reference 13BB-201), Technical Report on a Template for an Industry Training Program Description, is incorporated by reference.

Nuclear Energy Institute (NEI), "Technical Report on a Template for an Industry Training Program Description," NEI 06–13A, is a generic training program description. Revision 0 of this template, which was incorporated by reference in North Anna 3 FSAR Revision 0, did not address a cold license training plan. Revision 1 of NEI 06-13A included additional information that addresses cold license testing, and the staff has endorsed this revision. Therefore, the staff issued RAI 13.02.01-1, requesting Dominion to address the cold licensing process. In a letter dated September 11, 2008, Dominion stated that NEI 06-13A, Revision 1, will be

incorporated by reference in Appendix 13BB. The staff verified that NEI 06-13A, Revision 1, is incorporated by reference in Appendix 13BB in COL FSAR Revision 1. North Anna FSAR table 1.6-201 lists topical reports not included in DCD Section 1.6 that are incorporated in whole or in part by reference. Because the applicant's reference to NEI 06-13A, Revision 1 has been updated to the staff-endorsed revision that addresses cold licensing, the staff determined that the change made to Appendix 13BB is acceptable and meets the guidance of NUREG-0800, Chapter 13.2.1.

Section 13.2.1 of NUREG–0800 states that the description of the training program should address the subject matter, duration, organization, position titles, and schedules. Section 1 of NEI 06-13A, Revision 1, includes information on subject matter, duration, organization, position titles, and schedules. The staff concluded that the description of the NEI 06-13A, Revision 1, training program provides sufficient information to satisfy the criteria in Section 13.2.1 of NUREG–0800 and is therefore acceptable.

Section 13.2.1 of NUREG–0800 states that the training program for licensed operators should include (1) the subjects in 10 CFR 55.31, 10 CFR 55.41, 10 CFR 55.43, 10 CFR 55.45, and RG 1.8; and (2) provisions for upgrading licenses. In addition, this program should use the Systematic Approach to Training (SAT) as defined in 10 CFR 55.4, "Definitions." NEI 06-13A, Revision 1, Section 1.1 states that the training program for licensed operators is in accordance with and includes the subjects in 10 CFR Part 55 specifically 10 CFR 55.41, 10 CFR 55.43, 10 CFR 55.45, and RG 1.8. NEI 06-13A, Revision 1, Section 1 states that training programs are developed, established, implemented, and maintained using the SAT, as defined by 10 CFR 55.4. The staff determined that this program is acceptable and meets the guidance of NUREG–0800, Section 13.2.1, because the applicant will include in the training programs those subjects that are required by regulations and will base the training programs on the SAT, as required by regulations and in accordance with the guidance in the staff-endorsed template in NEI 06-13A, Revision 1.

NUREG-0800, Section 13.2.1, states that the applicant should describe the requalification program for ROs and SROs. In FSAR Appendix 13BB, the applicant stated that NEI 06-13A, Revision 1, is incorporated by reference. NEI 06-13A, Revision 1, addressed the requalification program descriptions in Section 1, "Training Program Description." In FSAR Section 13.4, "Operational Program Implementation," the applicant described the licensed operator requalification program. The staff determined that this program is acceptable because it follows the staff-endorsed template in NEI 06-13A and therefore meets the criteria of NUREG-0800, Chapter 13.2.1.

Section 13.2.1 of NUREG–0800 also states that the licensed operator requalification program should include the content described in 10 CFR 55.59 or should be based on the use of the SAT, as defined in 10 CFR 55.4. Section 1.1 of NEI 06-13A, Revision 1, states that the licensed operator training program content and schedule should comply with 10 CFR 55.59. This section also states that training programs are developed, established, implemented, and maintained using the SAT, as defined by 10 CFR 55.4. The staff found this information acceptable because the applicant will include in the training programs those subjects that are required by regulations and will base the training programs on the SAT, as required by regulations and in accordance with the guidance in NEI 06-13A, Revision 1. The staff concluded that the applicant has provided sufficient information to satisfy NUREG–0800, Section 13.2.1.

In addition, Section 13.2.1 of NUREG–0800 states that the program for providing the simulator capability should meet the requirements described in 10 CFR 55.31, 10 CFR 55.45, 10 CFR 55.46, "Simulation facilities," and 10 CFR 50.34(f)(2)(i); in addition to the guidance in RG 1.149. NEI 06-13A, Revision 1, Section 1.1, states that licensed operators will receive plant simulator training to demonstrate an understanding of and the ability to perform the actions listed in 10 CFR 55.45, NEI 06-13A, Revision 1, Section 1.1, also states that a simulator will be used for training licensed operators which includes the items listed in 10 CFR 55.31and for the administration of operating tests, in accordance with 10 CFR 55.46. 10 CFR 50.34(f)(2)(i), requires simulators to include the capability of simulating small-break, loss-of-coolant accidents. In North Anna 3 FSAR Table 1.9-202, "Conformance with Regulatory Guides," the applicant states that the North Anna 3 conforms to the guidance of RG 1.149, Revision 3 which includes loss of coolant accidents. The staff determined that this information is acceptable because the applicant will provide the simulator capability required by the regulation. The staff concluded that the applicant has provided sufficient information to satisfy NUREG–0800, Section 13.2.1.

Section 13.2.1 of NUREG–0800 states that the training program should include the means for evaluating the effectiveness of the training program in accordance with the SAT. NEI 06-13A, Revision 1, Section 1.5 includes a program to evaluate training effectiveness. It also states that training programs are to be developed, established, implemented, and maintained using the SAT as defined by 10 CFR 55.4. The staff determined that this information is acceptable and sufficient to satisfy NUREG–0800, Section 13.2.1, because the applicant will apply the SAT process in the evaluation of the training programs.

Section 13.2.1 of NUREG–0800 states that applicants are to provide implementation milestones for the RO training program. NEI 06-13A, Revision 1, includes implementation milestones. The staff determined that this information is acceptable because the applicant has provided implementation milestones as recommended by NUREG–0800, Section 13.2.1.

13.2.5 Post Combined License Activities

There are no post COL activities related to this section.

13.2.6 Conclusion

The NRC staff's finding related to information incorporated by reference is in NUREG–1966. NRC staff reviewed the application and checked the referenced DCD. The staff's review confirms that the applicant has addressed the required information, and no outstanding information is expected to be addressed in the COL FSAR related to this section. Pursuant to 10 CFR 52.63(a)(5) and 10 CFR Part 52, Appendix E, Section VI.B.1, all nuclear safety issues relating to this section that were incorporated by reference have been resolved.

In addition, the staff compared the additional COL and supplemental information in the application to the relevant NRC regulations; the guidance in Section 13.2 of NUREG-0800, and other NRC RGs. The staff's review concludes that the applicant has adequately addressed COL Items STD COL 13.2-1-A and 13.2-2-A and Supplemental Information STD SUP 13.2-1 relating to training, in accordance with NRC regulations. These items are thus acceptable.

13.3 Emergency Planning

13.3.1 Introduction

This section addresses the plans, design features, facilities, functions, and equipment necessary for radiological emergency planning (EP) that must be considered in a combined license (COL) application (hereinafter referred to as "COLA" or "application"). This includes both the 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, as well as the provisions that have been made to cope with radiological emergency situations.

Virginia Electric and Power Company, doing business as Dominion Virginia Power (DVP or Dominion) is the applicant for the COL (hereinafter referred to as "Dominion" or "applicant"). Dominion submitted its initial COLA on November 26, 2007 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML073320913), for one new nuclear reactor, consisting of the General Electric-Hitachi Nuclear Energy (GEH) Economic Simplified Boiling Water Reactor (ESBWR), which will be located on the North Anna Power Station site (North Anna site) located in Louisa County, Virginia. The new reactor is designated as North Anna 3. The NRC docketed the application on January 28, 2008 (Docket No. 52-017) (ADAMS Accession No. ML080240154). On June 28, 2010, Dominion revised its COLA to change the designation of the choice of reactor technology from the ESBWR to the Mitsubishi Heavy Industries, Ltd. US-APWR (ADAMS Accession No. ML101820627). Dominion changed the reactor technology designation back to the ESBWR on July 31, 2013 (ADAMS Accession No. ML13221A504), and updated the application on December 18, 2013, and June 24, 2014 (ADAMS Accession Nos. ML14007A541 and ML14199A360, respectively). On September 23, 2015, Dominion submitted a request for a one-time exemption from 10 CFR 50.71(e)(3)(iii), to postpone submission of the next Final Safety Analysis Report (FSAR) annual update to no later than June 30, 2016.

On August 24, 2005, GEH submitted its ESBWR standard design certification application to the NRC, and the NRC docketed the application on December 1, 2005 (Docket No. 52-010). On December 11, 2013, GEH submitted Revision 10 of the ESBWR design control document (DCD) to the NRC (ADAMS Accession No. ML14010A278), followed by an updated version of Revision 10 on April 1, 2014 (ADAMS Accession No. ML14101A028). Dominion supplemented its application in a letter dated February 10, 2014 (ADAMS Accession No. ML14043A035), which provided COLA markups that reflect the December 11, 2013, ESBWR DCD, Revision 10 changes. Dominion supplemented its application for a second time in a letter dated April 17, 2014 (ADAMS Accession No. ML14108A345), which provided additional COLA markups to reflect the April 1, 2014, updated version of ESBWR DCD, Revision 10, and to align with the February 14, 2014, Enrico Fermi Unit 3 COLA update (ADAMS Accession No. ML14055A463). On October 15, 2014, the NRC issued the ESBWR final rule (10 CFR Part 52, Appendix E) in the *Federal Register* (79 FR 61944).

Two existing nuclear reactors (i.e., North Anna Units 1 and 2) and an Independent Spent Fuel Storage Installation (ISFSI) are currently located on the North Anna site. Dominion is the licensed operator of the existing facilities, with control of the North Anna site and existing facilities. North Anna 3 will be located adjacent to and generally west of the existing reactor

units. Figure 2.0-205, "Unit 3 Power Block Building Locations Within the ESP Proposed Facility Boundary," in COLA Part 2, "Final Safety Analysis Report" (FSAR) (hereinafter referred to as "Part 2" or "FSAR"), shows that the proposed North Anna 3 footprint is located within the early site permit (ESP) plant parameter envelope. The North Anna 3 boundary is entirely within the existing North Anna site exclusion area boundary, so that for purposes of emergency planning, little distinction exists between the North Anna site (for Units 1 and 2) and the ESP site (for North Anna 3). The COLA takes advantage of the emergency planning resources, capabilities, and organization that currently exist at the North Anna site for Units 1 and 2.

The application includes a complete and integrated emergency plan for North Anna 3, which consists of the onsite North Anna 3 Emergency Plan in COL application Part 5, "Emergency Plan" (hereinafter referred to as "COL Plan"), and supplemental information that includes the offsite radiological emergency response plans (RERP) for the State of Maryland and Commonwealth of Virginia (including the affected counties), and an evacuation time estimate (ETE) report for the North Anna site (hereinafter referred to as "ETE Report"). The ETE Report is discussed below in SER Section 13.3.4.17. The application also includes a listing of emergency planning inspections, tests, analyses, and acceptance criteria (ITAAC) in Table 2.3-1, "ITAAC For Emergency Planning," of COLA Part 10, "Tier 1/ITAAC/Proposed License Conditions," that will be completed before fuel load. Finally, the COLA incorporates by reference ESP No. ESP-003 for the North Anna ESP site and the ESBWR standard plant design.

As described below, in consultation with FEMA, the staff reviewed the COLA, the applicant's responses to requests for additional information (RAI) and generally available reference materials in accordance with the guidance provided in the Standard Review Plan (SRP) (i.e., NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light Water Reactor] 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 RERPs for the State of Maryland and Commonwealth of Virginia, and local government plans for Caroline, Hanover, Louisa, Orange, and Spotsylvania Counties in Virginia (i.e., risk jurisdictions).

In an August 22, 2008, letter to NRC, FEMA provided its Interim Findings Report for the North Anna COLA (ADAMS Accession No. ML082470307), and on December 23, 2008, its Interim Findings Report for Open Items (ADAMS Accession No. ML090070398). These reports reflected the current status of FEMA's evaluation, including FEMA's RAIs, associated with the offsite emergency response plans for North Anna 3. By letter dated October 24, 2008 (ADAMS Accession No. ML083080127), Dominion provided responses to FEMA's RAIs, which had been prepared by the Commonwealth of Virginia Department of Emergency Management (VDEM) on October 22, 2008. In a March 4, 2009, letter to NRC (ADAMS Accession No. ML090790498), FEMA stated that there remained 37 open items that require resolution before it could make its finding of reasonable assurance for the offsite plans. FEMA continued to work directly with Dominion and the governmental agencies until all of the open items were resolved. In a December 7, 2009, letter to NRC (ADAMS Accession No. ML093441405), FEMA provided its Interim Finding Report for Reasonable Assurance, dated December 1, 2009 (ADAMS Accession No. ML093441481), which found that all planning standards associated with their review were adequate. The "planning standards" referred to here and below consist of the 16 planning standards (i.e., A through P) of NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (hereinafter referred to as "NUREG-0654").

FEMA further stated in the December 1, 2009, report that the adequacy of the COLA emergency plan review for offsite response organizations is also dependent on satisfactory demonstration of plan implementation during a joint exercise with the licensee (Dominion) and State and local governments, utilizing the North Anna 3 facilities. Exercises and drills are discussed below in SER Section 13.3.4.14, and offsite exercise objectives are addressed in SER Table 13.3-1, "NAPS Unit 3 ITAAC," acceptance criterion 8.1.3. The staff reviewed the FEMA findings in the December 1, 2009, report, and the overall FEMA conclusions are reflected below in SER Sections 13.3.4 and 13.3.6. The applicant's reactor technology change from the ESBWR to the US-APWR, and subsequent change back to the ESBWR, did not affect the offsite emergency plans; and therefore, FEMA's December 1, 2009, findings remain valid.

13.3.2 Summary of Application

The COLA Part 2 (FSAR) Section 1.1.1.9, "Referencing of [ESP application] ESPA Information," incorporates by reference Revision 9 of the North Anna ESP application Site Safety Analysis Report (SSAR), as required by Title 10 of the *Code of Federal Regulations* (10 CFR) 52.79(b)(1). Dominion submitted the ESP application to the NRC on September 25, 2003 (ADAMS Accession No. ML032731511), which was docketed on October 23, 2003 (Docket No. 52-008). The NRC issued ESP-003 on November 27, 2007 (ADAMS Accession Nos. ML073180427 and ML073180440). In addition, as required by 10 CFR 52.79(d)(1), FSAR Section 1.1.1.7, "Incorporation by Reference," incorporates by reference Revision 10 of the ESBWR DCD.

FSAR Section 13.3, "Emergency Planning," incorporates by reference Section 13.3 of the ESBWR DCD, Revision 10, and Section 13.3 of the ESP SSAR. COLA Part 7, "Departures Report," includes information on departures, variances, and exemptions. With regard to emergency planning, there are no departures from the ESBWR DCD, variances from the ESP SSAR, or requests for exemptions from NRC regulations. In addition, there are no ESP COL action items or permit conditions associated with emergency planning.

COL Items

As reflected in ESBWR DCD Tier 2 Table 1.10-1, "Summary of COL Items," and the table's referenced Tier 2 DCD sections, the applicant identified COL items relating to emergency planning in COLA Part 2 (FSAR) Table 1.10-201, "Summary of FSAR Sections Where DCD COL Items Are Addressed," and FSAR Table 1C-202, "Operating Experience Review Results Summary – IE Bulletins." In FSAR Section 13.3, the applicant identified the following three Standard COL Items from the ESBWR DCD:

- STD COL 13.3-1-A: The COL applicant is responsible for identifying the operational support center (OSC) and the communication interfaces for inclusion in the detailed design of the control room and technical support center (TSC).

- STD COL 13.3-2-A: The COL applicant is responsible for the design of the communication system located in the emergency operations facility (EOF) in accordance with NUREG-0696.

- STD COL 13.3-3-A: The COL applicant will provide supplies at the site for decontamination of onsite individuals in the service building adjacent to the main change rooms.

The applicant also identified (in the respective FSAR sections) the following three Standard COL Items from the ESBWR DCD (including ESBWR DCD Tier 2 Appendix 1C, "Industry Operating Experience," and DCD Tier 2 Table 1C-2, "Operating Experience Review Results Summary – IE Bulletins"), which relate to emergency planning:

- STD COL 13.4-2-A: The COL applicant will provide implementation milestones for operational programs that are required by NRC regulation.

- STD COL 14.3-1-A: The COL applicant shall provide emergency planning ITAAC, based on industry guidance.

- STD COL 1C.1-2-A: COL applicant will address requirements of IE Bulletin 2005-02[2] regarding emergency preparedness and response actions for security-based events.

The staff's evaluation of the applicant's resolution of these six Standard COL Items is addressed below in SER Section 13.3.4.18.

In FSAR Section 9.5.2, "Communications System," the applicant identified four additional (ESBWR DCD) Plant-Specific COL Items associated with emergency communication systems (i.e., NAPS COL 9.5.2.5-1-A, NAPS COL 9.5.2.5-3-A, NAPS COL 9.5.2.5-4-A, and NAPS COL 9.5.2.5-5-A). Communication systems are described in ESBWR DCD Tier 2 Section 9.5.2, "Communications System," FSAR Section 9.5.2.2, COL Plan Sections II.E and II.F, ESP SSAR Sections 13.3.2.2.2.e and 13.3.2.2.2.f, and NUREG-1835[3] Sections 13.3.3.6 and 13.3.3.7; and are addressed below in SER Sections 13.3.4.5 and 13.3.4.6. Resolution of these four Plant-Specific COL Items is addressed in SER Section 9.5.2, "Communication System."

Supplemental Information

In FSAR Section 13.5.2.2.2, "Emergency Preparedness Procedures," the applicant identified the following Standard Supplemental Information to DCD Tier 2 Section 13.5.2, "Operating and Maintenance Procedures," relating to emergency planning:

- STD SUP 13.5-28: A discussion of emergency preparedness procedures can be found in the emergency plan, and that a list of implementing procedures is maintained in the emergency plan.

The staff's evaluation of the applicant's resolution of this Standard Supplemental Information item is addressed below in Section 13.3.4.18 of this report.

Onsite Emergency Plan

[2] NRC Office of Inspection and Enforcement (IE) Bulletin (BL) 2005-02, "Emergency Preparedness and Response Actions for Security-Based Events," July 18, 2005 (ADAMS Accession No. ML051740058).

[3] NUREG-1835, "Safety Evaluation Report for an Early Site Permit (ESP) at the North Anna ESP Site," September 2005 (ADAMS Accession No. ML052710305).

Emergency planning for North Anna 3 is addressed throughout COLA Part 2 (FSAR), with the North Anna 3 Emergency Plan (COL Plan) provided in COLA Part 5. The COL Plan consists of a basic plan and eight appendices (listed below), which provide additional detailed information on specific aspects of the emergency planning, and incorporates by reference various information from Section 13.3, "Emergency Planning," of the ESP SSAR. In addition, the COLA includes the ETE Report as supplemental information to the COL Plan. COL Plan Appendix 4, below, consists of the Executive Summary from the full ETE Report.

- Appendix 1: Reserved
- Appendix 2: Assessment and Monitoring for Actual or Potential Offsite Consequences of a Radiological Emergency
- Appendix 3: Public Alert and Notification System
- Appendix 4: Evacuation Time Estimates (summary)
- Appendix 5: Implementing Procedures – Topical List
- Appendix 6: Emergency Equipment and Supplies
- Appendix 7: Certification Letter
- Appendix 8: Cross-Reference to Regulations, Guidance, and State and Local Plans

Offsite Emergency Plans

The COLA includes supplemental information consisting of the offsite RERPs for the State of Maryland, the Commonwealth of Virginia, and the risk jurisdictions of Louisa, Spotsylvania, Orange, Caroline, and Hanover Counties in Virginia.

License Conditions

COLA Part 10 Section 3, "North Anna 3 Proposed License Conditions," includes the following proposed license conditions related to emergency planning actions (which are addressed below in SER Sections 13.3.4 and 13.3.6):

- License Condition 3.1 (Letters of Agreement) (See SER Section 13.3.4.16).

  Prior to loading fuel, the licensee shall update its Units 1 & 2 Letters of Agreement with the following entities or their successors:

  a. Commonwealth of Virginia Department of Emergency Management
  b. Commonwealth of Virginia Department of Health
  c. Commonwealth of Virginia Department of State Police
  d. Commonwealth of Virginia Department of Game and Inland Fisheries
  e. Virginia Commonwealth University Medical Center
  f. Louisa County Administrator
  g. Louisa County Sheriff
  h. Louisa County Department of Fire and Emergency Medical Services
  i. Spotsylvania County Sheriff
  j. Spotsylvania Department of Fire, Rescue, and Emergency Management
  k. Orange County Administrator
  l. Orange County Sheriff
  m. Caroline County Sheriff
  n. Caroline County Department of Fire, Rescue, and Emergency Management
  o. Hanover County Administrator

p. Hanover County Sheriff

These updated letters of agreement will identify the specific nature of arrangements in support of emergency preparedness for the North Anna site, including North Anna 3. The emergency plan shall be revised to include these update letters of agreement after they have been executed.

- License Condition 3.7.1 (Emergency Action Levels (EAL)) (See SER Section 13.3.4.4).

  No later than 180 days prior to initial fuel load, the licensee shall submit to the Director of NRO [NRC Office of New Reactors], or the Director's designee, a fully developed set of site-specific EALs in accordance with [Nuclear Energy Institute] NEI 07-01, Revision 0, with no deviations. The EALs shall have been discussed and agreed upon with state and local officials.

- License Condition 3.7.2 (On-Shift Staffing) (See SER Section 13.3.4.2).

  The licensee shall perform a detailed analysis of on-shift staffing, in accordance with NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0, and the licensee shall incorporate any changes to the emergency plan (EP) needed to bring staff to the required levels, prior to or concurrent with the completion of EP ITAAC 2.0 of Table 2.3-1, and no less than 180 days prior to initial fuel load.

- License Condition 3.8.1 (Fukushima Near-Term Task Force (NTTF) Recommendations) (See SER Sections 13.3.4.2 and 13.3.4.6).

  At least two years prior to scheduled initial fuel load, the licensee shall have performed an assessment of the onsite and augmented staffing capability to satisfy the regulatory requirements for response to a multi-unit event. The staffing assessment 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 prior to scheduled initial fuel load, the licensee shall revise the EP to include the following:

  - Incorporation of corrective actions identified in the staffing assessment described above

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

  At least two years prior to scheduled initial fuel load, the licensee shall have performed an assessment of on-site and off-site communications systems and equipment required during an emergency event to ensure communications capabilities can be maintained during prolonged station blackout conditions. The communications capability assessment will be performed in accordance with NEI 12-01, "Guidance [*sic*] for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0.

At least 180 days prior to scheduled initial fuel load, 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

The COLA Part 10 Section 2.3, "Emergency planning ITAAC," includes the proposed emergency planning ITAAC (EP ITAAC) in Table 2.3-1. The application does not include EP ITAAC from either the referenced North Anna 3 ESP SSAR or ESBWR DCD, as there are none (see STD COL 14.3-1-A in SER Section 13.3.4.18, below, with regard to the ESBWR DCD). The complete set of EP ITAAC for North Anna 3 is provided below in SER Table 13.3-1.

13.3.3 Regulatory Basis

The regulatory basis of the North Anna 3 ESP SSAR information incorporated by reference is addressed in NUREG-1835, "Safety Evaluation Report for an Early Site Permit (ESP) at the North Anna ESP Site," September 2005. The regulatory basis of the ESBWR DCD information incorporated by reference is addressed in NUREG-1966, "Final Safety Evaluation Report Related to the Certification of the Economic Simplified Boiling-Water Reactor Standard Design," April 2014 (which reflects DCD Revision 9), and in Supplement 1 to NUREG-1966, September 2014 (which reflects DCD Revision 10). The applicable regulatory requirements and guidance for emergency planning information submitted in a COLA 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 and Utilization Facilities." In addition, 10 CFR 52.79(a)(22)(i) requires certifications from State and local governmental agencies with emergency planning responsibilities. The staff also considered the applicable requirements in 10 CFR 50.33(g), 10 CFR 50.72, "Immediate notification requirements for operating nuclear power reactors," 10 CFR 52.79(b)(4), 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 considered during its review. The related acceptance criteria are identified in Section II, "Acceptance Criteria," NUREG-0800, Section 13.3, and the applicable regulatory guidance for reviewing emergency preparedness as an operational program is established in NUREG-0800, Section 13.4, "Operational Programs." In addition, the staff considered NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimate Studies," November 2011, NUREG/CR-6863, "Development of Evacuation Time Estimate Studies for Nuclear Power Plants," January 2005; and (NRC Office of Nuclear Security and Incident Response/Division of Preparedness and Response (NSIR/DPR) Interim Staff Guidance (ISG) NSIR/DPR-ISG-01, Revision 0, "Emergency Planning for Nuclear Power Plants," November 2011 (ADAMS Accession No. ML113010523). NSIR/DPR-ISG-01 provides updated guidance based on changes to emergency planning regulations in 10 CFR 50.47 and 10 CFR Part 50, Appendix E, which were

published as a Final Rule in the *Federal Register* on November 23, 2011 (76 FR 72560)).

- 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 the review and evaluation of the adequacy of offsite radiological emergency planning and preparedness. In addition, FEMA considered NUREG-0654 (FEMA-REP-1), the Radiological Emergency Preparedness (REP) Program Manual, current FEMA guidance documents, and established industry practices. Pursuant to 44 CFR Part 353, "Fee for Services in Support, Review, and Approval of State and Local Government or Licensee Radiological Emergency Plans and Preparedness," Appendix A, "Memorandum of Understanding Between NRC and FEMA Relating to Radiological Emergency Planning and Preparedness" (58 FR 47996, September 14, 1993), FEMA provided its findings and determinations on offsite planning and preparedness to the NRC for its use in the licensing process.

13.3.4 Technical Evaluation

As documented in NUREG–1966, NRC staff reviewed and approved Section 13.3 of the certified ESBWR DCD, Revision 10. The staff reviewed Section 13.3 of the North Anna 3 COL FSAR, Revision 8, and checked the referenced ESBWR DCD to ensure that the combination of the information in the COL FSAR and the information in the ESBWR DCD appropriately represents the complete scope of information relating to this review topic. [1] The staff's review confirms that the information contained in the application and the information incorporated by reference address the relevant information related to this section. The staff reviewed the information in the North Anna 3 COLA, including FSAR, Revision 8, Section 13.3, "Emergency Planning," and the certified ESBWR DCD, Revision 10 and the North Anna 3 ESP SSAR, for conformance with the applicable standards and requirements identified in NUREG-0800, Sections 13.3 and 14.3.10, and confirmed that the COLA addresses the required information relating to emergency planning.

The staff reviewed general and administrative information in COLA Part 1, COLA Part 2 (FSAR), the North Anna 3 Emergency Plan (COL Plan) in COLA Part 5, the Departure Report in COLA Part 7, and EP ITAAC and proposed license conditions in COLA Part 10. The complete set of EP ITAAC for North Anna 3 is provided below in SER Table 13.3-1, and various EP ITAAC are discussed throughout this SER Section. EP ITAAC are also addressed below in SER Section 13.3.4.18, which includes resolution of STD COL 14.3-1-A.

In addition, the staff reviewed selected portions of the RERPs for the State of Maryland and the Commonwealth of Virginia, including the Virginia counties of Caroline, Hanover, Louisa, Orange, and Spotsylvania, for understanding and content, in relation to consistency with various sections of the COL Plan that address offsite support and resources (e.g., see SER Section 13.3.4.3). The staff also conducted three site area visits to the North Anna 3 on December 8, 2003, August 16, 2006, and April 16, 2008, consisting of a review of existing onsite emergency response facilities (ERF) and the various areas within and beyond the 16-km (10-mi) plume exposure pathway emergency planning zone (EPZ).

In COLA Part 1, the applicant referenced ESP-003, and in FSAR Section 1.1.1.9, incorporated Revision 9 of the SSAR from the North Anna ESP application. SSAR Section 13.3, "Emergency

Planning," describes the "major features" of the emergency plan for the proposed North Anna 3 (hereinafter referred to as the "ESP Plan"), submitted by the ESP applicant (Dominion Nuclear North Anna, LLC) for the North Anna ESP site pursuant to 10 CFR 52.17(b)(2)(i). The NRC issued ESP-003 to the ESP applicant on November 27, 2007, pursuant to 10 CFR 52.24, "Issuance of Early Site Permit." The emergency planning information in the COLA supplements what was submitted in the ESP application. Consistent with 10 CFR 52.83, the staff's review of the COLA was limited by the scope and nature of the matters resolved in the staff's previous evaluation of the North Anna 3 ESP application. Without re-evaluating the matters resolved during the ESP review, the staff's review of the COLA considered Section 13.3 of the ESP SSAR and the associated NRC findings in NUREG-1835.

The staff's and FEMA's previous technical review of the ESP Plan, together with the review of the COL Plan, addressed all of the relevant evaluation criteria in the 16 planning standards of NUREG-0654 in a way consistent with NUREG-0800, Section 13.3, which cites the applicable regulations. As stated above, the proposed North Anna 3 boundary is entirely within the existing North Anna site exclusion area boundary, so that for purposes of emergency planning, little distinction exists between the North Anna site (for the existing reactor units) and the proposed new North Anna 3. The COLA takes advantage of the emergency planning resources, capabilities, and organization that currently exist at the North Anna site. NUREG-0800 Section 13.3, Subsection I, "Areas of Review," provides, in part, this guidance to the staff regarding the appropriate level of review:

> In general, if an application is for an additional reactor at an operating reactor site, and the application proposes to incorporate and extend elements of the existing emergency planning program to the new reactor (including by reference), those existing elements should be considered acceptable and adequate. The reviewer will generally focus the review on the extension of the existing program to the new reactor, and will determine whether the incorporated emergency planning program information from the existing reactor site (1) is applicable to the proposed reactor, (2) is up-to-date when the application is submitted, and (3) reflects use of the site for construction of a new reactor (or reactors) and appropriately incorporates the new reactor(s) into the existing plan.

To be consistent with this guidance, the staff focused its review on the extension of the existing North Anna site emergency preparedness program to the new unit, and considered those elements of the existing program that are unchanged in their applicability to the new unit, as acceptable and adequate.

The FSAR Section 1.1.1.7 incorporates by reference Revision 10 of the ESBWR DCD, and FSAR Section 13.3 references ESBWR DCD Section 13.3, "Emergency Planning." COLA Part 5 provides the North Anna 3 onsite emergency plan (COL Plan), which consists of a basic plan and eight appendices (see SER Section 13.3.2, above). The basic plan follows the format of NUREG-0654, and provides detailed information about each of the 16 planning standards and associated evaluation criteria in NUREG-0654. In addition, COL Plan Section I.C, "Planning Basis and Emergency Planning Zones," states that the EPZs for the new unit are based on the guidance in NUREG-0654. As shown in COL Plan Figure I-1, the North Anna site plume exposure pathway EPZ for the North Anna site is an area surrounding the plant within a radius of approximately 16 km (10 mi). COL Plan Figure I-2 shows the North Anna site ingestion exposure pathway EPZ, which is an area surrounding the North Anna site within a radius of approximately 80 km (50 mi). The existing 16-km and 80-km (10-mi and 50-mi) EPZs for the

North Anna site are used for the new unit, and the descriptions of the EPZs in ESP SSAR Section 13.3.2.2.1, "Emergency Planning Zones," are incorporated by reference into the COLA, and are addressed in Section 13.3.3.1, "Emergency Planning Zones," of NUREG-1835.

The SER Sections 13.3.4.1 through 13.3.4.19 describe the staff's technical evaluation of the information provided in the COL Plan, and the review and findings in this SER apply only to the proposed new unit. Any changes to the operating North Anna Units 1 and 2 Emergency Plan would be addressed as separate licensing actions, in accordance with 10 CFR 50.54(q). The section designations of the COL Plan generally correspond to the 16 planning standard designations in NUREG-0654, Section II; specifically, COL Plan Sections II.A through II.P address NUREG-0654, "Planning Standards and Evaluation Criteria," A through P, respectively. The format of the staff's review of the COL Plan is patterned after these 16 planning standards, which reflect the requirements ("standards") in 10 CFR 50.47(b)(1) through 10 CFR 50.47(b)(16). 10 CFR Part 50, Appendix E provides additional requirements that duplicate and supplement the evaluation criteria associated with the planning standards. The staff's evaluation of the various aspects of 10 CFR Part 50, Appendix E is included within the associated NUREG-0654 planning standards review.

13.3.4.1 Assignment of Responsibility (Organization Control)

As stated in NUREG-0654, Section II, Planning Standard A, "Assignment of Responsibility (Organization Control)," 10 CFR 50.47(b)(1) 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 the incorporated 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 a description of the local offsite services to be provided in support of the licensee's emergency organization; 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; and identification of the State and/or local officials responsible for planning for, ordering, and controlling appropriate protective actions, including evacuations when necessary. In addition, 10 CFR 52.79(a)(22)(i) requires the COL applicant to obtain emergency plan certifications from the State and local governmental agencies with emergency planning responsibilities, which 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 COL Plan Section II.A, "Assignment of Responsibility (Organization Control)," the applicant described the responsibilities of the applicant and of various local, State, and Federal agencies, as well as private sector organizations, that are part of the emergency response organization (ERO) for the North Anna site and may be required to respond to an emergency at the North Anna site. 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 A, 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)(1).

In COL Plan Section II.A, the applicant incorporated by reference Sections 13.3.2.2.2.a and 13.3.2.2.2.b.1 of the ESP Plan, with regard to the description of participating organizations, and the interfaces between and among the onsite and offsite functional areas of emergency response. ESP Plan Section 13.3.2.2.2.a.6 references letters of agreement with various offsite agencies and supporting organizations that are in Appendix 10.1, "Letters of Agreement," of the (Units 1 and 2) North Anna Emergency Plan (hereinafter referred to as "NAEP"), Revision 28, July 1, 2003 (not publicly available). Dominion also provided copies of these letters of agreement in support of the ESP application, which include an acknowledgement by each agency that its existing arrangements would apply to prospective additional reactors at the North Anna site. In Sections 13.3.2 and 13.3.3.2 of NUREG-1835, the staff found that this information was acceptable.

COL Plan Section II.A.3, "Written Agreements," it states that Appendix 7 (in the North Anna 3 COLA Part 5 provides a copy of the certification letter established between Dominion and the Commonwealth of Virginia and risk jurisdiction government agencies and private sector organizations committed to supporting further development and implementation of the COL Plan. The applicant also stated that no certification letters are required for many Federal agencies, because their responsibilities are established in the U.S. Department of Homeland Security, "National Response Framework" (January 2008). The staff reviewed the certification letter, dated June 11, 2010, and finds it acceptable because it adequately addresses the requirements in 10 CFR 52.79(a)(22)(i), described above, in support of a new reactor at the North Anna site. Further, the 16 agencies and organizations represented in the certification letter are the same agencies and organizations represented in the letters of agreement provided by Dominion in support of the ESP application. The certification letter and letters of agreement are discussed further in SER Sections 13.3.4.3 and 13.3.4.16.

Dominion provided additional information in COL Plan Section II.A that addresses the concept of operations for the onsite organization and ERFs; the relationships with local, State, and Federal agencies; and coordination of emergency response actions taken at North Anna 3 with Units 1 and 2. The Emergency Coordinator is responsible for making notifications and subsequent communications with Units 1 and 2 staff, in order to provide for coordination of activities between onsite ERFs. Figure II-1, "Emergency Response Organization Interrelationships," provides a block diagram that illustrates the interrelationships among the station and offsite EROs. Emergency response support from offsite organizations and agencies, including expected assistance associated with hostile action at the North Anna site, is further described in COL Plan Section II.C, and addressed below in SER Sections 13.3.4.3 and 13.3.4.16.

The COL Plan Section II.A also addresses the coordination of North Anna 3 emergency response actions with other reactor sites serviced by the Central EOF (discussed below in SER Section 13.3.4.8). In the unlikely event that the Central EOF is activated for emergencies that are declared at North Anna 3 simultaneously with another reactor site it services, the EOF Director is responsible for discharging the duties described in the COL Plan, as well as in the other affected site's emergency plan. Section II.A.1.b lists the following actions that Dominion is responsible for taking during an emergency condition:

- Assess plant conditions

- Classify emergency conditions
- Notify affected agencies of emergency conditions
- Provide technical expertise to affected agencies
- Provide support for offsite assessment and protective activities
- Make protective action recommendations (PARs)
- Mitigate the consequences of adverse plant conditions by monitoring and controlling plant parameters
- Request assistance from off-site agencies, as needed
- Provide support to affected agencies for communications with the affected public
- Terminate emergency conditions

In COL Plan Section II.A.1, Dominion stated that normal operations at North Anna 3 are conducted under the authority of the Shift Manager and directed from the North Anna 3 Control Room. Using approved operating procedures, including the EALs provided in implementing procedures, the Shift Manager determines if an emergency condition exists and, if so, the proper emergency classification. (EALs are discussed below in SER Section 13.3.4.4.) Based on this classification and plant conditions, the Shift Manager (or Unit Supervisor) assumes the role of the Emergency Coordinator, makes or directs initial notifications to affected plant staff and Commonwealth of Virginia, risk jurisdiction, and Federal authorities, and determines if activation of the Dominion ERFs is desirable or required. The OSC, which provides an operational center to provide support to the TSC and Control Room, dispatches assessment and repair teams as directed by the Emergency Coordinator, and provides operational information, radiological assessment, and manpower for in-plant functions. Table II-1, "Responsibility for Emergency Response Functions," summarizes the responsibilities and activities of the ERFs under the four emergency classifications (i.e., notification of unusual event, alert, site area emergency, and general emergency). ERFs are discussed below in SER Section 13.3.4.8.

Upon declaration of an emergency, the Emergency Coordinator is in charge of the emergency response for the facility, including directing the activities of the plant staff in performing initial assessment, corrective, and protective functions. If required by the emergency classification, or deemed appropriate by the Emergency Coordinator, emergency response personnel are notified and instructed to report to their emergency response locations. (Notification methods and procedures are discussed below in SER Section 13.3.4.5.) Following activation of the ERFs and receipt of an adequate turnover, the Site Vice President, or other designated member of the station management staff, relieves the Shift Manager of Emergency Coordinator responsibilities and directs the activities of the onsite ERO from the TSC.

If the EOF is activated, it is staffed by Dominion personnel, including the EOF Director, who directs the activities of this facility and assumes responsibility for the licensee's offsite emergency response efforts, coordinates the availability and utilization of corporate and external resources, and manages recovery efforts. The EOF may be activated concurrently with the TSC, and is always activated upon declaration of a Site Area Emergency or General Emergency. The senior Dominion representative is responsible for ensuring the EOF communicates emergency status to the Commonwealth of Virginia and risk jurisdiction governments, directs the efforts of the offsite monitoring teams, makes radiological assessments, recommends offsite protective measures to the Commonwealth of Virginia, and arranges through the company for the dispatch of any special assistance or services requested by the station. The Director Nuclear Protection Services and Emergency Preparedness reports

to Dominion's senior nuclear executive, who is responsible for the total execution of the radiological emergency response effort at Dominion's fleet of nuclear power plants.

The COL Plan Sections II.A.1.e and II.A.4 state that Dominion maintains the capability for a 24-hour response, including staffing of communication links, and for continuous operations through training of multiple responders for key emergency response positions, consistent with the staffing requirements of COL Plan Section II.B.5, "Plant Emergency Response Staff," and the training requirements of Section II.O, "Radiological Emergency Response Training." The Emergency Coordinator bears responsibility for ensuring continuity of technical, administrative, and material resources during emergency operations.

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 adequately assigned primary responsibilities for emergency response, and the applicant has the staff to respond to and to augment its initial response on a continuous basis. The applicant is capable of providing 24-hour-per-day emergency response and staffing of communications 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 has established the emergency responsibilities of the various supporting organizations, including providing adequate written agreements. The applicant has 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 finds that the applicant has incorporated information about the emergency response roles of supporting organizations and offsite agencies, and that information is sufficient to provide assurance of coordination among the supporting groups and with the licensee. Further, the applicant has described the local offsite services to be provided in support of the licensee's emergency organization, and has 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.

Conclusion

The staff concludes that the information provided in the COLA is consistent with the guidelines in NUREG-0654, Planning Standard A. Therefore, the staff finds that the information is acceptable and meets the relevant requirements of 10 CFR 50.47(b)(1), 10 CFR Part 50, Appendix E, Sections III and IV.A, and 10 CFR 52.79(a)(22)(i), insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

13.3.4.2 Onsite Emergency Organization

As stated in NUREG-0654, Section II, Planning Standard B, "Onsite Emergency Organization," 10 CFR 50.47(b)(2) 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 shall include a description of the normal plant operating organization, onsite ERO, 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 their 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 COL Plan Section II.B, "Onsite Emergency Organization," the applicant described the organizational structure that would be available to respond to an emergency at the North Anna site. 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, 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)(2).

In COL Plan Section II.B, the applicant incorporated by reference Section 13.3.2.2.2.b of the ESP Plan, with regard to interfaces among various onsite response activities, and the identification of offsite support and response activities. In Section 13.3.3 of NUREG-1835, the staff found this information was acceptable. In addition, COL Plan Section II.B states that Figure II-2, "North Anna 3 Emergency Response Organization On-Site," illustrates the onsite ERO and that upon the declaration of an emergency, designated members of the normal staff complement fulfill corresponding roles within the ERO. Station administrative procedures provide the details of the normal station organization, including reporting relationships, and emergency plan implementing procedures (EPIP) provide details regarding ERO position functions. The minimum staff required to conduct routine and immediate emergency operations is maintained at the station, consistent with 10 CFR 50.54(m) and the emergency plan. Staffing is further described in FSAR Section 13.1, "Organizational Structure of Applicant."

The Shift Manager/Unit Supervisor position is continuously staffed, consistent with 10 CFR 50.54(m). Upon recognition of an emergency condition, the individual filling this position assumes the duties of the Emergency Coordinator until relieved by a qualified member of the management staff or until termination of the emergency condition, whichever comes first. The Emergency Coordinator has the responsibility and authority to initiate emergency actions necessary to protect the life, health, and safety of the plant staff, and to initiate any required emergency response actions, including notification of affected Federal, Commonwealth of Virginia, and risk jurisdiction authorities and provision of PARs to offsite authorities. The non-delegable responsibilities of the Emergency Coordinator are listed in COL Plan Section II.B.4, and include classifying the emergency, authorizing offsite notifications, recommending protective measures, and authorizing emergency exposure limits. With the staffing of the ERO,

the EOF Director relieves the Emergency Coordinator of responsibility for notifying and coordinating with offsite authorities.

If the Shift Manager is rendered unable to fulfill the duties and responsibilities of the Emergency Coordinator position, the Unit Supervisor or an on-shift Reactor Operator assumes the Emergency Coordinator position until relieved by a qualified member of the management staff. Figure II-1 illustrates the interfaces between and among the onsite functional areas of emergency response activity, Dominion EOF support, the affected Commonwealth of Virginia and risk jurisdiction government response organizations, the NRC, and other offsite organizations.

The staff finds that the applicant has 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.

In COL Plan Section II.B.5, "Plant Emergency Response Staff," the applicant stated that Dominion will establish minimum emergency response staffing consistent with Table II-2, "Plant Staff Emergency Functions," which has been based on the guidance in Table B-1, "Minimum Staffing Requirements for NRC Licensees for Nuclear Power Plant Emergencies," of NUREG-0654. Figure II-2 illustrates the plant staff emergency organization. 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 the key functions of accident assessment, radiological monitoring and analysis, security, fire-fighting, first aid and rescue, and communications. Figure II-3, "North Anna 3 Augmented Emergency Response Organization," illustrates the augmented plant staff ERO. The ERO, when fully activated, includes the positions described in Table II-2. Additional personnel may be designated as emergency responders providing special expertise deemed beneficial, but not mandatory, to the planned response. The individuals assigned as responders for the emergency positions are designated based on the technical requirements of the position. COL Plan Appendix 5 lists an EPIP entitled "Activation of the Emergency Response Organization." The staff reviewed Table II.2, as well as the comparable North Anna Units 1 and 2 Table 5.1, "Minimum Staffing Requirements for Emergencies," of the NAEP, Revision 40, December 10, 2013 (not publicly available), and finds that the required minimum on-shift and augmentation staffing in support of North Anna 3 is acceptable because it is consistent with Table B-1 of NUREG-0654.

The COL Plan Section II.B.7, "Corporate 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. Dominion management, technical, and administrative personnel staff the EOF and provide (or coordinate) augmented support for the plant staff. The Dominion 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 Table II-2, Dominion corporate staff provides logistical support for plant personnel; technical support for planning and recovery/re-entry operations; management-level interface with governmental authorities; and coordination with, and the release of information to, the news media.

ERO augmentation is also addressed in BL 2005-02, which requested in part that all holders of operating licenses provide information regarding ERO augmentation for security-based events. DCD COL Item 1C.1-2-A requires the COL applicant to address the security-related requirements of BL 2005-02, and is addressed below in SER Section 13.3.4.18. As discussed below in SER Section 13.3.4.8, COL Plan Section II.H.4 states in part that in the event the site is under threat of, or experiencing hostile action, the Louisa Fire Training Center functions as a staging area for augmentation of emergency response staff. Specific aspects of BL 2005-02 are also addressed below in SER Sections 13.3.4.4, 13.3.4.5, 13.3.4.10, and 13.3.4.14.

The Institute of Nuclear Power Operations (INPO), when notified of an emergency situation, will serve as a clearinghouse for industry wide support and provide requested emergency response technical assistance, including emergency manpower and equipment. Dominion may request that the reactor vendor, GEH, provide technical support for emergency response activities. GEH will operate primarily from its corporate offices, with a small contingent at the plant if requested. If required at the time of the event, additional resources can be obtained through purchase agreements with the supporting institutions. These agreements would be negotiated on an as-needed basis. In addition, Dominion has established and will maintain agreements for risk jurisdiction emergency response support services, including firefighting, rescue squad, and medical and hospital services. COL Plan Section II.L describes the arrangements for medical support services, including hospital and ambulance support, and is addressed below in SER Section 13.3.4.12. COL Plan Appendix 7 provides the certification letter for organizations providing these services. (Emergency response support and resources are further described below in SER Section 13.3.4.3.)

Fukushima Dai-ichi – NTTF Recommendation 9.3

On March 12, 2012, the NRC requested additional information 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 (ADAMS Accession No. ML12053A340). In Recommendation 9.3, the NTTF addressed staffing and communications provisions for enhancing emergency preparedness. On January 23, 2013, the NRC issued a follow-up letter (ADAMS Accession No. ML13010A162), which identified generic technical issues that need to be addressed as part of the Recommendation 9.3 communications capability assessment.

With regard to staffing, the accident at Fukushima highlighted the need to determine and implement the required staff to fill all necessary positions responding to a multi-unit event. Specifically, NTTF Recommendation 9.3 requests that all power reactor licensees and holders of construction permits (in active or deferred status) assess their current staffing levels and determine the appropriate staff to fill all necessary positions for responding to a multi-unit event during a beyond design basis natural event, and determine if any enhancements are appropriate. Single unit sites should provide the requested information, as it pertains to an extended loss of all alternating current (AC) power and impeded access to the site. (Emergency communications are addressed in Section 13.3.4.6 of this report.)

In COLA Part 10 the applicant proposed License Condition 3.8.1 (Fukushima Near-Term Task Force (NTTF) Recommendations), which addresses both the staffing and communications areas addressed in NTTF Recommendation 9.3. The staff reviewed License Condition 3.8.1, and, with the exception of the timeframes for completion and submission of the staffing and

communications capability assessments, finds that it is 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.[4]

The staff proposes a similar timeframe for completion of the assessments, which is based on 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). In addition, the staff proposes a similar timeframe for submission of the assessments 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, consistent with the applicant's proposed License Condition 3.8.1, the staff identified the following License Conditions 1 and 2, which address enhanced staffing and communications capabilities, respectively, and include the staff's proposed timeframes for completion of the assessments and their submission to the NRC.

License Conditions 1 and 2

1. No later than 2 years 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 augmented staffing capability for responding to a multi-unit event. The staffing assessment shall be performed in accordance with NEI 12-01, "Guidance for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities." At least one hundred eighty (180) days before the date scheduled for initial fuel loading, as 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 staffing assessment described above, and identify how the augmented staff will be notified given degraded communications capabilities, including any related emergency plan and implementing procedure changes and associated training.

2. No later than 2 years 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 ac power. The communication capability assessment shall be performed in accordance with NEI 12-01, "Guidance for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities." At least one hundred eighty (180) days before the date scheduled for initial fuel loading, as 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

[4] 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, dated 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).

above, including any related emergency plan and implementing procedure changes and associated training.

Enhancements to Emergency Preparedness Regulations

In addition to appropriate staffing levels associated with multi-unit events (discussed above), 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 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 that for nuclear power reactor licensees, by December 24, 2012, a detailed analysis must be performed to demonstrate 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, NRC issued associated guidance in Interim Staff Guidance NSIR/DPR-ISG-01. In Section IV.C, "On-Shift Staffing Analysis," of NSIR/DPR-ISG-01, NRC endorsed NEI technical report NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0, dated June 2011 (ADAMS Accession No. ML111751698) stating in part that NEI 10-05 establishes a standard methodology for a licensee to perform the required staffing analysis (in 10 CFR Part 50, Appendix E, Section IV.A.9), and that the NRC has reviewed NEI 10-05 and found it to be an acceptable methodology for this purpose.

In COLA Part 10, the applicant proposed License Condition 3.7.2, "On-Shift Staffing," 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 staff reviewed License Condition 3.7.2, and, with the exception of the timeframe for submission of the on-shift staffing analysis and changes to the emergency plan, finds that it is acceptable because it is consistent with the Final Rule and NSIR/DPR-ISG-01. The NRC endorsed NEI 10-05 is addressed in NSIR/DPR-ISG-01, Section IV.C, "On-Shift Staffing Analysis," which states, in part, that NEI 10-05 establishes a standard methodology for a licensee to perform the required staffing analysis, and that the NRC has reviewed NEI 10-05 and finds it an acceptable methodology for this purpose.

The staff proposes 2-year timeframe for completion of the on-shift staffing analysis, which is similar to that proposed for completion of the on-site and augmented staffing capability assessment addressed in proposed License Condition 1, above. The staff also proposes a similar timeframe for submission of the on-shift staffing analysis 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). In addition, the staff has eliminated the applicant's proposed link between ITAAC 2.0 and incorporation of any needed changes to the emergency plan, because it is unnecessary. Therefore, consistent with the applicant's proposed License Condition 3.7.2, the staff identified the following License Condition 3, which addresses an analysis of on-shift personnel assigned emergency plan implementation functions, and includes the staff's proposed timeframes for completion of the on-shift staffing analysis, and submission to the NRC.

License Condition 3

3. No later than 2 years 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-shift staffing in accordance with NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities." At least one hundred eighty (180) days before the date scheduled for initial fuel loading, as set forth in the notification submitted in accordance with 10 CFR 52.103(a), the licensee shall incorporate any changes to the emergency plan needed to bring staffing to the required levels.

Subject to License Conditions 1, 2, and 3, the staff finds that the applicant sufficiently defined its responsibilities for emergency response, has adequate staffing to provide and maintain at all times initial facility accident response in key functional areas, and is capable of timely augmentation of the response capabilities. In addition, the applicant adequately specified the interfaces among various onsite and offsite support and response activities. In addition, the applicant 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. The applicant also 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. Further, licensee employees who are responsible for making offsite dose projections, and licensee and other persons with special qualifications for coping with emergency conditions, are also identified.

Conclusion

Subject to License Conditions 1, 2, and 3, the staff concludes that the information provided in the COLA is consistent with the guidelines in NUREG-0654, Planning Standard B and NSIR/DPR-ISG-01, Section IV.C. Therefore, the staff finds that the information is 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 essential elements of advanced planning and the provisions made to cope with emergency situations.

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 that the emergency plans incorporate information about the emergency response roles of supporting organizations and offsite agencies, and that 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.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 COL 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 North Anna site, including North Anna 3, 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).

In COL Plan Section II.C, the applicant incorporated by reference Section 13.3.2.2.2.c of the ESP Plan, with regard to arrangements for emergency response support and resources. In Section 13.3.3.4 of NUREG-1835, the staff found this information was acceptable. The applicant provided additional information in COL Plan Section II.C, including identifying the Emergency Coordinator/EOF Director as the person who may request Federal Radiological Monitoring and Assessment Center (FRMAC) assistance through the NRC. Dominion estimates that a FRMAC Advance Party could be expected at the site within 6 to 14 hours following the order to deploy, based on the availability of airports near the North Anna site,[5] and expects NRC assistance from NRC's offices in Atlanta, Georgia will arrive in the (North Anna) site vicinity within 7 to 8 hours following notification. (The DOE FRMAC Operations Plan is addressed below in SER Section 13.3.4.16.) Dominion provides facilities and resources needed to support the Federal response at the TSC and EOF. Dominion does not expect risk jurisdiction representatives to be present at the EOF. A VDEM State On-Scene Coordinator serves as the Commonwealth's representative to provide interface between the utility and the Commonwealth of Virginia and risk jurisdiction governments.

The North Anna maintains fixed laboratory equipment to support sampling analysis and monitoring. The equipment includes multichannel analyzers, proportional counters, a tritium analyzer, and whole body counters; arrangements are maintained for reading thermoluminescent dosimeters (TLD). These resources are supplemented by offsite radiological laboratory facilities, listed in COL Plan Section II.C.3, "Radiological Laboratories," and ESP SSAR Section 13.3.2.2.2.c.2, which are available to support emergency response activities on a 24-hour per day basis. In addition, COL Plan Section II.C.4, "Other Supporting Organizations," states that Dominion has made arrangements to obtain additional emergency response support from the INPO Fixed Nuclear Facility Voluntary Assistance Agreement signatories and the REAC/TS.

The scope of expected support from additional agencies and organizations that can be relied upon in an emergency to provide assistance is outlined in the certification letter in COL Plan Appendix 7, and reflected in the letters of agreement that were provided in support of the ESP application. As described in SER Sections 13.3.4.1 and 13.3.4.16, the staff reviewed these letters of agreement and determined that they were broadly written; such that they could cover an expanded North Anna site use to include North Anna 3. In addition, while not specifically addressed, they could also include expected assistance associated with hostile action at the site. In order to clarify that the expected assistance from offsite agencies includes hostile action at the site, consistent with 10 CFR Part 50, Appendix E, Section IV.A.7, the staff has included this requirement in proposed License Condition 5 (addressed below in SER Section 13.3.4.16).

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[5] U.S. Department of Energy (DOE) Radiation Emergency Assistance Center/Training Site (REAC/TS) staff is available 24 hours a day, seven days a week, to deploy and provide emergency medical consultation for incidents involving radiation anywhere in the world. REAC/TS provides direct support for the National Nuclear Security Administration's Office of Emergency Response and the FRMAC (source: http://orise.orau.gov/reacts/, visited March 27, 2014).

In addition, License Condition 5 addresses updating the Units 1 and 2 letters of agreement to reflect North Anna 3.

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 5, the staff finds that the applicant has made arrangements for requesting and effectively using assistance resources, including arrangements to accommodate State and local staff at the EOF, and has identified other organizations capable of augmenting the planned response. In addition, the applicant has made adequate provisions for incorporating the Federal response capability into its operation plan, and has identified radiological laboratories and other organizations that can be relied on in an emergency to provide assistance. The staff also finds that the emergency plans incorporate information about the emergency response roles of supporting organizations and offsite agencies, and that the information is sufficient to provide assurance of coordination among the supporting groups and the licensee. Finally, the applicant has identified appropriate local, State, and Federal agencies with responsibilities for coping with emergencies (including hostile action at the North Anna 3 site), as well as the expected assistance from each.

Conclusion

Subject to License Condition 5, the staff concludes that the information provided in the COLA is consistent with the guidelines in NUREG-0654, Planning Standard C. Therefore, the staff finds that the information is acceptable and 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 essential elements of advanced planning and the provisions made to cope with emergency situations.

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 on 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 that an EAL has been exceeded, and to promptly declare the emergency conditions as soon as possible after the identification of the appropriate emergency classification level.

In COL 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 COL Plan Section II.D, the applicant incorporated by reference Section 13.3.2.2.2.d of the ESP Plan, with regard to the description of the emergency classification system. In Section 13.3.2.2.2.d, Dominion described the four emergency classes (identified above), and stated that Dominion would propose site-specific EALs in the COL application. Further, the EALs would be discussed and agreed on with the Commonwealth of Virginia and local governmental authorities, and submitted to the NRC for approval. Thereafter, they would be reviewed with the Commonwealth of Virginia and local governmental authorities on an annual basis. After initial approval, changes to these EALs and initiating criteria would be made without NRC approval only if the changes do not decrease the effectiveness of the [emergency] plans, and the revised plans continue to meet the standards of 10 CFR 50.47(b)(4) and the requirements of 10 CFR Part 50, Appendix E. In Section 13.3.3.5 of NUREG-1835, the staff found this information acceptable.

At the COL application stage, the requisite EAL information is limited and consists of 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 controlled by 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 COLA Plan Section II.D, the applicant stated that Dominion uses a standard emergency classification scheme, based on system and effluent parameters, which allows affected Commonwealth of Virginia and risk jurisdiction response organizations to determine initial offsite response measures. Section II.D also contains an overview of the EAL scheme, which includes a definition of the four emergency classes (identified above) and a general list of licensee actions for each. The description of EALs in ESP Plan Section 13.3.2.2.2.d is supplemented by Section II.D, which states that implementing procedures provide the parameter values and equipment status that are indicative of each emergency class. Once indications are available to plant operators that an emergency action level has been exceeded, the event is promptly assessed and classified, and the corresponding emergency classification level is declared. This declaration occurs as soon as possible, and within 15 minutes of when these indications become available. COL Plan Appendix 5 lists an EPIP entitled "Emergency Classification." In addition, the applicant proposed License Condition 3.7.1, 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.

The staff finds the description of the EAL scheme is acceptable because it is consistent with 10 CFR Part 50, Appendix, Section IV.C, and addresses critical element (1). The applicant's incorporation of the fully developed site-specific EAL scheme into implementing procedures is acceptable because it ensures that the EALs are maintained in a document controlled by 10 CFR 50.54(q) (i.e., EPIPs), and therefore addresses critical element (4). With regard to critical elements (2) and (3), in COLA Part 10, the applicant proposed License Condition 3.7.1 (Emergency Action Levels (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 3.7.1 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 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 3.7.1, 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, consistent with the applicant's proposed License Condition 3.7.1, the staff identified the following License Condition 4, which includes the staff's proposed timeframe for submission of the EALs to the NRC.

License Condition 4

4. 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 North Anna 3, 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.

For the reasons discussed above, the staff finds that the applicant adequately addressed the four critical elements (identified above) that comprise the required EAL information in the COL application. EALs are also addressed in the various ITAAC in COL Plan Attachment 10 and reflected in Table 13.3-1 of this report. These include ITAAC 1.1.1, which states that the specific parameters identified in the EAL thresholds listed in the EPIPs have been retrieved and displayed in the control room, TSC, and EOF. ITAAC 1.1.2 states that the ranges available in the control room, TSC, and EOF encompass the values for the specific parameters identified in the EAL thresholds listed in the EPIPs. Finally, full-participation exercise ITAAC 8.1.1.A states that the licensee will demonstrate the ability to identify initiating conditions, determine EAL parameters, and correctly classify the emergency throughout the exercise.

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 4, 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 has been exceeded, and to promptly declare the emergency condition.

Conclusion

Subject to License Condition 4, the staff concludes that the information provided in the COLA is consistent with the guidelines in NUREG-0654, Planning Standard D. Therefore, the staff finds that the information is acceptable and 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.

In COL 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 North Anna 3 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).

In COL Plan Section II.E, the applicant incorporated by reference Sections 13.3.2.2.2.e and 13.3.2.2.2.g of the ESP Plan, with regard to the descriptions of notification methods and procedures, including the processes used for providing written messages to the public. In Sections 13.3.3.6 and 13.3.3.8 of NUREG-1835, respectively, the staff found this information acceptable. (Public education and information is discussed further in SER Section 13.3.4.7, below.) The applicant provided additional information in COL Plan Section II.E, which states that Dominion maintains procedures for notifying Commonwealth of Virginia and risk jurisdiction response organizations and licensee emergency responders. These procedures include, or make reference to, the pre-planned content of messages to Commonwealth of Virginia and risk jurisdiction organizations. Dominion also makes arrangements to provide prompt notification to members of the public within the plume exposure pathway EPZ. COL Plan Appendix 5 lists an EPIP entitled "Notifications Associated with Emergency Conditions." ITAAC 2.3 states that a

means exists to notify and provide instructions to the public in accordance with the emergency plan requirements.

In COL Plan Section II.E.1, "Notification of Commonwealth and Risk Jurisdiction Authorities," the applicant stated that Dominion maintains systems and procedures needed to provide prompt notification of affected Commonwealth of Virginia, risk jurisdiction, and Federal authorities following the declaration of any emergency condition, consistent with the emergency classification and action level scheme described in implementing procedures. The emergency classification system is discussed above in SER Section 13.3.4.4. ITAAC 2.1 states that a means to notify responsible organizations, within 15 minutes after the licensee declares an emergency, has been established via the Operational Hot Line among the control room, the Commonwealth of Virginia, and the five risk jurisdictions. The 15-minute notification capability is also addressed in ITAAC 8.1.1.B.2.a.

The Emergency Coordinator initiates notification of affected Commonwealth of Virginia and risk jurisdiction authorities (within 15 minutes after declaration of an emergency), including the escalation or de-escalation of any emergency condition. The primary notification method is the Insta-phone system, which is accessible from the control room, TSC, and EOF. Back-up notification capability is maintained through the use of commercial telephone systems. Message content and verification methods are established in the implementing procedures. Implementing procedures are addressed in ITAAC 9.1, which states that each of the detailed implementing procedures for the North Anna 3 Emergency Plan, as defined in Appendix 5 of the emergency plan, are submitted to the NRC no less than 180 days prior to fuel load. The submission of implementing procedures is also included as an implementation milestone, which is addressed below in SER Section 13.3.4.19. The adequacy of the procedures will be demonstrated through a review of their use during an exercise pursuant to ITAAC 8.1.1 and ITAAC 8.1.2. Exercises and drills are addressed below in SER Section 13.3.4.14.

Dominion maintains the systems and procedures needed to provide prompt notification of the NRC Operations Center following the declaration of any emergency condition. The NRC will be notified as soon as practical following notification of the Commonwealth of Virginia and risk jurisdiction authorities, and within 1 hour of the emergency declaration, including the escalation or de-escalation of any emergency declaration. The primary notification method is the Emergency Notification System (ENS), with back-up notification capability maintained through the use of commercial telephone systems. Emergency notification and communication systems are discussed further in SER Section 9.5.2.

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. DCD COL Item 1C.1-2-A requires the COL applicant to address the security-related requirements of BL 2005-02, and is addressed below in SER Section 13.3.4.18. With regard to NRC notifications, in RAI Letter No. 18 (RAI 13.03-2.16), dated July 18, 2008 (ADAMS Accession No. ML082000593), the staff asked the applicant to discuss how the North Anna 3 Emergency Plan addresses the latest applicable requirements associated with notifications and responses that are related to an imminent or actual safeguard threat against the facility (or other safeguards event). In an October 6, 2008, response to RAI 13.03-2.16 (ADAMS Accession No. ML082830168), the applicant stated that Dominion plans to include immediate notification of the NRC in the Operations Abnormal Procedures, similar to Units 1 and 2. In addition, for North Anna 3, security-related events are addressed in COLA Part 8, Security Plan, Appendix C,

Responsibility Matrix. COLA Part 8, Security Plan was submitted to the NRC under separate letter (Dominion Serial No. NA3-07-002). Demonstration of facility response capabilities in response to hostile actions will be integrated into Force-on-Force and emergency exercises when required. Emergency exercises are addressed below in SER Section 13.3.4.14.

As described by Dominion, the Emergency Coordinator directs the notification and mobilization of the licensee ERO following the declaration of an alert or higher level emergency. The Emergency Coordinator has the discretion to mobilize all or part of the ERO at the notification of unusual event level. ITAAC 2.2 states that a means exists to notify the North Anna 3 ERO. When staffing of the ERO is required, or desired by the Emergency Coordinator, affected personnel may be notified by a multifaceted process, including alarms, announcements, pagers, telephones, on-line messages, etc. Notification and mobilization of the ERO is initiated in accordance with implementing procedures.

The content of initial emergency notification messages from the plant to affected Commonwealth of Virginia and risk jurisdiction authorities includes information addressing the class of the emergency, status of any radioactive releases, locations of any potentially-affected populations, and recommendations regarding protective public actions. Follow-up messages from the plant to affected Commonwealth of Virginia and risk jurisdiction authorities include various detailed information, to the extent that the information is available and appropriate, as mutually agreed upon between Dominion and VDEM.

Dominion further stated that the primary method of alerting the public is by sounding the Alert and Notification System (ANS) sirens. Other alerting methods may include telephone communications, television and radio communications via the Emergency Alert System (EAS) stations, public address systems, bull horns from patrol cars, and personal contact. The Commonwealth of Virginia and risk jurisdiction governments have ultimate responsibility for warning the public in accordance with their respective RERPs. Affected Commonwealth of Virginia and risk jurisdiction officials bear responsibility for providing emergency messages intended for the public, including instructions regarding specific protective actions. Dominion supports development of these messages by providing supporting information.

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 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 State 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 State 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. In addition, the

applicant has described how offsite dose 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 COLA is consistent with the guidelines in NUREG-0654, Planning Standard E. Therefore, the staff finds that the information is acceptable and 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 communications 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 communications with State and local governments within the plume exposure EPZ, and Federal emergency response organizations and the NRC. Also required are provisions for communications among the Control Room, TSC, EOF, principal State, and local emergency operations centers (EOC), and field assessment teams. Communication systems shall be tested at designated frequencies.

In COL Plan Section II.F, "Emergency Communications," the applicant described the communication capabilities between the North Anna site and the Commonwealth of Virginia and risk jurisdiction governments. 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 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).

In COL Plan Section II.F, the applicant incorporated by reference Section 13.3.2.2.2.f of the ESP Plan, with regard to the description of the provisions for prompt communications among principal response organizations to emergency personnel and to the public. In Section 13.3.3.7 of NUREG-1835, the staff found this information acceptable. The applicant provided additional information in Section II.F, which states that Dominion maintains systems and procedures that provide prompt communications between its ERFs and between the site and offsite ERFs. COL Plan Appendix 5 lists an EPIP entitled "Emergency Communications." ERF communication capabilities are further described below in SER Section 13.3.4.8.

In COL Plan Section II.F.1, "Description of Communication Links," the applicant stated that Dominion maintains reliable communications links both within the plant and between the plant and external EROs. In addition, Dominion maintains capabilities for 24-hour-per-day emergency notification to the Commonwealth of Virginia and risk jurisdiction emergency response network. Commonwealth of Virginia and risk jurisdiction warning points are staffed 24 hours per day. This communications link consists of an Insta-phone loop, which can be activated from the control room, TSC, or EOF, with links to the Commonwealth of Virginia and risk jurisdictions. The Insta-phone loop has been installed to permit simultaneous telephone-

speaker communications for the station to the risk jurisdictions and the Virginia EOC on a 24-hour per day basis. If the Insta-phone is out of service, regular commercial telephone will be used to make the notifications. The offsite agencies have a system to call back to the power station and verify the notification message. Dominion also provides communications capabilities between the control room or TSC and radiological field personnel. Communications systems are described further in DCD Tier 2 Section 9.5.2 and FSAR Section 9.5.2, and addressed in SER Section 9.5.2.

Procedures for notifying, alerting, and activating emergency response personnel in the TSC, OSC, and EOF are described in Section II.E.2, and are discussed in SER Section 13.3.4.5. ITAAC 3.1 and ITAAC 3.2 address the establishment of various communications capabilities. The staff reviewed other application sections that deal with the availability of 24-hour emergency communications and response, and discusses those reviews in SER Sections 13.3.4.1, 13.3.4.2, 13.3.4.5, 13.3.4.8, and 13.3.4.12.

Dominion provides for communications between the control room/TSC/EOF and the NRC Operations Center via dedicated telephone lines. In addition to the ENS, Health Physics Network, Reactor Safety Counterpart Link, and Protective Measures Counterpart Link, separate dedicated telephone lines for communications with the NRC include the Management Counterpart Link (MCL) and Local Area Network (LAN). The MCL lines are located in the TSC and EOF and provide for internal discussions between the NRC Executive Team and the NRC Director of Site Operations or licensee management. The LAN has jacks in the TSC and EOF, and provides access to the NRC LAN. Finally, Dominion will activate the Emergency Response Data System (ERDS) within one hour of the declaration of an alert or higher emergency classification in accordance with the applicable facility procedure(s). ITAAC 3.2 states that an access port for ERDS is provided. SER Section 13.3.4.3 discusses the assistance available from Federal agencies, including coordination and communications among those agencies with the North Anna site and State and local agencies.

In COL Plan Sections II.F.2 and II.F.3, the applicant stated that Dominion maintains communications systems that allow for communications between the North Anna site and fixed and mobile medical support facilities. The communications systems include both commercial telephone communications with fixed facilities and radio communications to the ambulance. Communications associated with transporting personnel from the site to the hospital is addressed below in SER Section 13.3.4.12. Dominion conducts tests of its emergency communications system consisting of monthly testing of communications with the facility, EOF, and Commonwealth of Virginia and risk jurisdiction warning points. Dominion also conducts annual testing of communications between the Virginia/risk jurisdiction emergency operations centers (EOCs) and field assessment teams. COL Plan Appendix 5 lists a supporting procedure entitled “Testing of Emergency Communications Systems.”

Fukushima Dai-ichi – NTTF Recommendation 9.3

As discussed above in SER Section 13.3.4.2, on March 12, 2012, the NRC requested additional information from all power reactor licensees and holders of construction permits, associated with the NRC Near-Term NTTF review of the accident at the Fukushima Dai-ichi nuclear facility. In Recommendation 9.3, the NTTF addressed staffing and communications provisions for enhancing emergency preparedness. With regard to communications, the accident at Fukushima highlighted the need to ensure that the communications equipment relied upon to coordinate the event response during a prolonged station blackout can be powered.

Specifically, NTTF Recommendation 9.3 requests that all power reactor licensees and holders of construction permits (in active or deferred status) assess their current communications systems and equipment used during an emergency event, including consideration of any enhancements that may be appropriate for the emergency plan with respect to communications requirements of 10 CFR 50.47, Appendix E to 10 CFR Part 50, and NUREG-0696, "Functional Criteria for Emergency Response Facilities." In addition, the means necessary to power the new and existing communications equipment during a prolonged station blackout should be considered. (Onsite emergency organization and staffing is addressed above in SER Section 13.3.4.2.)

In COLA Part 10, the applicant proposed License Condition 3.8.1, which addresses both enhanced staffing and communications capabilities. The resolution of NTTF Recommendation 9.3, including the staff's identified License Condition 2, associated with emergency communications, is addressed above in Section 13.3.4.2 of this report.

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 2, the staff finds that provisions exist for prompt communications among principal response organizations, to emergency personnel, and to the public. Specifically, the applicant established a reliable primary and backup means of communications for alerting and activating the response organizations and personnel, including 24-hour manning of communications links. Provisions also exist for communications 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 Conditions 2, the staff concludes that the information provided in the COLA is consistent with the guidelines in NUREG-0654, Planning Standard F. Therefore, the staff finds that the information is 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 (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) 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 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 (16-km (10-mi)) EPZ.

In COL Plan Section II.G, "Public Education and Information," the applicant described the public education and information program for the North Anna site, including the process for keeping the public in 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).

In COL Plan Section II.G, the applicant incorporated by reference Section 13.3.2.2.2.g of the ESP Plan, with regard to the description of the emergency information program for the public and the news media. In Section 13.3.3.8 of NUREG-1835, the staff found this information acceptable. The applicant provided additional information in Section II.G, which addresses the dissemination of information to the public and the news media, and states that Dominion maintains a coordinated program to educate affected members of the public regarding emergency notification methods and actions.

In COL Plan Section II.G.1, "Public Information Program," the applicant stated that Dominion coordinates with affected Commonwealth of Virginia and risk jurisdiction authorities to disseminate pertinent emergency response information to members of the public in the plume exposure pathway EPZ on a yearly basis. Information may be provided via a number of methods, including providing informational publications such as brochures or calendars through mailings to individual households in the plume exposure pathway EPZ. Emergency public information may also be distributed in telephone directories and utility bills, through public information postings, and via local media outlets. Distributed information includes educational information on radiation, notification methods and immediate actions, protective measures, special needs of the handicapped, and point of contact for additional information. In addition, COL Plan Section II.G.2, "Distribution and Maintenance of Public Information," states that information intended for transients (i.e., individuals on vacation in, camping in, or traveling through the plume exposure pathway EPZ) may include public postings, publications provided to hotels, motels, and campgrounds, and information published in telephone directories. These sources of information provide transients with sources for local emergency information, such as local radio and television stations.

The COL Plan Section II.G.3, "News Media Coordination," states that the outlet for emergency information is the Joint Information Center (JIC), which is an element of the Corporate Emergency Response Center that is located at Dominion's Innsbrook Technical Center in Glen Allen, Virginia. Members of the news media respond to the JIC. Dominion's Chief Technical Spokesperson serves in the JIC as the primary licensee spokesperson and news media contact, gathers information from the ERO for dissemination to the news media, and updates the news media on a periodic basis throughout any emergency situation. COL Plan Appendix 5 lists an EPIP entitled "Emergency Media Relations." COL Plan Section II.G.5, "News Media Training," states that news media training is accomplished through briefings for the news media offered on a yearly basis. These annual briefings acquaint members of the media organizations with

emergency plans, information about radiation hazards, and points of contact for the release of public information during an emergency. COL Plan Appendix 5 lists a supporting procedure entitled "Emergency Plan Training."

The COL Plan Section II.G.4, "Information Exchange," states that the Dominion public affairs liaison has access to required public information, primarily through communications with the Chief Technical Spokesperson and designated members of the EOF staff. The Dominion public affairs liaison coordinates continuity and consistency of information with designated members of the Commonwealth of Virginia and risk jurisdiction EROs on a periodic basis. Rumor control is accomplished through ongoing contact with the Chief Technical Spokesperson and by the activities of a Dominion public affairs liaison in the JIC, who monitors communications, identifies rumors, and makes appropriate contacts to obtain and disseminate accurate information through the representatives in the JIC. The rumor control telephone number is announced by the VDEM Public Affairs Office at media briefings and in press releases.

The staff reviewed the various emergency information communication publications, including the brochure entitled "North Anna Power Station Emergency Public Information for Residents and Visitors in the Communities of: [Louisa, Spotsylvania, Orange, Caroline, and Hanover Counties]," Revision September 2007 (ADAMS Accession No. ML081210740), and the NAPS 2008 Nuclear Emergency Planning Information Calendar (ADAMS Accession No. ML081210741).

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 adult population within the plume exposure (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 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 EPZ.

Conclusion

The staff concludes that the information provided in the COLA is consistent with the guidelines in NUREG-0654, Planning Standard G. Therefore, the staff finds that the information is 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 provision 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 COL Plan Section II.H, "Emergency Facilities and Equipment," 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 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 H, 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)(8).

In COL Plan Section II.H, the applicant incorporated by reference Section 13.3.2.2.2.h of the ESP Plan, with regard to the descriptions of ERFs. As described in Section 13.3.3.9 of NUREG-1835, on March 3, 2005, the ESP applicant withdrew its request for the NRC to evaluate major feature H, "Emergency Facilities and Equipment," as part of the North Anna ESP application. Since the ESP applicant withdrew its request that major feature H (of the ESP SSAR) be evaluated, the staff reached no conclusion regarding the acceptability of ESP major feature H. As part of its COLA review, the staff reviewed the description of the emergency facilities and equipment in Section II.H, which includes the information in Section 13.3.2.2.2.h of the ESP plan.

In COL Plan Section II.H, the applicant stated that the TSC and OSC are provided to support emergency operations consistent with the guidance in Supplement 1 to NUREG-0737, "Clarification of [Three Mile Island] TMI Action Plan Requirements – Requirements for Emergency Response Capability (Generic Letter No. 82-33)." Consistent with NUREG-0800 Section 13.3, the staff determined compliance with the applicable regulations using the guidance in NUREG-0654, and through it NUREG-0696, "Functional Criteria for Emergency Response Facilities." Supplement 1 to NUREG-0737 provides additional related guidance that primarily summarizes and supplements the information in NUREG-0696.

Dominion staffs and activates the designated ERFs (i.e., TSC, OSC, and EOF), consistent with the emergency classification and in accordance with EPIPs. ERFs and ERO augmentation is also addressed in BL 2005-02, which states in part that all holders of operating licenses provide information regarding how alternative locations for onsite ERFs support EP functions during a security-based event. In COL Plan Section II.H.4, "Activation and Staffing of Emergency Response Facilities," the applicant stated that in the event the site is under threat of, or

experiencing hostile action, the Louisa Fire Training Center functions as a staging area for augmentation of emergency response staff. This location has the capability to communicate with the EOF, control room, and plant security. The descriptions of ERF notification and staffing are provided in ESP Plan Sections 13.3.2.2.2.e.2 and 13.3.2.2.2.f.4. See also, COL Plan Sections II.E and II.F, which are addressed in SER Sections 13.3.4.5 and 13.3.4.6, respectively. The Commonwealth of Virginia and risk jurisdiction emergency response personnel also staff their ERFs consistent with the provisions in their respective plans.

Emergency Systems and Equipment

Dominion maintains and operates onsite monitoring systems needed to provide data that is essential for initiating emergency measures and for performing accident assessments. This includes monitoring systems for geophysical phenomena, radiological conditions, plant processes, and fire hazards. Dominion also provides offsite radiological monitoring equipment, suitable for assessing the offsite radiological consequences of facility incidents, for use by its offsite monitoring field teams.

Offsite environmental radiological monitoring equipment includes a series of continuous air samplers and environmental monitoring dosimeters surrounding the facility. The facility's Offsite Dose Calculation Manual (ODCM) describes the monitoring systems. In addition to the monitoring systems, equipment, and radiological laboratory facilities provided at the plant, Dominion maintains arrangements to obtain back-up radiological monitoring and analysis support from offsite organizations. COL Plan Section II.C.3 describes the available laboratory facilities, which are discussed above in SER Section 13.3.4.3, and COL Plan Appendix 7 provides a certification letter from these offsite organizations.

Dominion acquires meteorological data from the National Weather Service during periods when the primary system is unavailable. Back-up seismic data are available from the U.S. Geological Survey (National Earthquake Information Center) and the Virginia Polytechnic Institute and State University (Virginia Tech) Seismological Observatory. Streamflow data is available from the U.S. Geological Survey. Flooding data is available from the National Oceanographic and Atmospheric Administration's Hydro-Meteorological Reports. Other data sources, such as commercial media outlets, may also be used.

The station's Meteorological Monitoring System can provide data that is used to predict atmospheric effluent transport and diffusion. The system consists of a primary and a back-up tower, the locations of which were chosen so as to be representative of regional conditions. The North Anna 3 primary meteorological monitoring site consists of a 48.4 meters (m) (159 feet (ft)) tower located approximately 579 m (1900 ft) east of the Unit 1 reactor containment building. The primary meteorological tower records wind speed, wind direction, horizontal wind direction fluctuation, ambient temperature, and dew point temperature. The North Anna 3 back-up meteorological monitoring site consists of instrumentation on a freestanding 10 m (33 ft) tower located approximately 396 m (1300 ft) northeast of the Unit 1 containment building. The tower serves as the back-up meteorological monitoring site. A sensor at the top of the mast monitors wind speed, wind direction, and horizontal wind direction fluctuation. The Meteorological Monitoring System is described further in COL Plan Appendix 2, and addressed below in SER Section 13.3.4.9. In addition, ESP application SSAR Section 2.3, "Meteorology," provides a detailed description of the Meteorological Monitoring System, which is addressed in Section 2.3.3, "Onsite Meteorological Measurements Program," of NUREG-1835.

Dominion performs inspection, inventory, and appropriate operational tests of dedicated emergency equipment and instruments on a quarterly basis, consistent with COL Plan Section II.P. The responsibility for maintaining facilities and equipment is described in COL Plan Section II.P, and addressed below in SER Section 13.3.4.16. Plant procedures establish requirements for performing inventories and operational tests. COL Plan Appendix 5 lists a supporting procedure entitled "Emergency Equipment Inventory and Operational Tests." Dominion maintains sufficient reserves of equipment and instruments to replace any items that are removed from the emergency kits for calibration or repair. COL Plan Appendix 6 describes the emergency equipment and supplies that are typically used by emergency response personnel, including field teams.

The staff finds that the applicant has adequately identified onsite monitoring systems that will be used to initiate emergency measures in addition to the provisions for acquiring data from, or gaining emergency access to, offsite monitoring and analysis equipment. The staff finds that the applicant has provided for adequate offsite meteorological instrumentation and radiological monitoring equipment in the vicinity of the nuclear facility, including sufficient reserves of instruments and equipment to replace those that are removed for calibration or repair. In addition, the applicant has identified emergency kits by general category (e.g., protective equipment, communications equipment, radiological monitoring equipment, and emergency supplies).

Technical Support Center

In COL Plan Section II.H.1, "On-Site Emergency Response Facilities," the applicant stated that the function of the TSC is to provide an area and resources for use by personnel providing plant management and technical support to the plant operating staff during emergency evolutions. The TSC relieves the reactor operators of peripheral duties and communications not directly related to reactor system manipulations and prevents congestion in the control room.

The TSC is located in the electrical building and its size is sufficient to support a staff of 25 people. The TSC is environmentally controlled to provide room air temperature, humidity, and cleanliness appropriate for personnel and equipment. The room is provided with radiological protection and monitoring equipment necessary to monitor personnel radiation exposure and to maintain personnel doses less the 0.05 Sv (5 rem) total effective dose equivalent (TEDE), as defined in 10 CFR 50.2, for the duration of the accident. The level of protection is similar to the main control room. In the event that offsite and onsite AC power are unavailable, the TSC could be evacuated and the TSC management function transferred to a location unaffected by the radiation release. ITAAC 5.1 addresses various TSC features, including location, size, habitability, back-up power, and information and communications capabilities.

The TSC is provided with reliable voice and data communication with the main control room and EOF, and reliable voice communications with the OSC, NRC Operations Center, and Virginia and risk jurisdiction EOCs. COL Part Section II.F describes the communications capabilities provided in the TSC, which is addressed above in SER Section 13.3.4.6. The TSC is also provided control room communication of ERDS data with the NRC Operations Center, Safety Parameter Display System (SPDS) parameters, and key reference materials via LAN connection from the Nuclear Electronic Document Library. Information systems associated with the ERFs and the accident monitoring and display systems are discussed in ESBWR DCD Tier 2 Section 7.5, "Safety-Related and Nonsafety-Related Information Systems," and NUREG-

1966 Section 7.5, “Information Systems Important to Safety,” and addressed in SER Section 7.5, “Safety-Related Display Information.”

Emergency Operations Facility

In COL Plan Section II.H.2, “Emergency Operations Facility,” the applicant stated that the function of the EOF is to provide a location for Dominion management to direct and coordinate emergency response activities, with an emphasis on providing support to the plant staff and coordinating emergency response activities with offsite response agencies. Health physics personnel located in the EOF are designated as the point of contact for the receipt of offsite monitoring data results and sample media analysis results collected by Dominion personnel.

Dominion provides both a Local EOF and Central EOF to support the North Anna site. The Local EOF is the primary EOF used to support emergency response activities at the North Anna site. The Central EOF may be activated in lieu of the Local EOF to support emergency response activities for emergencies, such as severe storms, that affect both the North Anna and Surry sites. The Central EOF may also be activated if the Local EOF is unavailable. Except for the radiation protection functions of the Local EOF (discussed below), the minimum capacities, capabilities, and plant parameter displays of the Local EOF and Central EOF are similar.

The Local EOF and Central EOF are the same as those used for North Anna Units 1 and 2. The Local EOF is located within the owner controlled area, adjacent to the NAPS Units 1 and 2 Training Facility, and the Central EOF is located at Dominion’s Innsbrook Technical Center in Glen Allen, Virginia, approximately 30 miles from North Anna 3. COL Plan Section II.H.2 further states that the size of the EOF is sufficient to support 35 people. ITAAC 5.2.1 states that the EOF has at least 243 square meters (2625 square feet). Provisions are made for staffing of the EOF by Dominion, Commonwealth of Virginia, and NRC personnel. Dominion also makes provisions for accommodating a limited number of media personnel in the EOF. Contact with the news media in the JIC is described in COL Plan Section II.G, and addressed above in SER Section 13.3.4.7. The Local EOF was designed to provide a specified protection factor from gamma radiation, and has a specially designed ventilation system to limit the exposure of its occupants and further assure its availability during an emergency. Provisions exist for dedicated radiation monitoring equipment to measure airborne particulate and direct radiation. The location of the Central EOF precludes the necessity of providing radiation monitoring systems.

The Local EOF and Central EOF draw power from commercial power sources, and there is electrical generator backup power to the Central EOF. A loss of commercial power should not impact any of the voice or data communications equipment located in the Central EOF. Common Dominion telecommunications infrastructure that supports EOF functions include fiber optic transmission equipment, telephone switching equipment, and data network routers. The telecommunication infrastructure 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, direct current (DC) battery, and uninterruptible power supply (UPS) systems. Emergency communications capabilities are described in COL Plan Section II.F, and addressed above in SER Section 13.3.4.6. ITAAC 5.2.2 states that voice transmission and reception have been accomplished between the EOF and TSC. ITAAC 5.2.3 addresses the establishment of EOF communications via the Operational Hot Line. In addition, ITAAC 5.2.4 addresses the availability of various data in the EOF that is pertinent to determine offsite protective measures.

Display capability of the technical data system in the EOF includes a workstation that is capable of displaying the parameters that are required of an SPDS. The SPDS function, as well as human-system interface design for the EOF and TSC, is described in ESBWR DCD Tier 2 Chapter 18, "Human Factors Engineering," and addressed in SER Section 18.8, "Human-System Interface Design." Key reference materials will be available to the EOF staff via LAN connection from the Nuclear Electronic Document Library.

Operational Support Center

In COL Plan Section II.H.9, "Operational Support Center," the applicant stated that the function of the OSC is to provide a common area and the necessary supporting resources for the assembly of designated operations support personnel during emergency conditions. Designated plant support personnel, as indicated in COL Plan Section II.B, assemble in the OSC to provide support to both the control room and the TSC. Personnel reporting to the OSC can be assigned duties in support of emergency operations. Assessment, corrective action, and rescue personnel are dispatched by the OSC to locations in the plant, as directed by the TSC and control room. 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 OSC is located within the protected area in the service building. ITAAC 5.1.6 states that the OSC is in a located separate from the control room. The OSC provides dedicated telephone extensions for communicating with the control room and TSC, which permits personnel reporting to the OSC to be assigned to duties in support of emergency operations. The OSC is also equipped with a separate telephone line to provide for communications with onsite and offsite locations, as needed. COL Plan Section II.F describes the communications capabilities provided in the OSC (see also, SER Section 13.3.4.6). ITAAC 5.1.7 lists the various communications equipment that is provided in the OSC.

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, 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.

Conclusion

The staff concludes that the information provided in the COLA is consistent with the guidelines in NUREG-0654, Planning Standard H. Therefore, staff finds that the information is 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, and VI.1, 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 COL 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).

In COL Plan Section II.I, the applicant incorporated by reference Section 13.3.2.2.2.i of the ESP Plan, with regard to the description of provisions for accident assessment. In Section 13.3.3.10 of NUREG-1835, the staff found this information acceptable. The applicant provided additional information in Section II.I. In COL Plan Section II.I.1, "Parameters Indicative of Emergency Conditions," the applicant stated that implementing procedures describe plant system and effluent parameter values that are indicative of off-normal conditions and the various indications that correspond to the emergency initiating conditions. Plant procedures specify the types and capabilities of the instruments used to indicate emergency conditions.

Tier 2 Section 7.5.1, "Post-Accident Monitoring Instrumentation," of the ESBWR DCD describes the post-accident monitoring systems, and is incorporated into the emergency plan by reference. Tier 2 Section 7.5.2, "Containment Monitoring System," of the ESBWR DCD describes instrumentation parameters that are monitored during both normal reactor operations and post-accident conditions to evaluate the integrity and safe condition of the containment. In addition, FSAR Section 9.3.2, "Process Sampling System," incorporates by reference DCD Tier 2 Section 9.3.2, "Process Sampling System," which describes the post-accident monitoring

systems and program. Systems for post-accident sampling, including associated provisions and procedures, are addressed in SER Section 9.3, “Process Auxiliaries.”

The COL Plan Section II.I.3, “Determination of Source Term and Radiological Conditions,” states that COL Plan Appendix 2 and plant procedures provide the means for relating various measured parameters, including containment radiation monitor readings, to the source term available for release within plant systems, and effluent monitor readings to the magnitude of the release of radioactive materials. COL Plan Appendix 5 lists EPIPs entitled “Core Damage Assessment” and “Obtaining and Analyzing High Activity Samples Under Emergency Conditions.” ITAAC 6.1 states that an exercise or drill has been accomplished, including use of selected monitoring parameters identified in the EAL thresholds listed in the EPIPs, to assess simulated degraded plant conditions and initiate protective actions in accordance with the various listed criteria relating to accident assessment and classification, and radiological assessment and control. (The emergency classification and EAL scheme are discussed above in SER Section 13.3.4.4) ITAAC 6.2 states that the EPIPs and ODCM correctly calculate source terms and magnitudes of postulated releases.

In addition, COL Plan Section II.I states that dose assessment procedures include the relationship between effluent monitoring readings and onsite and offsite exposures and contamination for various meteorological conditions. Plant procedures establish processes for estimating release rates and projected doses if the associated instrumentation is inoperable or off-scale, and consider estimated releases based on field monitoring data and surrogate instrumentation and methods to estimate the extent of fuel damage. COL Plan Appendix 2 provides a description of the emergency dose assessment program used at North Anna 3. Information includes dose and dose rate determinations based on plant effluent monitors, and contamination estimates based on deposition assumptions and meteorological conditions. ITAAC 6.3 states that the EPIPs and ODCM calculate the relationship between effluent monitor readings and offsite exposure and contamination for various meteorological conditions.

In COL Plan Section II.H.8, Appendix 2, and ESP SSAR Section 2.3.3, “Onsite Meteorological Measurements Program,” the applicant provided a description of the meteorological monitoring systems that are used to provide initial values and continuing assessments of meteorological conditions under emergency conditions. ITAAC 6.4 states that various meteorological data (i.e., wind speed, wind direction, and ambient and differential air temperature) is available in the control room, TSC, and EOF. Additional details about meteorological instrumentation and methods are discussed in NUREG-1835, Section 2.3.3, “Onsite Meteorological Measurements Program,” and SER Section 2.3.3, “Onsite Meteorological Measurement Programs.”

The COL Plan Section II.I.7, “Field Monitoring Capability,” states that Dominion provides emergency response field teams composed of one or more radiation protection technicians trained in accordance with the emergency preparedness training requirements established in COL Plan Section II.O. The field teams perform a sampling of offsite media as needed to assess the actual or potential magnitude and locations of radiological hazards. ITAAC 6.5 addresses demonstration of the capability for making rapid assessment of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways. Dominion notifies and activates field team personnel consistent with COL Plan Section II.E. Mobilization times are consistent with COL Plan Section II.B. (COL Plan Sections II.O, II.E, and II.B are addressed in SER Sections 13.3.4.15, 13.3.4.5, and 13.3.4.2, respectively.)

The COL Plan Appendix 6 provides a description of instrumentation that is available for performance of field monitoring in the plume exposure pathway EPZ. Dominion equips field teams with portable air samplers, appropriate filters or other sampling media (e.g., silver zeolite or other media capable of collecting airborne radioiodine samples), and analysis equipment capable of detecting radioiodine concentrations at or below 10^{-7} µCi/ml (microcuries per milliliter) under field conditions, taking into consideration potential interference from noble gas activity and background radiation. ITAAC 6.6 states that instrumentation used for monitoring I-131 to detect airborne concentrations as low as 1E-07 microcuries per cubic centimeter (µCi/cc) has been provided.

In addition to the required field monitoring instrumentation, Dominion provides protective equipment (including respiratory protection and radioprotective drugs), communications equipment, and supplies to facilitate the performance of radiation, surface contamination, and airborne radioactivity monitoring. Implementing procedures provide guidance for field monitoring teams' performance of monitoring activities. COL Plan Appendix 5 lists an EPIP entitled "Plume Tracking and Assessment of Offsite Radiological Conditions." Field monitoring teams act under the direction of health physics personnel in the TSC prior to activation of the EOF. Following activation of the EOF, the teams act under the direction of EOF health physics personnel.

The COL Plan Section II.I.10, "Relating Measured Parameters to Dose Rates," states that plant implementing procedures establish the means for relating measured parameters, such as surface, airborne, or waterborne activity levels to dose rates for those key isotopes listed in NUREG-0654, Section I, Table 3, "Radionuclides with Significant Contribution to Dominant Exposure Modes." Implementing procedures also establish provisions for estimating the projected dose based on projected and actual dose rates. ITAAC 6.7 states that a methodology has been established for relating contamination levels and airborne radioactivity levels to dose rates and gross radioactivity measurements for the various listed isotopes, and for comparing the dose estimates with the Environmental Protection Agency (EPA) protective action guides (PAG).

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 1×10^{7} µCi/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 COLA is consistent with the guidelines in NUREG-0654, Planning Standard I. Therefore, the staff finds that the information is 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, consideration has been given to evacuation, sheltering, and as a supplement to these, the prophylactic use of potassium iodide (KI). ETEs have been developed by applicants and licensees, and licensees shall update the ETEs on a periodic basis. 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 COL 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 North Anna 3 site. 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).

In COL Plan Section II.J, the applicant incorporated by reference Section 13.3.2.2.2.j of the ESP Plan, with regard to the description of protective response measures associated with the plume exposure pathway (10-mi) EPZ and the ingestion exposure pathway (50-mi) EPZ. The two EPZ were also addressed in ESP SSAR Section 13.3.2.2.1, "Emergency Planning Zones," which consist of the same EPZs that currently support North Anna Units 1 and 2. Consistent with 10 CFR 50.47(c)(2), the EPZs meet the required size and were 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 Section 13.3.3.1 of NUREG-1835, the staff found this information acceptable. In addition, as discussed above, the staff conducted three site visits, which included driving the roads within and beyond the 10-mi EPZ.

The applicant provided additional information in Section II.J, stating that Dominion establishes and implements methods to inform personnel within the protected area (within the Security

fence) and exclusion area (within 5,000 ft of the North Anna 3 containment) of an emergency condition requiring individual action. Dominion maintains the ability to notify individuals within the protected area within about 15 minutes of the declaration of an emergency requiring individual response actions, such as accountability or evacuation, and to account for individuals within the protected area and identify any missing individuals within 30 minutes following initiation of assembly and accountability measures. Dominion also provides a capability to account for individuals within the protected area continuously after the initial accountability. Dominion maintains these capabilities consistent with the requirements of the facility Security Plan. The notification methods include plant public announcement system and audible warning systems. In high noise areas or other areas where these systems may not be audible, other measures, such as visible warning signals or personal notifications, may be used.

Dominion informs individuals located within the exclusion area, but outside of the protected area, via audible warnings provided by warning systems and the activities of the Security force (e.g., vehicle-mounted public address systems) and activities of the Virginia Department of Game and Inland Fisheries. Dominion provides information regarding the meaning of the various warning systems, and the appropriate response actions, via plant training programs, visitor orientation, escort instructions, posted instructions, or within the content of the audible messages. COL Plan Appendix 5 lists an EPIP entitled "Site Assembly, Accountability, and Evacuation." ITAAC 7.1.1 states 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. ITAAC 7.1.2 states that during a drill or exercise, audible warnings were provided to individuals outside the protected area, but within the owner controlled area.

Dominion has established evacuation routes to primary and secondary assembly areas, which are shown in Figure II-4, "Map to North Anna Remote Assembly Areas." Affected individuals evacuate the site via personal vehicles and will be directed to a designated assembly area. The assembly areas provide a location for contamination monitoring of personnel, vehicles, and personal property. If the evacuation routes are rendered impassable or inadvisable due to adverse conditions (e.g., weather-related, radiological, or traffic density conditions), Dominion will direct affected individuals to a safe onsite area for accountability and, if necessary, contamination monitoring and decontamination. Appropriate equipment and supplies are provided from the facility to the assembly areas to facilitate contamination monitoring. Monitoring and decontamination are further discussed below in SER Section 13.3.4.11.

The COL Plan Section II.J.6, "Protective Measures," states that Dominion provides equipment and supplies to provide adequate protection for individuals remaining or arriving onsite during an emergency. The equipment and supplies include respiratory protection equipment, protective clothing, and radioprotective drugs. COL Plan Appendix 5 lists an EPIP entitled "Respiratory Protection and Distribution of Radioprotective Drugs." Onsite supplies of protective clothing and respiratory protection equipment may be augmented by that provided by offsite responders, such as firefighters responding to the site. Dominion maintains inventories of emergency equipment and supplies, described in COLA Plan Appendix 6, for use by emergency response personnel in the ERFs and by Dominion's offsite field monitoring teams. COL Plan Figure II-5, "Radiological Monitoring Locations," indicates the offsite radiological monitoring locations associated with the plume exposure pathway EPZ.

In the event of a hostile action against the site, conditions may dictate the initiation of protective measures other than personnel assembly, accountability, and evacuation. The Emergency Coordinator makes decisions regarding appropriate protective measures based on the

evaluation of site conditions, including input from the Security force. If the Emergency Coordinator feels that 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
- On-site sheltering
- Staging of ERO personnel in alternate locations pending restoration of safe conditions
- Implementation of accountability measures following restoration of safe conditions

Onsite protective measures for security-based events is also addressed in BL 2005-02, which requested in part that all holders of operating licenses provide information regarding onsite protective actions that may be appropriate for a terrorist attack, particularly an aircraft attack. The staff reviewed the description of onsite protective measures identified in BL 2005-02, and find that it is consistent with the applicant's description above of protective measures that may be initiated for hostile actions against the North Anna 3 site. As stated in the applicant's response to RAI 13.03-2.16, demonstration of facility response capabilities in response to hostile actions will be integrated into Force-on-Force and emergency exercises when required. Emergency exercises are addressed below in SER Section 13.3.4.14.

COL Plan Section II.J.7, "Protective Action Recommendations and Bases," states that public PARs are based on plant conditions, estimated offsite doses, or some combination of both. EALs correspond to the projected dose to the population at risk, and are determined consistent with the methodology described in implementing procedures. (EALs are addressed above in SER Section 13.3.4.4). If the Emergency Coordinator declares a general emergency, then Dominion will communicate to the Virginia EOC a PAR to evacuate at least a two mile radius around the facility, unless impediments to evacuation exist. The PAR may call for other areas within the plume exposure pathway EPZ to evacuate, shelter-in-place, or monitor and prepare to take protective actions as directed. Notification methods and procedures are described in COL Plan Section II.E, and discussed above in SER Section 13.3.4.5.

In addition to the EAL-based PAR, Dominion provides PARs based on offsite dose projections. The Health Physics staff is responsible for conducting offsite dose projections periodically throughout any emergency during which there is an actual or potential release of an amount of radioactive material that is likely to result in offsite consequences. Implementing procedures will establish requirements for performing calculations and projections. Projected doses are compared to the PAGs shown in COL Plan Table II-3, "Protective Action Guides" (as derived from EPA 400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," dated May 1992[6]), and PARs are developed based on the results of these

[6] In March 2013, the EPA updated EPA 400-R-92-001 with "PAG Manual – Protective Action Guides and Planning Guidance for Radiological Incidents," Draft for Interim Use and Public Comment.

comparisons, as discussed in COLA Plan Section II.J.10.m. Consideration will be given to evacuation, sheltering, and as a supplement to these, the prophylactic use of KI, as appropriate. An implementing procedure includes specific PARs, which are based on NUREG-0654, Supplement 3, "Criteria for Protective Action Recommendations for Severe Accidents," and plant and meteorological conditions. COL Plan Appendix 5 lists an EPIP entitled "Protective Action Recommendations." Prior to activation of the EOF, the Emergency Coordinator is responsible for determining PARs and communicating them to the Virginia EOC, which is responsible for implementing the protective actions. Following activation of the EOF, the EOF Director assumes these responsibilities, and the Emergency Coordinator or EOF Director provides PARs to the Virginia EOC.

The COL Plan Section II.J.8, "Evacuation Time Estimates," states that Dominion conducted an ETE that updated the ETE information provided in ESP SSAR Section 13.3.2.1, "Identification of Physical Characteristics," and which is consistent with the guidance in Appendix 4 of NUREG-0654, NUREG/CR-6863, and NUREG/CR-7002. The ETE Report is included in the COLA as supplemental information to the COL Plan, and the updated population distribution and ETEs are summarized in COL Plan Appendix 4, which includes the updated ETE's Executive Summary. ETEs are a factor considered in the development of off-site PARs, and are provided to Commonwealth and local governmental authorities for use in developing off-site protective action strategies. The ETE Report provides maps of the plume exposure pathway EPZ, which illustrate the population distribution around the North Anna 3, evacuation areas and routes, and locations of assembly areas. A summary of the staff's detailed review of the ETE Report is included below in SER Section 13.3.4.17.

The COL Plan Section II.J.10, "Protective Measures Implementation," states that warnings to the public within the plume exposure pathway EPZ are the responsibility of Commonwealth of Virginia and risk jurisdiction officials, and the primary method of warning the public is by the use of the Early Warning System sirens. Other warning methods may include telephone communications, television and radio EAS stations, public address systems, bull horns from patrol cars and personal contact. There are currently no hospitals, prisons, or nursing homes within the plume exposure pathway EPZ. Offsite notifications and communications are discussed in COL Plan Sections II.E and II.F, and are addressed above in SER Sections 13.3.4.5 and 13.3.4.6, respectively.

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 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

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

In COL Plan Section II.K, the applicant incorporated by reference Section 13.3.2.2.2.k of the ESP Plan, with regard to the description of radiological exposure control measures. In Section 13.3.3.12 of NUREG-1835, the staff found this information acceptable. The applicant provided additional information in Section II.K. In COL Plan Section II.K.1, "On-Site Exposure Guidelines and Authorizations," the applicant stated that Dominion implements onsite exposure guidelines for emergency response consist with EPA 400-R-92-001, Table 2-2, "Guidance on Dose Limits for Workers Performing Emergency Services," which are reflected in COL Plan Table II-4, "Emergency Worker Exposure Guidelines,"

Prior to EOF activation, the Emergency Coordinator, in consultation with facility health physics personnel, is responsible for authorizing any emergency exposure exceeding 10 CFR Part 20 limits. Following EOF activation, the EOF Director, in consultation with health physics personnel and the Emergency Coordinator, has this responsibility. If exposures in excess of 10 CFR Part 20 limits are required, these exposures will be limited to individuals who are properly trained and knowledgeable of the tasks to be completed and the risks associated with the exposures. Selection criteria for volunteer emergency workers include consideration of those who are in good physical health, are familiar with the consequences of emergency exposure, and are not a declared pregnant worker. It is preferable, though not mandatory, that volunteers be older than 45 years of age and not be a female capable of reproduction. Efforts are made to maintain personnel doses as low as reasonably achievable (ALARA).

Dominion further stated that Chapter 12, "Radiation Protection," of the FSAR (i.e., COLA Part 2) describes a radiation protection program (RPP) that is consistent with the requirements of 10 CFR Part 20. The RPP, in concert with the EPIPs, includes provisions for implementing emergency exposure guidelines. Implementing procedures establish procedures for allowing onsite volunteers to receive radiation doses in the course of carrying out life-saving and other emergency response activities, including provisions for expeditious decision-making and consideration of the relative risks. COL Plan Appendix 5 lists EPIPs entitled "Radiation Protection Under Emergency Conditions," and "Personnel Monitoring." The radiation protection and health physics programs are further described in SER Section 12.0, "Radiation Protection."

COLA Plan Section II.K.3, "Dosimetry and Dose Assessment," states that Dominion maintains a site personnel radiation dosimetry program that includes the capability to determine both external and internal doses consistent with the requirements of 10 CFR Part 20. The external dosimetry program includes provisions and requirements for use of both permanent record and self-reading dosimeters (e.g., pocket or electronic dosimeters). Dosimeter ranges are sufficient to measure both planned routine and foreseeable accident photon doses. Plant procedures establish requirements for distributing dosimeters to emergency responders, including those individuals responding to the site from offsite locations. Internal doses are typically estimated through the use of whole body counting and/or in-vitro sampling and analysis routines. Dominion maintains individual does records in accordance with the requirements of 10 CFR Part 20 and the RPP and its supporting procedures.

Dominion implements requirements for personnel and area decontamination, including decontamination actions levels and criteria for returning areas and items to normal use, in procedures supporting the RPP. Procedures also address decontamination of onsite personnel wounds, supplies, instruments and equipment, and for waste disposal. COL Plan Appendix 5 lists an EPIP entitled "Decontamination." COL Plan Appendix 6 describes the emergency equipment and supplies, including decontamination supplies with emergency kits. In addition, Dominion makes provisions for protective clothing, contamination monitoring, and decontamination (including decontamination for radioiodine contamination on the skin) at the offsite assembly area or other location as directed.

In COL Plan Section II.K.6, "Contamination Control Measures," the applicant stated that the FSAR and Security Plan establish requirements for site access control from offsite locations. Following a site evacuation, law enforcement agencies control access to the owner controlled area, consistent with the requirements of the supporting Commonwealth of Virginia and risk jurisdiction plans. The site Security Force controls entry to the restricted area by individuals, including emergency responders, who must enter the site during an emergency. The RPP and its supporting procedures establish requirements for limiting access to areas having significant radiological hazards, consistent with the requirements of 10 CFR Part 20 and FSAR Chapter 12.

Should the potential exist for contamination of onsite food or drinking water supplies that renders these supplies non-consumable, arrangements will be made for transport of non-contaminated offsite supplies to the North Anna site. Dominion permits areas and items to be returned to normal (i.e., non-contaminated) use following surveys and verification that contamination levels meet the criteria provided in the RPP or its supporting procedures.

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 COLA is consistent with the guidelines in NUREG-0654, Planning Standard K. Therefore, the staff finds that the information is 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 stated 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 COL Plan Section II.L, "Medical and Public Health Support," the applicant described the arrangements for medical services for contaminated injured personnel at the North Anna site. 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 L, 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)(12).

In COL Plan Section II.L, the applicant incorporated by reference Section 13.3.2.2.2.l of the ESP Plan, with regard to descriptions of plans for medical and public health support. These descriptions included contacts and arrangements for medical services for contaminated injured individuals and were supported by a letter of agreement with the Medical College of Virginia Hospitals (MCVH) in Richmond, Virginia, which describes arrangements that have been made to provide emergency services to the North Anna. These arrangements would apply to the ESP site. In Section 13.3.3.13 of NUREG-1835, the staff found this information acceptable.

The applicant provided additional information in COL Plan Section II.L, including a certification letter in COL Plan Appendix 7 that is signed by the Chief Executive Officer of MCVH, which addresses the facility's continued availability in support of a new unit at the North Anna site. COL Plan Section II.L refers to MCVH as the Virginia Commonwealth University Medical Center (VCUMC). (The certification letter in support of North Anna 3 is also discussed above in SER Section 13.3.4.1.) In addition, Section II.L.1 states that the hospital has established and maintains the capability to evaluate the radiation exposure and/or uptake of accident victims and

to handle contaminated victims. These capabilities are established and maintained through training courses that are consistent with COL Plan Section II.O, periodic drills and exercises that are consistent with COL Plan Section II.N, and services provided that are consistent with agreements between Dominion and the medical support providers. In the event that a contaminated injured person is transported from North Anna 3 to an offsite medical facility, Dominion may provide to the facility one or more technicians qualified to perform radiological monitoring if requested by the facility to support the radiological aspects of the medical treatment and post-treatment efforts.

Dominion maintains a trained first aid team at the site to provide 24-hour-per-day first aid support consistent with COL Plan Section II.B, and maintains first aid team readiness through training consistent with COL Plan Section II.O and drills and exercises consistent with COL Plan Section II.N. In addition, Dominion has made arrangements with local volunteer rescue squads to transport injured contaminated personnel to the hospital, and response team members have received training concerning transportation of contaminated injured individuals. A health physics technician, with appropriate instrumentation, would normally accompany the person to the hospital. Contaminated injured personnel will be suitably clothed or prepared to prevent the spread of contamination in the transporting vehicle, if practical, considering the medical condition of the injured person. The station can communicate with VCUMC and the site ambulance (if used), and the ambulance can communicate with VCUMC. COL Plan Appendix 5 lists an EPIP entitled "Notifications Associated with Emergency Conditions."

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 COL 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 COLA is consistent with the guidelines in NUREG-0654, Planning Standard L. Therefore, the staff finds that the information is 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 stated 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 COL Plan Section II.M, “Recovery and Re-Entry,” the applicant described the steps that it will take, once the emergency situation has ended, to mitigate the consequences of the event and to minimize any effects on the health and safety of the public and emergency workers. 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, 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)(13).

In COL Plan Section II.M.1, “Recovery Plans and Procedures,” the applicant stated that Dominion implements recovery plans and procedures that provide guidance for a range of recovery and re-entry activities, including organization, decision making, informing members of the ERO that recovery operations are to be initiated, and estimating the total population exposure. The recovery process is further outlined in the EPIP specifically designed for administration of the recovery program. COL Plan Appendix 5 lists an EPIP entitled “Recovery and Reentry.”

In COL Plan Section II.M.2, “Recovery Organization,” states that prior to entering the recovery/re-entry phase of operations following an emergency Dominion establishes a recovery organization that is consistent with the existing conditions and continuing organizational needs. The EOF Director assumes control and direction of the recovery operation, with the authority and responsibilities set forth in the EPIPs. Depending on plant conditions and the scope of activities, the recovery organization may discharge its activities from one or more designated ERFs or from other locations specified by the recovery organization managers.

COL Plan Section II.M further states that the recovery process is implemented when the facility’s ERO managers, with concurrence of Commonwealth of Virginia and Federal agencies, have determined the station to be in a stable and controlled condition. Upon the determination, Dominion notifies the NRC Operations Center, Virginia EOC, and risk jurisdiction EOCs that the emergency has been terminated and any required recovery has commenced. The recovery organization develops plans and procedures that are designed to address both immediate and long term actions. Specific recovery procedures may need to be written to address special requirements. The necessity to maintain protective measures implemented during the emergency will be evaluated and, if deemed appropriate, the recovery organization will recommend the relaxation of existing protective measures. Total population doses are periodically estimated in the affected areas utilizing population distribution data. Health Physics personnel determine the TEDE and the thyroid committed dose equivalent (CDE) using a methodology that is consistent with EPA 400-R-92-001.

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 COLA is consistent with the guidelines in NUREG-0654, Planning Standard M. Therefore, the staff finds that the information is 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 communications 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 further describes the full participation exercise (including timing), participation by each offsite authority having a role under the radiological response plan, deficiencies identified during the exercise, remedial exercises, exercise scenarios, and 8-year exercise cycle.

In COL Plan Section II.N, "Exercises and Drills," the applicant described the conduct and frequency of emergency exercises and drills, including coordination between the North Anna 3 site and offsite EROs. 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).

The COL Plan Section II.N states that Dominion implements a program of periodic drills and exercises to test and evaluate major portions of emergency response capabilities, including emergency plans, procedures and organizations, and to develop and maintain key emergency response skills. Exercises allow demonstration of the key skills specific to emergency response duties in the control room, TSC, OSC, EOF, and JIC. The exercises test the adequacy of timing and content of implementing procedures and methods, emergency equipment and communications networks, the public notification system, and the familiarity of emergency organization personnel with their duties. COL Plan Appendix 5 lists supporting procedures entitled "Conduct of Emergency Drills and Exercises," and "Testing of Emergency Communications Systems." Exercise scenarios are varied so major elements of the plans and preparedness organizations are tested, including, at least once during the eight-year exercise cycle, the following:

- Hostile action directed at the plant site.
- No radiological release or an unplanned minimal radiological release that does not require public protective actions.
- An initial classification of, or rapid escalation to, a site area emergency or general emergency.
- Implementation of strategies, procedures, and guidance developed under §50.54(hh)(2) (i.e., for loss of large areas of the plant due to explosion or fire).
- Integration of offsite resources with onsite response.

The drill and exercise program is also addressed in BL 2005-02, which requested in part that all holders of operating licenses provide information regarding how current emergency preparedness drill and exercise programs prepare or evaluate responders for security-based events commensurate with established emergency preparedness standards. DCD COL Item 1C.1-2-A requires the COL applicant to address the security-related requirements of BL 2005-02, and is addressed below in SER Section 13.3.4.18. With regard to the drill and exercise program, the applicant stated in response to RAI 13.03-2-16 that demonstration of facility response capabilities in response to hostile actions will be integrated into Force-on-Force and emergency exercises when required.

Dominion conducts an exercise of its onsite emergency plan every two years, which may be included in the biennial full participation exercise. Dominion also conducts exercises involving full participation by offsite authorities at least biennially, and at least once every eight-year exercise cycle provisions will be made to start a drill or exercise during off-hours. Unannounced exercises will also be conducted on a periodic basis. Dominion will conduct a full participation exercise within two years before initiation of scheduled initial fuel loading, which will include participation by the Commonwealth of Virginia, State of Maryland, and affected local governments within the plume exposure pathway EPZ and the ingestion exposure pathway EPZ. If the full participation exercise is conducted more than one year before the scheduled date for initial fuel loading, Dominion will conduct an exercise that tests the onsite emergency plans within one year before the scheduled date for initial fuel loading.

The ITAAC 8.1.1 states that the exercise is completed within the specified time periods of 10 CFR Part 50, Appendix E, and the listed onsite exercise objectives have been met with no uncorrected onsite exercise deficiencies. (SER Section 13.3.4.19 addresses implementation milestones associated with this exercise.) In addition, ITAAC 8.1.2 addresses successful performance of assigned responsibilities by onsite emergency response personnel. ITAAC 8.1.3 addresses offsite exercise objectives and the absence of uncorrected offsite exercise deficiencies prior to reactor operation above 5 percent of rated power.

The COLA Plan Section II.N.2, “Drills,” states that Dominion maintains adequate emergency response capabilities between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of onsite emergency response capabilities. Upon request, Dominion allows affected Commonwealth of Virginia and risk jurisdiction governments to participate in the drills. A response to an actual declared emergency may be used to satisfy emergency drill requirements if the response demonstrates adequate

execution of the specified activities. The drill program includes the following (at the indicated frequencies):

Communication Drills:

Dominion conducts monthly tests of communications with Commonwealth of Virginia and risk jurisdiction governments. In addition, Dominion conducts quarterly tests of communications with Federal emergency response organizations, and annual tests of communications between the facility, the Virginia and risk jurisdiction EOCs, and field assessment teams. Communication drills evaluate both the operability of the communications systems and the ability of the participants to understand message content.

Fire Drills:

Dominion conducts fire drills as required by Section 9.5.1 ["Fire Protection System"] of the North Anna 3 FSAR.

Medical Emergency Drills:

Dominion conducts yearly medical emergency drills that include a simulated contaminated injured individual and participation by the local support services agencies (i.e., medical transportation and offsite medical treatment facility).

Radiological Monitoring Drills:

Dominion conducts yearly radiological monitoring drills involving both onsite and offsite radiological monitoring activities, which include collection and analysis of sample media, communications with monitoring teams, and recordkeeping activities. Dominion may coordinate radiological monitoring drills with those drills conducted by Commonwealth of Virginia and risk jurisdiction government entities, or may conduct these drills independently.

Health Physics Drills:

On a semi-annual basis, Dominion conducts onsite health physics drills that include a response to, and analysis of, simulated elevated airborne and liquid samples, direct radiation measurements in the environment, and an analysis of in-plant liquid samples with simulated or actual elevated radiation levels.

Dominion develops drill and exercise scenarios and related materials that establish basic objectives and evaluation criteria; date, time period, location, and participating organizations; simulated events; a narrative summary describing the conduct of the exercise or drill; and arrangements for official observers. One or more qualified instructors/evaluators supervise and evaluate drills and exercises. A qualified instructor/evaluator is an individual whose knowledge, skills, and abilities have been evaluated and determined to be sufficient for observing and evaluating the planned activities against the established criteria. Exercises may be critiqued by Federal and Commonwealth of Virginia observers/evaluators.

Dominion conducts a critique following conduct of the exercise. Participants may include selected Dominion, NRC, Commonwealth of Virginia, risk jurisdiction, and other participants and observers/evaluators. Input from the critique is evaluated to determine the need for changes to the plan, procedures, equipment, facilities, and other components of the emergency preparedness and response program. Dominion identifies deficiencies and tracks corrective actions to completion using the facility's corrective action program.

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 North Anna 3 COLA 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 North Anna 3 facilities. ITAAC 8.1.3 addresses offsite exercise objectives and the absence of uncorrected offsite exercise deficiencies prior to (reactor) operation above 5 percent of 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 communications 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.

Conclusion

The staff concludes that the information provided in the COLA is consistent with the guidelines in NUREG-0654, Planning Standard N. Therefore, the staff finds that the information is 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 Response 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 COL 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 North Anna site. 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).

In COL Plan Section II.O, the applicant incorporated by reference Section 13.3.2.2.2.o of the ESP Plan, with regard to the description of the emergency preparedness training program. In Section 13.3.3.14 of NUREG-1835, the staff found that this information was acceptable. The applicant provided additional information in Section II.O, which states that Dominion implements a training program that provides for initial training and retraining for individuals who have been assigned emergency response duties, including both onsite staff and offsite individuals who may be called on to provide assistance in the event of an emergency. This includes emergency responders employed by agencies identified in COL Plan Section II.A. Dominion offers training for affected hospital, ambulance/rescue, police, and firefighting personnel. For these and any other offsite emergency responders who may be required to enter the site under emergency conditions, Dominion offers training that addresses site access procedures and identifies (by position) the individual who will control their activities onsite.

In COL Plan Section II.O.2, "Onsite Emergency Response Training," the applicant stated that the training program includes practical drills (consistent with COL Plan Section II.N) for on-site Dominion personnel who may be called upon to respond to an emergency, during which individuals demonstrate the ability to discharge the assigned emergency response function. The instructor/evaluator corrects any erroneous performance noted during these practical drills and, as appropriate, demonstrates proper performance that is consistent with approved procedures and accepted standards. COL Plan Appendix 5 lists a supporting procedure entitled "Emergency Plan Training," which supports the ongoing maintenance of emergency preparedness.

COL Plan Section II.O further states that Dominion conducts a program for instructing and qualifying personnel who implement the emergency plan. Individuals complete the required training prior to assignment to a position in the ERO. The training program establishes the scope, nature, and frequency of the required training and qualification measures (e.g., individuals assigned to render treatment during an emergency receive first aid training equivalent to the Red Cross Multi-Media Training). Dominion implements a program to provide position-specific emergency response training for designated members of the ERO, which includes annual retraining. The content of the training program is appropriate for the duties and responsibilities of the assigned position. Failure of Dominion ERO members to successfully complete this 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.

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 COLA is consistent with the guidelines in NUREG-0654, Planning Standard O. Therefore, the staff finds that 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 – Development, Periodic Review, and Distribution of Emergency Plans

As stated 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) 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 COL Plan Section II.P, "Responsibility for the Planning Effort," the applicant described the responsibilities and authorities associated with developing and maintaining emergency preparedness for the North Anna site. 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, 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)(16).

In COL Plan Section II.P, the applicant incorporated by reference Section 13.3.2.2.2.p of the ESP Plan, with regard to the description of plans for maintaining emergency preparedness. In Section 13.3.3.15 of NUREG-1835, the staff found this information acceptable. The applicant provided additional information in Section II.P, which states that Dominion implements an organizational structure and processes to periodically review, update, distribute, and control the emergency plan (i.e., COL Plan), consistent with facility quality assurance and document control requirements. The facility's document control organization distributes the updated emergency plan to organizations and individuals with responsibility for implementing the plans. Dominion also implements a program to provide training to personnel responsible for the emergency planning effort appropriate to their duties and responsibilities.

The COL Plan Section II.P further states that the Site Vice President holds the overall authority and responsibility for ensuring that an adequate level of emergency preparedness is maintained. In addition, Dominion establishes a Manager Emergency Preparedness position, which is responsible for developing and updating site emergency plans (including the ETE and emergency personnel notification list), coordinating these plans with other response organizations, and conducting or coordinating an annual review of the emergency plan to verify the plan and its supporting agreements are current. The Manager Emergency Preparedness also reviews and updates the plan and agreements, as needed, to verify they remain current. Dominion develops and implements a process to provide training to the Manager Emergency Preparedness and support staff, which may include formal education, professional seminars, plant-specific training, industry meetings, and other activities and forums that provide for an exchange of pertinent information.

In COLA Part 10, the applicant proposed License Condition 3.1 (Letters of Agreement), which states that prior to loading fuel, the licensee shall update its Units 1 and 2 letters of agreement

with the 16 listed entities (i.e., State and county agencies and organizations) or their successors. These updated letters of agreement will identify the specific nature of arrangements in support of emergency preparedness for the North Anna site, including North Anna 3. (Arrangements for support from the various offsite agencies and organizations are discussed above in SER Section 13.3.4.3.) In addition, the emergency plan shall be revised to include these updated letters of agreement after they have been executed. The complete License Condition 3.1 is included above in SER Section 13.3.2 and reflected below, with some staff revisions, as staff-proposed License Condition 5.

In ESP Plan Section 13.3.2, "Major Features Emergency Plan," the applicant stated that "[t]he Major Features Emergency Plan [i.e., ESP Plan] takes advantage of the emergency planning resources, capabilities, and organization that Virginia Power has already established and currently maintains at the NAPS site." In addition, ESP Plan Section 13.3.2.2.2.a.6, "Contacts and Arrangements," states that the existing licensed facilities (i.e., Units 1 and 2) maintain within the NAEP letters of agreement with the listed State and county agencies and organizations. The staff's evaluation of these NAEP letters of agreement is reflected in NUREG-1835, Section 13.3.2, "Contacts and Arrangements with Local, State, and Federal Agencies," and Section 13.3.3.4, "Emergency Response Support and Resources (Supplement 2, Major Feature C)," where the staff found that the letters of agreement were acceptable.

In COL Plan Appendix 7, the applicant provided a June 11, 2010, certification letter, which provided up-to-date information associated with submission of the COLA, and is signed by the 16 agencies and organizations that will support the proposed new nuclear unit (i.e., North Anna 3). When initially submitted to the NRC, as part of the June 28, 2010, revised COLA, the certification letter provided up-to-date information because it reflected recent agreement by the signatories (i.e., all parties signed the certification letter between June 11 and June 16, 2010). The applicant did not update the certification letter in subsequent COLA revisions because there is no requirement to do so. The agencies and organizations represented in the certification letter are the same agencies and organizations represented in the Units 1 and 2 letters of agreement listed in the applicant's proposed License Condition 3.1. (The certification letter and letters of agreement are discussed further in SER Sections 13.3.4.1 and 13.3.4.3.) The staff reviewed the certification letter, and finds it acceptable because it meets the requirements in 10 CFR 52.79(a)(22)(i), and guidance in NUREG-0800, SRP Acceptance Criterion II.18.

The applicant's proposed License Condition 3.1 would require the COL licensee to update the Units 1 and 2 letters of agreement to reflect North Anna 3 prior to loading fuel, and revise the emergency plan to include these updated letters of agreement after they have been executed. There is no requirement or guidance that precludes Dominion, as a new 10 CFR Part 52 licensee on the existing North Anna site, from waiting to update the emergency plan and letters of agreement until prior to initial North Anna 3 fuel load.

As required by 10 CFR Part 50, Appendix E, Section IV.G, Dominion has maintained the Units 1 and 2 letters of agreement up-to-date following, and independent of, their submission in the ESP application. Since all three reactor units are located on a common site (i.e., the North Anna site), the nature of offsite support reflected in the existing Units 1 and 2 letters of agreement would be generally applicable to North Anna 3 after the COL is issued, during construction, and up to fuel load.

As required by 10 CFR Part 50, Appendix E, Section IV.G, Dominion must maintain the Units 1 and 2 letters of agreement up-to-date.

In addition, as discussed above in SER Section 13.3.4.3, 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 COL Plan. However, this requirement is not effective until June 23, 2014, which occurred after COLA submission. The Units 1 and 2 letters of agreement supporting the COLA did not specifically address hostile actions, and were not required to, when the COLA was initially submitted on November 26, 2007. In order to clarify that the expected assistance from offsite agencies includes hostile action, the staff has included in License Condition 5 (below) the requirement for the updated letters of agreement to reflect expected assistance associated with hostile actions at the North Anna site, 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 North Anna 3 Emergency Plan to include them after they are executed, until prior to North Anna 3 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 License Condition 3.1, and with the exception of the timeframe for submission of the updated letters of agreement, finds that it is acceptable for the reasons discussed above. The staff proposes a timeframe for updating the letters of agreement, which is basedon the date scheduled for initial fuel load set forth in the notification submitted in accordance with 10 CFR 52.103(a). In addition, the license condition provides the staff with the necessary control over post-licensing updates to the letters of agreement, and ensures that they will be in effect prior to fuel load. Therefore, consistent with the applicant's proposed License Condition 3.1, the staff identified the following License Condition 5.

License Condition 5

5. No later than one hundred eighty (180) days before the date schedule for initial fuel load set forth in the notification submitted in accordance with 10 CFR § 52.103(a), the licensee shall update its North Anna Units 1 and 2 Letters of Agreement with the following entities, or their successors, and revise the North Anna 3 Emergency Plan to include these updated Letters of Agreement after they have been executed. These updated Letters of Agreement shall identify the specific nature of arrangements in support of emergency preparedness for the North Anna site, including North Anna 3, and reflect expected assistance associated with hostile action at the North Anna site, as defined in 10 CFR Part 50, Appendix E, Section IV.A.7.

    a. Commonwealth of Virginia Department of Emergency Management
    b. Commonwealth of Virginia Department of Health
    c. Commonwealth of Virginia Department of State Police
    d. Commonwealth of Virginia Department of Game and Inland Fisheries
    e. Virginia Commonwealth University Medical Center
    f. Louisa County Administrator
    g. Louisa County Sheriff
    h. Louisa County Department of Fire and Emergency Medical Services
    i. Spotsylvania County Sheriff
    j. Spotsylvania Department of Fire, Rescue, and Emergency Management
    k. Orange County Administrator
    l. Orange County Sheriff

m. Caroline County Sheriff
n. Caroline County Department of Fire, Rescue, and Emergency Management
o. Hanover County Administrator
p. Hanover County Sheriff

In COL Plan Section II.P.9, "Emergency Plan Reviews," the applicant stated that Dominion's independent assessment organization performs, or oversees the performance of, periodic independent reviews of the emergency preparedness program, consistent with the requirements of 10 CFR 50.54(t). The reviews include, at a minimum, the following:

- Emergency plan
- EPIPs and practices
- Emergency preparedness training program
- Readiness testing (e.g., drills and exercises)
- ERFs, equipment, and supplies
- Interfaces with Commonwealth of Virginia and risk jurisdiction government agencies

Dominion's independent assessment organization documents review results and improvement recommendations and reports these results to Dominion management. Review findings are subject to management controls, consistent with the facility's corrective action program. Dominion makes those portions of the reviews that address the adequacy of interfaces with Commonwealth of Virginia and risk jurisdiction governments available to the affected governments. Dominion retains review records for a period of at least five years, in accordance with facility document control requirements. COL Plan Section II.P.6, "Supporting Plans," identifies the following supporting plans and their sources:

- Commonwealth of Virginia Plan (Virginia Emergency Operations Plan, Radiological Emergency Response Basis Plan)
- RERPs for the Counties of Louisa, Spotsylvania, Orange, Caroline, and Hanover
- VCUMC Radiation Emergency Plan
- DOE FRMAC Operations Plan

The FRMAC assistance is discussed above in SER Section 13.3.4.3. COL Plan Appendix 5 lists supporting procedures entitled "Emergency Plan Training" and "Maintaining Emergency Preparedness." The format for the COL Plan directly follows the format of NUREG-0654, as outlined in the Table of Contents, and Appendix 8 provides a cross-reference of the plan to the evaluation criteria 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 5, 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 5, the staff concludes that the information provided in the COLA is consistent with the guidelines in NUREG-0654, Planning Standard P. Therefore, the staff finds that the information is 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 Analysis

The 10 CFR 50.47(b)(10) requires, in part, that ETEs have been developed by applicants and licensees, and that licensees shall update the ETEs on a periodic basis. In addition, 10 CFR Part 50, Appendix E, Section IV requires that the applicant provide an analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations, using the most recent U.S. Census Bureau data as of the application submission date. NUREG-0654, Appendix 4, "Evacuation Time Estimates within the Plume Exposure Pathway Emergency Planning Zone," contains the detailed guidance to be used by the staff to determine whether the ETE Report meets the applicable regulatory requirements in 10 CFR Part 50, Appendix E. Additional guidance is contained in NUREG/CR-6863 and NUREG/CR-7002. ETEs are part of the required emergency planning basis and provide Dominion and State and local governments with site-specific information needed for protective action decision making.

The North Anna site is located approximately 64 km (40 mi) northwest of Richmond, Virginia. The North Anna site plume exposure pathway EPZ and the surrounding communities, along with major highways and geographic features, are shown on mapping in the ETE. The protective action zones (PAZ) are illustrated in Figure 6-1, "NAPS EPZ PAZ," and the physical boundaries of each PAZ are described in Appendix L, "Protective Action Zone (PAZ) Boundaries." These areas are typically bounded by local roadways and Lake Anna. Evacuation time estimates were determined for 41 evacuation regions (i.e., Regions R01 through R41), which encompass the entire area within the plume exposure pathway EPZ. The evacuation regions are listed in Tables 6-1 and H-1, and are shown in Figures H-1 through H-41.

COL Plan Section J.8 states that an ETE was conducted consistent with the guidance provided in Appendix 4 of NUREG-0654, NUREG/CR-6863, and NUREG/CR-7002. The population distribution and ETEs are summarized in Appendix 4 of COL Plan Part 5 (i.e., the COL Plan), which contains the Executive Summary of the full ETE Report. The North Anna 3 COLA includes, as supplemental information to the COL Plan, ETE Final Report (KLD TR-503),

Revision 1, November 2012 (i.e., ETE Report), entitled, “North Anna Power Station – Development of Evacuation Time Estimates” (ADAMS Accession No. ML13221A389), which was prepared by KLD Engineering, P.C., in coordination with Dominion personnel and emergency management personnel representing State and local governments.

The ETE study (i.e., ETE Report) is based on local information, a telephone survey, and 2010 U.S. Census Bureau data, which was the most recent census data available when the ETE Report was revised in November 2012, and submitted to the NRC as part of the December 18, 2013, COLA update. The ETE Report provides a complete review of the evacuation road network, and the PAZ areas were used to define evacuation regions, which approximated keyhole sections within the plume exposure pathway EPZ. The ETE Report consists of these 13 sections and includes detailed supporting information in Appendices A-H and J-N.

- Section 1 – Introduction (basic description of the analysis process)
- Section 2 – Study Estimates and Assumptions (methodology used)
- Section 3 – Demand Estimation (population and vehicles)
- Section 4 – Estimation of Highway Capacity (ability of road network to service demand)
- Section 5 – Estimation of Trip Generation Time (activity/event time distributions)
- Section 6 – Demand Estimation for Evacuation Scenarios (region and scenario evacuation cases)
- Section 7 – General Population Evacuation Time Estimates (ETE) (results of computer analyses)
- Section 8 – Transit-Dependent and Special Facility Evacuation Time Estimates (analyses applied and results obtained)
- Section 9 – Traffic Management Strategy (traffic control designed to expedite movement of evacuating traffic)
- Section 10 – Evacuation Routes (major evacuation routes for the five counties within the plume exposure pathway EPZ)
- Section 11 – Surveillance of Evacuation Operations (concurrent surveillance procedures)
- Section 12 – Confirmation Time (suggested approach of stratified random sample and telephone survey to confirm that the evacuation process is effective)
- Section 13 – Recommendations (suggestions to improve/facilitate the evacuation process)

The Executive Summary of the ETE Report includes a summary of the conclusions reached in the report. Specifically, general population (i.e., permanent residents and transients) ETEs were computed for 574 unique cases, consisting of a combination of 41 unique evacuation regions and 14 unique evacuation scenarios. The 14 scenarios address different times of day, days of the week, weather conditions, a special event (i.e., Triathlon at Lake Anna State Park), and roadway impact. For each scenario, an analysis was included of the scenario applicable population segments including permanent residents and transient populations, transit-dependent permanent residents, special facility residents, and schools. In addition, the ETEs considered a shadow evacuation in each analysis to reflect evacuation of residents from outside of the official evacuation area; the estimated shadow population is presented in Figure 3-4.

The ETEs for the general population range from 1:45 (hr: min) to 3:45 for the 90th percentile. The maximum ETE for the 100th percentile is 6:40. The ETE statistics provide the elapsed

times for 90 percent and 100 percent of the population to evacuate from within the impacted region. The 90th percentile ETEs have been identified as the values that should be considered when making protective action decision. This is because the 100th percentile ETEs are prolonged by those relatively few people who take longer to mobilize; referred to as the "evacuation tail." There is very little congestion experienced during evacuation of the EPZ. The ETEs are most influenced by the trip generation time, which is the time residents take to prepare to evacuate. Section M of the ETE study shows the ETEs are sensitive to the trip generation time.

Separate ETEs were computed for schools, the medical facility, transit-dependent persons, and homebound special needs persons. The average single-wave ETEs are comparable to the general population ETEs at the 90th percentile for these population segments, except for the transit-dependent where the average ETE was comparable to the general population ETEs at the 100th percentile. The ETE for the full EPZ (Region R03) is insensitive to changes in population growth and increased shadow evacuation.

The one special event, identified as the Kinetic Triathlon at Lake Anna State Park, and roadway impact scenarios have no material effect on the 100th percentile ETEs. The computation of ETEs considers staged evacuation, wherein people within the two mile region from the plant evacuate immediately, and those beyond 2 mi (i.e., downwind to the EPZ boundary) initially shelter-in-place and then evacuate. Federal guidance in Appendix 4 to NUREG-0654 suggests evacuation of the 0-2 mi regions and sectors downwind to 5 mi, and Federal guidance in Supplement 3 to NUREG-0654 and NUREG/CR-7002 suggests staged evacuation be considered where the 0-2 mi area evacuates while the 2-5 mi area shelters. The results of the study show there is no benefit in applying a staged evacuation approach for this EPZ. The current county traffic management plans for the North Anna site EPZ are sufficient, and the ETE study has not identified any necessary changes to the plans.

The staff evaluated the ETE Report against the criteria set forth in Appendix 4 to NUREG-0654, NUREG/CR-6863, and NUREG/CR-7002. The evaluation included checking the ETE Report for internal consistency, consistency with other parts of the emergency plan, and consistency with other parts of the COLA, including the FSAR. Citations in the ETE Report were verified by comparison to the cited document text. General descriptions of the North Anna site region, population, and highways were verified using internet searches, aerial photographs, and field survey observations. Demographic information was gathered, a field survey of the EPZ performed, trip generation times estimated, evacuation regions defined, the procedures specified in the 2010 Highway Capacity Manual applied, the site was modeled using the DYNEV II System traffic simulation model,[7] and ETEs were generated.

Section 3.3 of the ETE study describes a total of 2,298 transients and 899 vehicles assigned to campgrounds in the EPZ. These values correspond to values in Table E-5, "Campgrounds within the EPZ," which show 2,000 transients and 800 vehicles for the Christopher Run Campground and 298 transients and 99 vehicles for the Lake Anna State Park. Section 3.3 further states that data gathered from Lake Anna State Park include 1,920 transients and 480 vehicles, which correspond to values in Table E-6, "State Parks within the EPZ." In RAI Letter No. 118, May 5, 2014 (email, ADAMS Accession No. ML14125A460), the staff requested

[7] The DYNEV traffic simulation model is a macroscopic model that describes the operations of traffic flow in terms of aggregate variables: vehicles, flow rate, mean speed, volume, density, queue length, on each link, for each turn movement, during each Time Interval (i.e., simulation time step).

additional information from the applicant in RAI 7483 (Question 13.03-9), regarding why there are two separate (and different) sets of transient data for Lake Anna State Park.

In a May 19, 2014, response to RAI 7483 (Question 13.03-9) (ADAMS Accession No. ML14141A016), the applicant stated that the number of transients and vehicles was calculated separately for the campground/cabin facilities and for the day use facilities. Table E-5 presents the number of transients and vehicles for the Lake Anna State Park campground/cabin facilities. Table E-6 presents the number of transients and vehicles for the Lake Anna State Park day use facilities. The number of transients and vehicles presented in Tables E-5 and E-6 for Lake Anna State Part are exclusive of each other (i.e., the number of transients and vehicles are not double-counted). This clarification does not impact the calculated evacuation time estimates. The staff finds this response acceptable because the applicant's clarification that the values identified in the ETE study represent two different types of transient visitors to Lake Anna State Park (i.e., those that stay for the day, and those that stay overnight) demonstrates that all transients for this facility were included in the analysis. Therefore RAI 7483 (Question 13.03-9) is resolved.

In ETE Table 1-1, "Stakeholder Interaction," the applicant identified various interactions among the State and local government agencies, and stated that final review meetings had been conducted.

The staff finds that the applicant has developed adequate ETEs for the plume exposure pathway EPZ for transient and permanent populations using the most recent U.S. Census Bureau data as of the application (update) submission date. In addition, the ETEs are consistent with Appendix 4 to NUREG-0654, NUREG/CR-6863, and NUREG/CR-7002. (SER Section 13.3.4.10 addresses the ETE Report, with regard to protective action decision making for the plume exposure pathway EPZ).

Conclusion

The staff concludes that Revision 1 of the ETE Final Report (KLD TR-503, November 2012) is consistent with the guidelines in Appendix 4 to NUREG-0654, NUREG/CR-6863, and NUREG/CR-7002. Therefore, the staff finds that the information is acceptable and meets the relevant requirements of 10 CFR 50.47(b)(10) and 10 CFR Part 50, Appendix E, Section IV, insofar as the information describes the essential elements of advanced planning and the provisions made to cope with emergency situations.

13.3.4.18 COL Items, Supplemental Information, and ITAAC

As addressed above in SER Section 13.3.2, FSAR Section 13.3 identifies three emergency planning Standard COL Items from the ESBWR DCD (i.e., STD COL Items 13.3-1-A, 13.3-2-A, and 13.3-3-A). Three additional Standard COL Items from the ESBWR DCD, relating to emergency planning, are identified in FSAR Section 13.4, "Operational Program Implementation," FSAR Section 14.3, and FSAR Appendix 1C "Industry Operating Experience," (i.e., STD COL Items 13.4-2-A, 14.3-1-A, and 1C.1-2-A, respectively). FSAR Table 1.10-201 lists the FSAR location(s) where the individual COL items from the DCD are addressed. In addition, FSAR Section 13.5.2.2 identifies one Standard Supplemental Information item (i.e., STD SUP 13.5-28). The following addresses the applicant's resolution of the six Standard COL Items and the Standard Supplemental Information item.

- STD COL 13.3-1-A

DCD COL Item 13.3-1-A states that the COL applicant is responsible for identifying the OSC and the communication interfaces for inclusion in the detailed design of the control room and TSC. In FSAR Section 13.3, the applicant identified this as STD COL 13.3-1-A, and stated that this COL item is addressed in COL Plan Sections II.F and II.H. The staff reviewed Sections II.F and II.H, and determined that the applicant identified the OSC and described the communication interfaces with the main control room and TSC. The staff's evaluation of the descriptions of OSC and communication interfaces is addressed above in SER Sections 13.3.4.6 and 13.3.4.8. Therefore, the staff finds that the COL applicant has adequately addressed DCD COL Item 13.3-1-A.

- STD COL 13.3-2-A

DCD COL Item 13.3-2-A states that the COL applicant is responsible for the design of the communication system(s) located in the EOF, in accordance with NUREG-0696. In FSAR Section 13.3, the applicant identified this as STD COL 13.3-2-A, and stated that this COL item is addressed in COL Plan Sections II.F and II.H. The staff reviewed Sections II.F and II.H, and determined that the applicant described the EOF communication systems, in accordance with NUREG-0696. In addition, the applicant addressed EOF communication systems in COL Plan Section II.E and FSAR Section 9.5.2. The staff's evaluation of the EOF and its communication systems is addressed above in SER Sections 13.3.4.5, 13.3.4.6, and 13.3.4.8, and in SER Section 9.5.2. Therefore, the staff finds that the COL applicant has adequately addressed DCD COL Item 13.3-2-A.

- STD COL 13.3-3-A

DCD COL Item 13.3-3-A states that the COL applicant will provide supplies at the site for decontamination of onsite individuals in the service building, adjacent to the main change rooms. In FSAR Section 13.3, the applicant identified this as STD COL 13.3-3-A, and stated that this COL item is addressed in COL Plan Section II.J. The staff reviewed Section II.J, and determined that the applicant described supplies at the site for decontamination of onsite individuals in the service building, adjacent to the main change rooms. The staff's evaluation of decontamination of onsite individuals is addressed above in SER Section 13.3.4.10. Therefore, the staff finds that the COL applicant has adequately addressed DCD COL Item 13.3-3-A.

- STD COL 13.4-2-A

DCD COL Item 13.4-2-A states that the COL applicant will provide implementation milestones for operational programs that are required by NRC regulation. In FSAR Section 13.4, the applicant identified this as STD COL 13.4-2-A, and stated that FSAR Table 13.4-201, "Operational Programs Required by NRC Regulations," lists each operational program, the regulatory source for the program, the associated implementation milestone(s), and the section of the FSAR in which the operational program is fully described. Table 13.4-201 lists the Emergency Planning program (Item) No. 14, and includes the associated implementation milestones. The staff reviewed FSAR Section 13.4 and Table 13.4-201, and determined that the applicant provided implementation milestones for the emergency planning operational program that are required by NRC regulation. The staff's evaluation of these implementation milestones is addressed below in SER Section 13.3.4.19, and in SER Section 13.4,

"Operational Programs." Therefore, the staff finds that the COL applicant has adequately addressed DCD COL Item 13.4-2-A.

- STD COL 14.3-1-A

DCD COL Item 14.3-1-A states that the COL applicant shall provide emergency planning ITAAC based on industry guidance. In FSAR Section 14.3, the applicant identified this as STD COL 14.3-1-A, and stated that the set of generic EP ITAAC 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 (ADAMS Accession No. ML052770225), was considered in the development of the plant-specific EP ITAAC, which are tailored to the ESBWR design, and included in a separate part of the COLA (i.e., Part 10 Table 2.3-1, which is reflected below in SER Table 13.3-1). The ESBWR DCD does not include any EP ITAAC. The staff reviewed the EP ITAAC in Table 2.3-1 against the generic EP ITAAC in Table 14.3.10-1 of NUREG-0800, Section 14.3.10, and determined that the applicant provided emergency planning ITAAC based on guidance in the SRP, because the EP ITAAC in SECY-05-0197 is a subset of, and consistent with, the EP ITAAC in Table 14.3.10-1. The staff's evaluations of individual EP ITAAC in Table 2.3-1 are addressed above in SER Section 13.3.4, as they relate to the various planning standards. Therefore, the staff finds that the COL applicant has adequately addressed DCD COL Item 14.3-1-A.

- STD COL 1C.1-2-A

DCD COL Item 1C.1-2-A states that the COL applicant will address the requirements of IE BL 2005-02 regarding emergency preparedness and response actions for security-based events. In FSAR Appendix 1C, the applicant identified this as STD COL 1C.1-2-A. Part 2 Table 1C-202 identifies COLA Part 5, Emergency Plan (i.e., COL Plan), as the location where BL 2005-02 is discussed. BL 2005-02 addresses five areas associated with emergency preparedness and response actions for security-based events. These areas, including the COL Plan section(s) where each is addressed, are as follows:

(1) Emergency classification scheme for security events (COL Plan Section II.D)
(2) NRC notifications (COL Plan Section II.E)
(3) Onsite protective measures (COL Plan Sections II.H and II.J)
(4) ERO augmentation, including alternative emergency response facilities (COL Plan Sections II.B, II.H, and II.J)
(5) Security-related drill and exercise program (COL Plan Section II.N)

The staff reviewed the COLA against BL 2005-02 to identify actions taken or planned to be taken for areas (1) through (5), identified above, and determined that the applicant addressed all of the requirements of BL 2005-02, with regard to emergency preparedness and response actions for security-based events. The staff's evaluation, associated with the applicable areas (1) through (5) of BL 2005-02, is addressed above in SER Sections 13.3.4.2 (4), 13.3.4.4 (1), 13.3.4.5 (2), 13.3.4.8 (3) & (4), 13.3.4.10 (3) & (4), and 13.3.4.14 (5). Therefore, the staff finds that the COL applicant has adequately addressed DCD COL Item 1C.1-2-A.

- STD SUP 13.5-28

STD SUP 13.5-28 states that a discussion of emergency preparedness procedures can be found in the emergency plan, and a list of implementing procedures is maintained in the

emergency plan. COL Plan Appendix 5 lists the EPIPs by topic, and states that EPIPs address a range of actions needed to implement the contents of the emergency plan. Specific topical EPIPs are identified above in SER Section 13.3.4, in relation to their applicability to the various planning standards that are addressed in the emergency plan. Submission of EPIPs to the NRC is discussed below in SER Section 13.3.4.19, and addressed in ITAAC 9.1 of SER Table 13.3-1. Administrative, plant operating, and emergency procedures are addressed in DCD Tier 2 Section 13.5, "Plant Procedures," and discussed in SER Section 13.5, "Plant Procedures."

13.3.4.19 Implementation Milestones

Activities that the COL licensee shall perform after the COL is issued, that are applicable to emergency planning, include the implementation milestones and license conditions listed below. In Table 13.4-201 of FSAR Section 13.4, the applicant listed operational programs required by NRC regulations. The Emergency Planning program is identified as operational program (Item) No. 14, and includes the associated implementation milestones. The staff reviewed Table 13.4-201, and finds that the proposed implementation milestones associated with the emergency planning program are acceptable because they are consistent with the relevant guidance and acceptance criteria in NUREG-0800, and therefore meet the requirements in Appendix E of 10 CFR Part 50. The implementation milestone associated with EALs is subject to the staff-identified changes reflected in proposed License Condition 4 (see SER Sections 13.3.4.4 and 13.3.5). See also, STD SUP 13.5-28 in SER Section 13.3.4.18, ITAAC 9.1 in SER Table 13.3-1, and SER Sections 13.4 and 13.5, with regard to EPIPs.

Implementation Milestones

- Full participation exercise conducted within 2 years prior to 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 prior to the scheduled date for initial loading of fuel, as required by 10 CFR Part 50, Appendix E, Section IV.F.2(a)(ii).
- 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.
- The licensee shall submit a fully developed set of site-specific Emergency Action Levels (EAL) to the NRC in accordance with the NRC-endorsed version of NEI 07-01, Rev. 0, with no deviations. The fully developed site-specific EAL scheme shall be submitted to the NRC for confirmation at least 180 days prior to initial fuel load.

13.3.5 Post-Combined License Activities

For the reasons discussed in the technical evaluation section above, the staff proposes to include the following license conditions:

License Conditions 1 through 5

1. No later than 2 years 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 augmented staffing capability for responding to a multi-unit event. The staffing assessment shall be performed in accordance with NEI 12-01, "Guidance for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities." At least one hundred

eighty (180) days before the date scheduled for initial fuel loading, as 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 staffing assessment described above, and identify how the augmented staff will be notified given degraded communications capabilities, including any related emergency plan and implementing procedure changes and associated training. [See Section 13.3.4.2 of this report.]

2. No later than 2 years 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 ac power. The communication capability assessment shall be performed in accordance with NEI 12-01, "Guidance for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities." At least one hundred eighty (180) days before the date scheduled for initial fuel loading, as 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. [See Sections 13.3.4.2 and 13.3.4.6 of this report.]

3. No later than 2 years 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-shift staffing in accordance with NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities." At least one hundred eighty (180) days before the date scheduled for initial fuel loading, as set forth in the notification submitted in accordance with 10 CFR 52.103(a), the licensee shall incorporate any changes to the emergency plan needed to bring staffing to the required levels. [See Section 13.3.4.2 of this report.]

4. 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 North Anna 3, 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 staff FSER.]

5. No later than one hundred eighty (180) days before the date schedule for initial fuel load set forth in the notification submitted in accordance with 10 CFR § 52.103(a), Dominion the licensee shall update its submit to the Director of NRO, or the Director's designee, in writing, updated North Anna Units 1 and 2 Letters of Agreement with the following entities, or their successors, and revise the Unit 3 Emergency Plan to include these updated Letters of Agreement after they have been executed. These updated Letters of Agreement shall identify the specific nature of arrangements in support of emergency preparedness for the North Anna site, including North Anna 3, and reflect expected assistance associated with hostile action at the North Anna site, as defined in 10 CFR Part 50, Appendix E, Section IV.A.7.

a. Commonwealth of Virginia Department of Emergency Management
b. Commonwealth of Virginia Department of Health
c. Commonwealth of Virginia Department of State Police
d. Commonwealth of Virginia Department of Game and Inland Fisheries
e. Virginia Commonwealth University Medical Center
f. Louisa County Administrator
g. Louisa County Sheriff
h. Louisa County Department of Fire and Emergency Medical Services
i. Spotsylvania County Sheriff
j. Spotsylvania Department of Fire, Rescue, and Emergency Management
k. Orange County Administrator
l. Orange County Sheriff
m. Caroline County Sheriff
n. Caroline County Department of Fire, Rescue, and Emergency Management
o. Hanover County Administrator
p. Hanover County Sheriff

[See Section 13.3.4.16 of this report.]

For the reasons discussed in the technical evaluation section above, the staff proposes to include the following EP ITAAC:

- The licensee shall perform and satisfy the acceptance criteria of the EP ITAAC set forth in SER Table 13.3-1.

13.3.6 Conclusions

The staff reviewed the application, including applicable portions of the referenced North Anna site ESP SSAR and ESBWR DCD. The staff confirmed that the applicant addressed the required information relating to emergency planning, and that there is no additional information needed to support the North Anna 3 COL application. The results of the staff's technical evaluation of the information incorporated by reference in the application are documented in NUREG-1835 for the ESP, and NUREG-1966 for the ESBWR standard design.

The EP ITAAC that are applicable to North Anna 3 are provided below in SER Table 13.3-1. The staff concludes that, pursuant to 10 CFR 52.80(a), the applicant included in the North Anna 3 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, and the NRC's rules and regulations.

The FEMA provided its findings and determinations concerning the adequacy of offsite emergency planning and preparedness, 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 North Anna site, and there is reasonable assurance that these plans can be implemented. On the basis of its review of these 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 planning basis for an acceptable state of onsite emergency preparedness, and there is reasonable assurance that the plan can be implemented.

Base 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, Appendix E to 10 CFR Part 50, 10 CFR 52.77, 10 CFR 52.79(a)(21), 10 CFR 52.79(a)(22)(i), 10 CFR 52.79(b)(4), 10 CFR 52.80, 10 CFR 52.83, 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 conditions listed in Section 13.3.5 of this SER, there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the North Anna site, and that emergency preparedness at North Anna 3 is adequate to support full-power operations.

Table 13.3-1 North Anna 3 ITAAC

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
1.0 Emergency Classification System			
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**] [**D.1 corresponds to NUREG-0654/FEMA-REP-1 evaluation criteria.] ITAAC element addressed in: Combined license (COL) Emergency Plan (EP) II.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 identified in the Emergency Plan Implementing Procedures (EPIPs).	1.1.1 The specific parameters identified in the EAL thresholds listed in the EPIPs have been retrieved and displayed in the control room, TSC, and EOF. 1.1.2 The ranges available in the control room, TSC, and EOF encompass the values for the specific parameters identified in the EAL thresholds listed in the EPIPs.
2.0 Notification Methods and Procedures			
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	2.1 The means exist to notify responsible State and local organizations within 15 minutes after the licensee declares an emergency. [E.1]	2.1 A test will be performed of the capabilities.	2.1 A means to notify responsible organizations, within 15 minutes after the licensee declares an emergency, has been established via the Operational Hot Line among the control room,

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
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 Planning Zone (EPZ) have been established.	ITAAC element addressed in: COL EP II.E.1		the Commonwealth of Virginia, Caroline County, Hanover County, Louisa County, Orange County, and Spotsylvania County.
	2.2 The means exist to notify emergency response personnel. [E.2] ITAAC element addressed in: COL EP II.E.2	2.2 A test will be performed of the capabilities.	2.2 A means exists to notify the North Anna 3 emergency response organization.
	2.3 The means exist to notify and provide instructions to the populace within the plume exposure EPZ. [E.6] ITAAC element addressed in: COL EP II.E.6	2.3 The full test of notification capabilities will be conducted.	2.3 A means exists to notify and provide instructions to the public in accordance with the emergency plan requirements.
3.0 Emergency Communications			
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] ITAAC element addressed in: COL EP II.F.1.d	3.1 A test will be performed of the capabilities.	3.1.1 Communications have been established between the control room and TSC. 3.1.2 Communications have been established among the control room, TSC, and EOF. 3.1.3 Communications via the Operational Hot Line have been established among the TSC and EOCs, which include the Commonwealth of Virginia, Caroline County, Hanover County, Louisa

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			County, Orange County, and Spotsylvania County. 3.1.4 Communications have been established between the TSC and radiological monitoring teams. 3.1.5 Communications have been established between the EOF and radiological monitoring teams.
	3.2 The means exist for communications from the control room, TSC, and EOF to the Nuclear Regulatory Commission (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] ITAAC element addressed in: COL EP II.F.1.f	3.2 A test will be performed of the capabilities.	3.2 Communications have been established from the control room, TSC, and EOF to the NRC headquarters and Region II EOCs and an access port for ERDS is provided.
4.0 Public Education and Information			
[Deleted]	[Deleted]	[Deleted]	[Deleted]
5.0 Emergency Facilities and Equipment			
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 TSC and onsite operational support center (OSC). [H.1] ITAAC element addressed in: COL EP II.H.1	5.1 An inspection of the as-built TSC and OSC will be performed.	5.1.1 The TSC has at least 1950 square feet of floor space. 5.1.2 The following communications equipment have been provided in the TSC and voice transmission and reception have been accomplished: a. NRC systems: Emergency Notification System (ENS), Health Physics Network (HPN), Reactor Safety Counterpart Link (RSCL), Protective Measures

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			Counterpart Link (PMCL), Management Counterpart Link (MCL) b. Dedicated telephone to EOF c. Dedicated telephone to control room d. Dedicated telephone to OSC 5.1.3 The TSC has been located in the Electrical Building. 5.1.4 The TSC includes radiation monitors and a ventilation system with a high efficiency particulate air (HEPA) and charcoal filter. 5.1.5 A back-up electrical power supply is available for the TSC.
			5.1.6 The OSC is in a location separate from the control room. 5.1.7 The following communications equipment have been provided in the OSC and voice transmission and reception have been accomplished: a. Dedicated telephone to control room b. Dedicated telephone to TSC c. Plant page system (voice transmission only)
	5.2 The licensee has established an EOF. [H.2] ITAAC element addressed in: COL EP II.H.2	5.2 An inspection of the EOF will be performed.	5.2.1 A report exists that confirms the EOF has at least 243 square meters (2625 square feet). 5.2.2 Voice transmission and reception have been accomplished between the EOF and TSC. 5.2.3 A report exists that confirms voice transmission and reception have been accomplished via the Operational Hot Line among the EOF, Commonwealth of

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			Virginia, Caroline County, Hanover County, Louisa County, Orange County, and Spotsylvania County. 5.2.4 The EOF has the means to acquire, display and evaluate radiological, meteorological, and plant system data pertinent to determining offsite protective measures.
6.0 Accident Assessment			
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. [I.2] ITAAC element addressed in: COL EP II.I.2, Appendix 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.	6.1 An exercise or drill has been accomplished, including use of selected monitoring parameters identified in the EAL thresholds listed in the EPIPs, to assess simulated degraded plant conditions and initiate protective actions in accordance with the following criteria: A. *Accident Assessment and Classification* 1. Initiating conditions identified, EAL parameters determined, and the emergency correctly classified throughout the drill. 2. Protective action recommendations developed and communicated to appropriate authorities. B. *Radiological Assessment and Control* 1. Onsite radiological surveys performed and samples collected. 2. Radiation exposure of emergency workers monitored and controlled. 3. Field monitoring teams assembled and deployed. 4. Field team data collected and disseminated. 5. Dose projections developed.

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			6. The decision whether to issue radioprotective drugs to NAPS emergency workers made.
	6.2 The means exist to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. [I.3] ITAAC element addressed in: COL EP II.I.3, Appendix 2	6.2 An analysis of EPIPs and the Offsite Dose Calculation Manual (ODCM) will be completed to verify the ability to determine the source term and magnitude of release.	6.2 The EPIPs and ODCM correctly calculate source terms and magnitudes of postulated releases.
	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] ITAAC element addressed in: COL EP II.I.4, Appendix 2	6.3 An analysis of EPIPs and the ODCM will be completed to verify the relationship between effluent monitor readings and offsite exposures and contamination for various meteorological conditions has been established.	6.3 The EPIPs and ODCM calculate the relationship between effluent monitor readings and offsite exposures and contamination for various meteorological conditions.
	6.4 The means exist to acquire and evaluate meteorological information. [I.5] ITAAC element addressed in: COL EP II.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: • Wind speed (at 10 meters (m) and 48.4 m) • Wind direction (at 10 m and 48.4 m)	6.4 The following meteorological data is available in the control room, TSC, and EOF: • Wind speed (at 10 m and 48.4 m) • Wind direction (at 10 m and 48.4 m) • Ambient air temperature (at 10 m)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
		• Ambient air temperature (at 10 m) • Differential air temperature (between 10 m and 48.4 m)	• Differential air temperature (between 10 m and 48.4 m)
	6.5 The means exist to make rapid assessments of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times. [I.8] ITAAC element addressed in: COL EP II.I.8	6.5 A test will be performed of the capabilities.	6.5 Demonstrate the capability for making rapid assessment of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways.
	6.6 The capability exists to detect and measure radioiodine concentrations in air in the plume exposure EPZ, as low as 10^{-7} µCi/cc (microcuries per cubic centimeter) under field conditions. [I.9] ITAAC element addressed in: COL EP II.I.9	6.6 A test of NAPS field survey instrumentation will be performed to verify the capability to detect airborne concentrations as low as 1E-07 µCi/cc.	6.6 Instrumentation used for monitoring I-131 to detect airborne concentrations as low as 1E-07 µCi/cc has been provided.
	6.7 The means exist to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the Environmental Protection Agency	6.7 An analysis of EPIPs will be performed to verify that a methodology is provided to establish means for relating contamination levels and airborne radioactivity levels to	6.7 A report exists and concludes a methodology has been established for relating contamination levels and airborne radioactivity levels to dose rates and gross radioactivity measurements for the

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
	(EPA) protective action guides (PAGs). [I.10] ITAAC element addressed in: COL EP II.I.10, Appendix 2	dose rates and gross radioactivity measurements for the following isotopes: Kr-88, Ru-106, I-131, I-132, I-133, I-134, I-135, Te-132, Xe-133, Xe-135, Cs-134, Cs-137, Ce-144	specified isotopes (Kr-88, Ru-106, I-131, I-132, I-133, I-134, I-135, Te-132, Xe-133, Xe-135, Cs-134, Cs-137, Ce-144), and for comparing the dose estimates with the EPA PAGs.
7.0 Protective Response			
10 CFR 50.47(b)(10) – A range of protective actions has been developed for the plume exposure 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 EPZ appropriate to the locale have been developed.	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] 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. ITAAC element addressed in: COL EP II.J.1	7.1 A test of the onsite warning and communications capability will be performed during a drill or exercise.	7.1.1 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. 7.1.2 During a drill or exercise, audible warnings were provided to individuals outside the Protected Area, but within the Owner Controlled Area.
8.0 Exercises and Drills			
10 CFR 50.47(b)(14) – Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key	8.1 Licensee conducts a full-participation exercise to evaluate major portions of emergency response capabilities, which includes participation by each State and local agency within the plume exposure	8.1 A full-participation exercise (test) will be conducted within the specified time periods of Appendix E to 10 CFR Part 50.	8.1.1 The exercise is completed within the specified time periods of 10 CFR Part 50, Appendix E, and a report exists that confirms onsite exercise objectives listed below have been met and there are no uncorrected onsite exercise deficiencies.

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.	EPZ, and each State within the ingestion control EPZ. [N.1] ITAAC element addressed in: COL EP II.N.1		A. *Accident Assessment and Classification* 1. Demonstrate the ability to identify initiating conditions, determine EAL parameters, and correctly classify the emergency throughout the exercise. Standard Criteria: a. Determine the correct highest 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(s) is (are) identified. B. *Notifications* 1. Demonstrate the ability to alert, notify, and mobilize site emergency response personnel. Standard Criteria: a. Initiate activation of the emergency recall system following initial event classification for an Alert or higher. 2. Demonstrate the ability to notify responsible State and local government agencies within 15 minutes and the NRC within 60 minutes after declaring an emergency. : a. Initiate transmittal of initial information to the Commonwealth of Virginia and risk jurisdictions using the designated EPIP within 15 minutes of event classification. b. Initiate transmittal of follow-up information to the Commonwealth of Virginia and risk jurisdictions using the

			designated EPIP within appropriate interval. c. Initiate transmittal of initial information to the NRC using the designated EPIP within 60 minutes of event classification. 3. Demonstrate the ability to warn or advise onsite individuals of emergency conditions. Standard Criteria: a. Initiate notification of onsite individuals (via plant page or telephone), using the designated EPIP within 15 minutes of notification. 4. Demonstrate the capability of the Alert and Notification System (ANS) sirens to operate properly when required. Standard Criteria: a. 90 percent of the sirens operate properly. C. *Emergency Response* 1. Demonstrate the capability to direct and control emergency operations. Standard Criteria: a. Command and control is demonstrated by the control room in the early phase of the emergency and the TSC, after its activation. 2. Demonstrate the ability to transfer emergency direction from the control room (simulator) to the TSC. Standard Criteria: a. Briefings were conducted prior to turnover responsibility. Personnel document transfer of duties. 3. Demonstrate the ability to prepare for around-the-clock staffing requirements.

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			Standard Criteria: a. Complete 24-hour staff assignments. 4. Demonstrate the ability to perform assembly and accountability for all onsite individuals during an emergency requiring Protected Area assembly and accountability. Standard Criteria: a. Protected Area personnel assembly and accountability completed within 30 minutes following initiation of assembly and accountability measures. D. *Emergency Response Facilities* 1. Demonstrate activation of the OSC, and full functional operation of the TSC and EOF. Standard Criteria: a. The TSC, OSC, and EOF are activated within about 60 minutes of the initial notification. 2. Demonstrate the adequacy of equipment, security provisions, and habitability precautions for the TSC, OSC, EOF, and Joint Information Center (JIC), as appropriate. Standard Criteria: a. Demonstrate the adequacy of the emergency equipment in the emergency response facilities. b. The Security Team Leader implements and follows applicable EPIPs. c. The Health Physics (HP) personnel implement the designated EPIP provisions if an onsite or offsite release has occurred. 3. Demonstrate the adequacy of

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			communications for all emergency support resources. Standard Criteria: a. Emergency response facility personnel are able to operate all specified communication systems. b. Clear primary or backup communications links are established and maintained for the duration of the exercise. E. *Radiological Assessment and Control* 1. Demonstrate the ability to obtain onsite radiological surveys and samples. Standard Criteria: a. HP personnel demonstrate the ability to obtain appropriate instruments (range and type) and take surveys. b. Airborne samples are taken when the conditions indicate the need for the information. 2. Demonstrate the ability to continuously monitor and control radiation exposure to emergency workers. Standard Criteria: a. Emergency workers are issued self-reading dosimeters when radiation levels require, and exposures are controlled to 10 CFR Part 20 occupational dose limits (unless the Emergency Coordinator/EOF Director authorizes emergency limits). b. Exposure records are available. c. Emergency workers include Security and

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			personnel within all emergency facilities. 3. Demonstrate the ability to assemble and deploy field monitoring teams. Standard Criteria: a. One field monitoring team is ready to be deployed within 60 minutes of being requested, and no later than 90 minutes from the declaration of an Alert or higher emergency. 4. Demonstrate the ability to satisfactorily collect and disseminate field team data. Standard Criteria: a. Field team data to be collected is dose rate or counts per minute (cpm) from the plume, both open and closed window, and air sample (gross/net cpm) for particulate and iodine, if applicable. b. Satisfactory data dissemination is from the field team to HP (Plume Tracking/Dose Assessment) personnel. 5. Demonstrate the ability to develop dose projections. Standard Criteria: a. Timely and accurate dose projections are performed in accordance with EPIPs. 6. Demonstrate the ability to make the decision whether to issue radioprotective drugs to emergency workers. Standard Criteria: a. Radioprotective drugs are taken (simulated) if the estimated dose to the thyroid will exceed 25 rem committed dose equivalent (CDE).

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			7. Demonstrate the ability to develop appropriate protective action recommendation(s) (PAR(s)) and notify appropriate authorities within 15 minutes of development. Standard Criteria: a. Total effective dose equivalent (TEDE) and CDE dose projections from the dose assessment computer code are compared to criteria in EPIPs. b. PAR(s) is (are) developed within 15 minutes of data availability, as appropriate. c. PAR(s) is (are) transmitted to responsible State and local government agencies within 15 minutes of development. F. *Public Information* 1. Demonstrate the capability to develop and disseminate clear, accurate, and timely information to the news media. Standard Criteria: a. Media information (e.g., press releases, press briefings, electronic media) is made available following notification of Dominion External Affairs personnel. 2. Demonstrate the capability to establish and effectively operate rumor control in a coordinated fashion. Standard Criteria: a. Calls are answered in a timely manner with the correct information. b. Rumors are identified and addressed.

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
			G. *Evaluation* 1. Demonstrate the ability to conduct a post-exercise critique, to determine areas requiring improvement and corrective action. Standard Criteria: a. An exercise time-line is developed, followed by an evaluation of the objectives. b. Significant problems in achieving the objectives are discussed to ensure understanding of why objectives were not fully achieved. c. Recommendations for improvement in non-objective areas are discussed.
			8.1.2 Onsite emergency response personnel are mobilized in sufficient number to fill the emergency positions identified in COL EP II.B, Onsite Emergency Organization, and a report exists that confirms they successfully perform their assigned responsibilities as outlined in Acceptance Criterion 8.1.1.D, Emergency Response Facilities.
			8.1.3 The exercise is completed within the specified time periods of 10 CFR Part 50, Appendix E, a report exists that confirms offsite exercise objectives have been met and there are no uncorrected offsite deficiencies, or a license condition requires offsite deficiencies to be corrected prior to operation above 5 percent of rated power.

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
9.0 Implementing Procedures			
10 CFR Part 50, Appendix E.V – No less than 180 days prior to the scheduled issuance of an operating license for a nuclear power reactor or a license to possess nuclear material, the applicant's detailed implementing procedures for its emergency plan shall be submitted to the Commission.	9.1 The licensee has submitted detailed implementing procedures for its emergency plan no less than 180 days prior to fuel load.	9.1 An inspection will be performed to confirm that the detailed implementing procedures for the North Anna 3 Emergency Plan were submitted to the NRC.	9.1 Each of the detailed implementing procedures for the North Anna 3 Emergency Plan, as defined in Appendix 5 of the Emergency Plan, are submitted to the NRC no less than 180 day prior to fuel load.

13.4 Operational Program Implementation

13.4.1 Introduction

This section of the FSAR addresses the operational programs described in NRC guidance SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria." The section includes a description of the programs and the proposed implementation milestones for each program.

This section describes the proposed implementation milestones for each operational program in compliance with the guidance of RG 1.206, Regulatory Position C.I.13.4. The applicant provides this information in FSAR Table 13.4-201 "Operational Programs Required by NRC Regulations," which lists each operational program, the regulatory requirement for the program, the associated implementation milestone(s), and the section of the FSAR that describes the operational program.

13.4.2 Summary of Application

Section 13.4.1 of North Anna 3 COL FSAR, Revision 8, incorporates by reference Section 13.4.1 of the certified ESBWR DCD, Revision 10. In addition, in FSAR Section 13.4.1, Revision 8, the applicant provides the following:

COL Items

- STD COL 13.4-1-A Operational Programs

Table 13.4-201 lists each operational program, the regulatory source for the program, the associated implementation milestone(s), and the section of the FSAR that fully describes the operational program, as required by RG 1.206.

- STD COL 13.4-2-A Implementation Milestones

The applicant provided the information in FSAR Table 13.4-201, which lists each operational program, the regulatory requirement for each program, the associated implementation milestone(s), and the section of the FSAR that fully describes the operational program consistent with the guidance in RG 1.206.

13.4.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is in NUREG-1966. In addition, in the Staff Requirements Memorandum on SECY-05-0197, the Commission provided the following directions regarding operational programs:

- Include license conditions for operational programs in the COL, where implementation requirements are not specified in the regulations.
- Identify the list of operational programs required to be included in a COL application.
- Use the proposed generic EP-ITAAC as a model for EP-ITAAC to be included in COL applications.
- The SRP Section 13.4.1 provides guidance for staff review. For a COL application, the staff reviews the applicable table in FSAR Section 13.4.1, Revision 8, to ensure that all required operational programs are included. The staff's review of the operational program description and the proposed implementation milestones is performed within the identified SRP section reviews.

13.4.4 Technical Evaluation

As documented in NUREG–1966, NRC staff reviewed and approved Section 13.4 of the certified ESBWR DCD, Revision 10. The staff reviewed Section 13.4. of North Anna 3 COL FSAR, Revision 8, and checked the referenced ESBWR DCD to ensure that the combination of the information in the COL FSAR and the information in the ESBWR DCD appropriately represents the complete scope of information relating to this review topic.[1] The staff's review confirmed that the information in the application and the information incorporated by reference address the relevant information related to this section.
The staff reviewed the information in North Anna 3 COL FSAR as follows:

COL Items

- STD COL 13.4-1-A Operational Programs
- STD COL 13.4-2-A Implementation Milestones

The NRC staff reviewed FSAR Table 13.4-201 and determined that the applicant had identified the operational programs required by NRC regulations and had provided a description of the proposed implementation milestones for each program in North Anna 3 COL Part 10; "Tier 1/ ITAAC/Proposed License Conditions." The technical evaluation of the operational programs to ensure that the applicant has fully described the programs and their associated implementation milestones is provided in the respective section of this SER.

Operational Program Implementation Schedule License Condition:

No later than 12 months after issuance of the COL, Dominion shall submit to the Director of NRO, or the Director's designee, a schedule for implementation of the operational programs listed in FSAR Table 13.4-201, including the associated estimated date for initial loading of fuel.

The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until all the operational programs listed in FSAR Table 13.4-201 have been fully implemented.

13.4.5 Post Combined License Activities

License Condition Section 3.6 of North Anna COLA Part 10 references North Anna 3 FSAR Table 13.4-201, for the implementation milestones for each operational program. These implementation milestones, the schedule for which is required to be submitted and updated in accordance with the license condition described above, specify activities to be completed following issuance of the COL. Implementation of each operational program will be evaluated by the staff according to the respective implementation milestone.

13.4.6 Conclusion

The NRC staff's finding related to information incorporated by reference is in NUREG–1966. NRC staff reviewed the COL application and checked the referenced DCD. The staff's review confirms that the applicant has addressed the required information, and no outstanding information is expected to be addressed in the COL FSAR related to this section. Pursuant to 10 CFR 52.63(a)(5) and 10 CFR Part 52, Appendix E, Section VI.B.1, all nuclear safety issues relating to this section that were incorporated by reference have been resolved.

In addition, the staff compared the additional COL information in the application to the relevant NRC regulations, the guidance in Subsection 13.4.1 of NUREG–0800, and other NRC RGs. The staff's review concludes that the applicant has presented adequate information on COL Items STD COL 13.4-1-A and 13.4-2-A in Table 13.4-201 of the COL FSAR.

13.5 Plant Procedures

This section of the FSAR addresses the administrative and operating procedures that the operating organization (plant staff) uses to ensure that routine operating, off-normal, and emergency activities are conducted in a safe manner. This section is divided into two subsections that are described below—Administrative Procedures and Operating and Emergency Operating Procedures. The Inspection of the procedures will occur as part of the construction inspection program.

13.5.1 Administrative Procedures

13.5.1.1 Introduction

The administrative procedures the applicant uses to ensure that routine operating, off-normal, and emergency activities are conducted in a safe manner are provided. In plant procedures, the applicant provides 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 delineates in the description of the procedures the functional position for

procedural revisions and approval before implementation.

13.5.1.2 Summary of Application

Section 13.5.1 of North Anna 3 COL FSAR, Revision 8, incorporates by reference Section 13.5.1 of the certified ESBWR DCD Revision 10. In addition, in FSAR Section 13.5.1, the applicant provides the following information:

COL Item

- STD COL 13.5-1-A Administrative Procedures

Industry guidance for the appropriate format, content, and typical activities delineated in written procedures is implemented, as appropriate. Guidance is based on ASME NQA-1, "Quality Assurance Requirements for Nuclear Facility Applications."

Administrative procedures are developed in accordance with the nominal schedule presented in Table 13.5-202.

Supplemental Information

- STD SUP 13.5-1

In FSAR Section 13.5, the applicant states that this section describes the administrative and operating procedures that the operating organization (plant staff) uses to conduct routine operating, abnormal, and emergency activities in a safe manner.

- STD SUP 13.5-2

The quality assurance program description (QAPD) describes procedural document control, record retention, adherence, assignment of responsibilities, and changes.

- STD SUP 13.5-3

Procedures are identified in this section by topic, type, or classification in lieu of the specific title and represent general areas of procedural coverage.

- STD SUP 13.5-4

The applicant states that procedures are developed before fuel loading to allow sufficient time for plant staff familiarization and to allow NRC staff adequate time to review the procedures and to develop operator licensing examinations.

- CWR COL 13.5-4-A

Industry guidance for the appropriate format, content, and typical activities delineated in written procedures is implemented, as appropriate. Guidance is based on ASME NQA-1, "Quality Assurance Requirements for Nuclear Facility Applications" (Reference 13.5-02).

- STD SUP 13.5-5

The format and content of procedures are controlled by administrative procedure(s). Procedures

are organized to include the following components, as necessary:

- Title Page
- Table of Contents
- Scope and Applicability
- Responsibilities
- Prerequisites
- Precautions and Limitations
- Main Body
- Acceptance Criteria
- Check-off Lists
- References
- Attachments and Data Sheets

- STD SUP 13.5-6

Each procedure is sufficiently detailed for an individual to perform the required function without direct supervision but does not provide a complete description of the system or plant process. The level of detail in the procedure is commensurate with the qualifications of the individual normally performing the function.

- STD SUP 13.5-7

Procedures are developed to be consistent with the guidance described in DCD Section 18.9, "Procedure Development," and with input from the human factors engineering (HFE) process and evaluations.

The bases for procedure development include:

- Plant design bases
- System-based technical requirements and specifications
- Task analyses results
- Risk-important human actions identified in the human reliability analysis (HRA)/probabilistic risk assessment (PRA)
- Initiating events considered in the EOPs, including those events in the design bases
- Generic Technical Guidelines (GTG) for EOPs

Procedure verification and validation (V&V) includes the following activities, as appropriate:

- A review to verify they are correct and can be carried out.
- A final validation in a simulation of the integrated system as part of the V&V activities as described in DCD Section 18.11, "Human Factors Verification and Validation."
- A verification of modified procedures for adequate content, format, and

integration.

- The procedures are assessed through validation if a modification substantially changes personnel tasks that are significant to plant safety. The validation verifies that the procedures correctly reflect the characteristics of the modified plant and can be performed effectively to restore the plant.

- STD SUP 13.5-8

Procedures for shutdown management are developed to be consistent with the guidance in NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management," to reduce the potential for the loss of reactor coolant system (RCS) boundary and inventory during shutdown conditions. (Reference 13.5-203)

- STD SUP 13.5-9

This section describes administrative procedures that provide administrative controls over activities that are important to safety for the operation of the facility.

- CWR SUP 13.5-10

Procedures outline the essential elements of the administrative programs and controls as described in ASME NQA-1 and Section 17.5. These procedures are organized such that the program elements are prescribed in documents normally referred to as administrative procedures. Administrative procedures contain adequate programmatic controls to provide effective interface between organizational elements. This includes contractor and owner organizations providing support to the station operating organization.

- CWR SUP 13.5-11

Procedure control is discussed in the QAPD. Type and content of procedures are discussed throughout Section 13.5.

- STD SUP 13.5-12

The applicant defines the procedure writer's guide.

- STD SUP 13.5-13

The applicant states that updates to maintenance and control procedures are performed according to the QAPD.

- STD SUP 13.5-14

The applicant states that the administrative programs and associated procedures developed in the pre-COL phase are described in Table 13.5-201.

- STD SUP 13.5-15

This section describes those procedures that provide administrative controls with respect to procedures, including those that define and provide controls for operational activities of the plant staff.

- STD SUP 13.5-16

The applicant provides a list of plant administrative procedures.

13.5.1.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is in NUREG-1966. In addition, the relevant requirements of the Commission regulations for the administrative and plant procedures, and the associated acceptance criteria, are in Section 13.5.1 and Subsection 13.5.2.1 of NUREG–0800.

In particular, the relevant provisions for reviewing plant procedures are based on (1) meeting the methods and criteria described in 10 CFR 52.79(a)(14), (26), (29)(i), (29)(ii), (33), and (34), and in TMI Action Plan Items I.C.1 and I.C.9; and (2) meeting the guidance of NUREG–0800, Subsections 13.5.1.1 and 13.5.2.1. The review of FSAR information related to the development of emergency procedures is based on meeting the requirements of 10 CFR 52.79(a)(14), (26), (29)(i), (29)(ii), (33), and (34); and the guidance of NUREG–0800, Subsection 13.5.2.1.

The provisions for reviewing COL Item STD COL 13.5-1-A related to the implementation of the plan are based on the following:

- Meeting the requirements of 10 CFR 52.79(a)(14), (26), (29)(i), (29)(ii), (33), and (34).
- Meeting the TMI Action Plan requirements described in NUREG–0737 and Supplement 1 to NUREG–0737.
- The plant procedures in accordance with the provisions of TMI Action Plan Item I.C.5.
- The guidance of NUREG–0800, Subsections 13.5.1.1 and 13.5.2.1.

The relevant provisions for reviewing FSAR information related to the procedures included in the scope of the plan are based on (1) meeting the requirements of the procedures in Sections A3, A5, and A10 of ANSI/ANS-3.2; and (2) meeting the guidance of NUREG-0800, Subsections 13.5.1.1 and 13.5.2.1.

13.5.1.4 Technical Evaluation

As documented in NUREG–1966, NRC staff reviewed and approved Section 13.5.1 of the certified ESBWR DCD, Revision 10. The staff reviewed Section 13.5.1 of North Anna 3 COL FSAR, Revision 8 and checked the referenced ESBWR DCD, Revision 10 to ensure that the combination of the information in the COL FSAR and the information in the ESBWR DCD appropriately represents the complete scope of information relating to this review topic.[1] The staff's review confirmed that the information in the application and the information incorporated by reference address the required information relating to administrative procedures.

The staff reviewed the information in the North Anna 3 COL FSAR as follows:

COL Item

- STD COL 13.5-1-A

The applicant states that industry guidance ASME NQA-1 for the appropriate format, content, and typical activities delineated in written procedures is implemented, as appropriate. Administrative procedures are developed in accordance with the nominal schedule presented in Table 13.5-202.

The ESBWR DCD Tier 2, Section 13.5.1 states that the applicant shall develop the administrative procedures, therefore in North Anna 3 COL FSAR, the applicant in Section 13.5.1 states, "This section describes administrative procedures that provide administrative control over activities that are important to safety for the operation of the facility."

The staff reviewed FSAR Section 13.5.1 and Table 13.5-202 and determined that they address the development of the administrative procedures within the timeline specified in NUREG–0800, Subsection 13.5.1.1. The staff concluded that the new paragraph meets the criteria in NUREG-0800, Subsection 13.5.1.1.

Supplemental Information

In addition to the supplemental items listed in Sections 13.5.1 and 13.5.2 of the FSAR, STD SUP Items 13.5.3 through13.5.9 described in FSAR Section 13.5 provide additional detail of the applicant's process for developing all of North Anna 3 procedures.

- STD SUP 13.5-1

The staff reviewed STD SUP 13.5-1, which describes the administrative and operating procedures used to conduct routine operating, abnormal, and emergency operating activities. The staff determined that this section of the applicant's FSAR meets the criteria in NUREG-0800, Subsection 13.5.1.1 and is therefore acceptable.

- STD SUP 13.5-2

The QAPD describes procedural document control, record retention, adherence, assignment of responsibilities, and changes. The QAPD is evaluated in Chapter 17, "Quality Assurance," of this SER.

The staff reviewed STD SUP 13.5-2, which describes procedural document control, record retention, adherence, assignment of responsibilities, and changes. The staff determined that this section of the applicant's FSAR meets the criteria in NUREG–0800, Subsection 13.5.1.1, combined with evaluation of the QAPD in Chapter 17 and is therefore acceptable.

- STD SUP 13.5-3

This section identifies procedures by topic, type, or classification in lieu of the specific title, and represents general areas of procedural coverage.

The staff reviewed STD SUP 13.5-3, which states that plant procedures are identified by topic, type, or classification. The staff determined that this section of the applicant's FSAR meets the criteria in NUREG–0800, Subsection 13.5.1.1 and is therefore acceptable.

- STD SUP 13.5-4

The applicant states that:

> Procedures are developed prior to fuel load to allow sufficient time for plant staff familiarization and to allow NRC staff adequate time to review the procedures and to develop operator licensing examinations.

The staff reviewed STD SUP 13.5-4 to develop plant procedures before initial fuel loading. The staff determined that this section of the applicant's FSAR meets the criteria in NUREG–0800, Subsection 13.5.1.1 and is therefore acceptable.

- CWR COL 13.5-4-A

The staff reviewed CWR COL 13.5-4-A, which states that industry guidance based on ASME NQA-1 is implemented as appropriate for the format, content, and activities delineated in written procedures. The staff determined that this section of the applicant's FSAR meets the criteria in NUREG–0800, Subsection 13.5.1.1 and is therefore acceptable.

- STD SUP 13.5-5

Administrative procedures control the format and content of procedures, which are organized to include the following components, as necessary:

- Title Page
- Table of Contents
- Scope and Applicability
- Responsibilities
- Prerequisites
- Precautions and Limitations
- Main Body
- Acceptance Criteria
- Check-Off Lists
- References
- Attachments and Data Sheets

The staff reviewed STD SUP 13.5-5, which states that the format and content of plant procedures used to conduct routine operating, abnormal, and emergency operating activities. The staff determined that this section of the applicant's FSAR meets the criteria in NUREG-0800, Subsection 13.5.1.1 and is therefore acceptable.

- STD SUP 13.5-6

The staff reviewed STD SUP 13.5-6, which states that the plant procedures used to conduct routine operations and abnormal and emergency operating activities should have the level of detail commensurate with the qualifications of the individual performing the required functions. The staff determined that this section of the applicant's FSAR meets the criteria in NUREG-0800, Subsection 13.5.1.1 and is therefore acceptable.

- STD SUP 13.5-7

Procedures should be developed consistent with the guidance described in DCD Tier 2, Section 18.9, and with input from the human factors engineering process and evaluations.

The bases for procedural development include:

- Plant design bases;
- System-based technical requirements and specifications;
- Task analyses results;
- Risk-important human actions identified in the HRA/PRA;
- Initiating events considered in the EOPs, including those events in the design bases; and
- GTGs for EOPs.

Procedure V&V includes the following activities, as appropriate:

- A review to verify that they are correct and can be carried out.
- A final validation in a simulation of the integrated system as part of the V&V activities as described in DCD Tier 2, Section 18.11.
- Verification that modified procedures have adequate content, format, and integration.
- The procedures are assessed through validation if a modification substantially changes personnel tasks that are significant to plant safety. The validation verifies that the procedures correctly reflect the characteristics of the modified plant and can be performed effectively to restore the plant.

The staff reviewed STD SUP 13.5-7, which states that plant procedures used to conduct routine operation and abnormal and emergency operating activities should be consistent with the guidance described in DCD Tier 2, Section 18.9. The staff determined that this section of the

applicant's FSAR is consistent with the guidance in DCD Tier 2, Section 18.9 and meets the criteria in NUREG–0800, Subsection 13.5.1.1 and is therefore acceptable.

- STD SUP 13.5-8

The staff reviewed STD SUP 13.5-08, which states that procedures for managing a shutdown should be consistent with the guidance in NUMARC 91-06. The staff determined that this section of the applicant's FSAR is consistent with the guidance in NUMARC 91-06 and meets the criteria in NUREG–0800, Subsection 13.5.1.1. This information is therefore acceptable.

- STD SUP 13.5-9

The NUREG–0800, Subsection 13.5.1.1 states that the applicant should describe the procedures that provide administrative controls over safety-related activities for the operation of the facility. In FSAR Subsection 13.5.1.1, the applicant replaces the first sentence of the paragraph to supplement the DCD with the following statement. The applicant states this section describes administrative procedures that provide administrative control over activities that are important to safety for the operation of the facility. The staff concluded that the applicant-provided descriptions of plant administrative procedures meet the criteria in NUREG–0800, Subsection 13.5.1.1 and are therefore acceptable.

- CWR SUP 13.5-10

The applicant states that:

> Procedures outline the essential elements of the administrative programs and controls described in ASME NQA-1 and Section 17.5. These procedures are organized to prescribe the programmatic elements in documents normally referred to as administrative procedures.
>
> Administrative procedures contain adequate programmatic controls to provide an effective interface between organizational elements, including contractor and owner organizations that support the station operating organization.

The NUREG–0800, Subsection 13.5.1.1 states that the applicant should describe the procedures that provide administrative controls over safety-related activities for the operation of the facility, but applicants are not required to include detailed written procedures in the FSAR. In FSAR Subsection 13.5-1-A, the applicant lists the Category (A) Controls and Category (B) Specific Procedures described in NUREG–0800, Subsection 13.5.1.1. The staff determined that this information meets the criteria of NUREG–0800 Subsection 13.5.1.1 and is therefore acceptable.

- CWR SUP 13.5-11

The NUREG–0800, Subsection 13.5.1.1 states that the applicant should describe the procedures that provide for administrative controls over safety-related activities for the operation of the facility, but applicants are not required to include detailed written procedures in the FSAR. In FSAR Subsection 13.5-1-A, the applicant lists the Category (A) Controls and Category (B) Specific Procedures described in NUREG–0800, Subsection 13.5.1.1. The Supplemental Information CWR SUP 13.5-11 refers to the QAPD and FSAR Section 13.5. The staff's review of these sections concluded that the applicant has provided an adequate and acceptable

description of procedural controls in North Anna 3 COL FSAR that meets the criteria in NUREG-0800, Subsection 13.5.1.1.

- STD SUP 13.5-12

The applicant states that:

> A procedure style (writer's) guide promotes the standardization and application of HFE principles to procedures. The writer's guide establishes the process for developing procedures that are complete, accurate, consistent, and easy to understand and follow. The guide provides objective criteria so that procedures are consistent in organization, style, and content. The writer's guide provides criteria for the content and format of procedures, including written action steps and specific acceptable acronym lists and terms to be used.

In NUREG–0800, Subsection 13.5.1.1, Area of Review Item 1.A, "Category (A) Controls," states that the applicant should describe the procedural review and approval process. Inherent in this discussion is the use of a procedure writer's guide. In FSAR Subsection 13.5.1.1, the applicant adds a new paragraph under STD SUP 13.5-12 that describes the writer's guide and promotes the standardization of procedures that include human factor applications and consistent organization, style, and content. The staff concluded that the applicant has provided acceptable general operating descriptions of procedures that meet the criteria in NUREG–0800, Subsection 13.5.2.1.

- STD SUP 13.5-13

The applicant states that:

> Procedure maintenance and control of procedure updates are performed in accordance with the QAPD.

The NUREG–0800, Subsection 13.5.1.1 states that the applicant should describe the procedures that provide administrative controls over safety-related activities for the operation of the facility, but the applicant is not required to include detailed written procedures in the FSAR. In FSAR Subsection 13.5.1.1, the applicant lists the Category (A) Controls and Category (B) Specific Procedures described in NUREG–0800, Subsection 13.5.1.1. In STD SUP 13.5-13, the applicant states that the control over the maintenance and updates of procedures is performed in accordance with the QAPD. The staff determined that this information meets the criteria of NUREG–0800, Subsection 13.5.1.1 and is therefore acceptable.

- STD SUP 13.5-14

The applicant states:

> The administrative programs and associated procedures developed in the pre-COL phase are described in Table 13.5-201 (for future designation as historical information).

The NUREG–0800, Subsection 13.5.1.1 states that the applicant should describe the procedures that provide administrative control over safety-related activities for the operation of the facility, but the applicant is not required to include detailed written procedures in the FSAR. In FSAR

Subsection 13.5.1.1, the applicant lists the Category (A) Controls and Category (B) Specific Procedures described in NUREG–0800, Subsection 13.5.1.1. In FSAR Section 13.5.1, STD SUP 13.5-14 refers to Table 13.5-201. The staff's review of these sections concluded that the applicant has provided an adequate description of procedural controls in the FSAR that meets the criteria in NUREG–0800, Subsection 13.5.1.1. This information is therefore acceptable.

- STD SUP 13.5-15

The applicant states:

> Subsection 13.5.1.1, "Administrative Procedures-General," describes those procedures that provide administrative controls with respect to procedures, including those that define and provide controls for operational activities of the plant staff.

The NUREG–0800, Subsection 13.5.1.1 states that the applicant should describe the procedures that provide administrative control over safety-related activities for the operation of the facility, but the applicant is not required to include detailed written procedures in the FSAR. In FSAR Subsection 13.5.1.1, the applicant lists the Category (A) Controls and Category (B) Specific Procedures described in NUREG–0800, Subsection 13.5.1.1. The staff reviewed these listed procedures, regulatory requirements, and proposed completion times per Table 13.5-202 in the COL FSAR. The staff concluded that the applicant has provided an acceptable and adequate description of procedural controls in the FSAR that meets the criteria in NUREG-0800, Subsection 13.5.1.1.

- STD SUP 13.5-16

The applicant states that, plant administrative procedures provide procedural instructions for the following:

- Procedures review and approval
- Procedure adherence
- Scheduling for surveillance tests and calibration
- Log entries
- Record retention
- Containment access
- Bypass of safety function and jumper control
- Communication systems
- Equipment control procedures—These procedures provide for control of equipment, as necessary, to maintain personnel and reactor safety, and to avoid the unauthorized operation of equipment
- Control of maintenance and modifications
- Fire Protection Program procedures
- Crane Operation Procedures—Crane operators who operate cranes over fuel pools are qualified and conduct themselves in accordance with ANSI B30.2 (Chapter 2-3), "Overhead and Gantry Cranes" (Reference 13.5-201).
- Temporary changes to procedures
- Temporary procedure issuance and control
- Special orders of a temporary or self-canceling nature
- Standing orders to shift personnel including the authority and responsibility of the

shift manager, senior reactor operator in the control room, control room operator, and shift technical advisor

- Manipulation of controls and assignment of shift personnel to duty stations per the requirements of 10 CFR 50.54 (i), (j), (k), (l), and (m), including delineation of the space designated for the "At the Controls" area of the Control Room
- Shift relief and turnover procedures
- Fitness for duty (FFD)
- Control Room access
- Working hour limitations
- Feedback of design, construction, and applicable important industry and operating experience
- Shift Manager administrative duties
- Verification of correct performance of operational activities
- A vendor interface program that provides vendor information for safety- related components is incorporated into plant documentation

The NUREG–0800, Subsection 13.5.1.1 states that the applicant should describe the procedures that provide administrative controls over safety-related activities for the operation of the facility, but the applicant is not required to include detailed written procedures in the FSAR. In FSAR Subsection 13.5.1.1, the applicant lists the Category (A) Controls and Category (B) Specific Procedures described in NUREG–0800, Subsection 13.5.1.1. The staff's review of these listed procedures, regulatory requirements, and proposed completion times per COL FSAR Table 13.5-202 concluded that the applicant has provided acceptable and adequate descriptions of procedural controls in the COL FSAR that meet the criteria in NUREG–0800, Subsection 13.5.1.1.

13.5.1.5 Post Combined License Activities

The applicant identifies the following commitment under the Supplemental Information STD SUP 13.5-4:

> Procedures are developed prior to fuel load to allow sufficient time for plant staff familiarization and to allow NRC staff adequate time to review the procedures and to develop operator licensing examinations.

13.5.1.6 Conclusion

The NRC staff's finding related to information incorporated by reference is in NUREG–1966. NRC staff reviewed the application and checked the referenced DCD. The staff's review confirms that the applicant has addressed the required information. Pursuant to 10 CFR 52.63(a)(5) and 10 CFR Part 52, Appendix E, Section VI.B.1, all nuclear safety issues relating to this section that were incorporated by reference have been reviewed and are acceptable.

In addition, the staff compared the additional COL items and supplemental information in the application to the relevant NRC regulations, the guidance in Section 13.5.1, Subsections 13.5.1.1 and 13.5.2.1 of NUREG-0800; and other NRC RGs. The staff's review concludes that the applicant has presented adequate information in North Anna 3 FSAR to meet the guidance in NUREG–0800. Thus, the applicant has adequately addressed COL Item STD COL 13.5-1-A, Supplemental Information Items STD SUP 13.5-1 through 13.5-16, and CWR COL 13.5-4-A relating Plant Operating Procedures Development, and the information in this section is therefore acceptable.

13.5.2 Operating and Maintenance Procedures

13.5.2.1 Introduction

This section of the FSAR provides the operating and maintenance procedures that the plant staff uses to ensure that routine operating, off-normal, and emergency activities are conducted in a safe manner. The plant procedures provide a brief description of the nature and content of the procedures and a schedule for preparing appropriate written operating and maintenance procedures. This FSAR section also delineates in the description of operating and maintenance procedures the functional position for a procedural revision and approval process before implementation.

13.5.2.2 Summary of Application

Section 13.5.2 of North Anna 3 COL FSAR, Revision 8, incorporates by reference Section 13.5.2 of the certified ESBWR DCD, Revision 10. In addition, in COL FSAR Section 13.5.2, the applicant provides the following:

COL Items

- STD COL 13.5-2-A

Operating Procedures are developed in accordance with Section 13.5.2.1, and Maintenance Procedures are developed in accordance with Section 13.5.2.2.6.1.

- STD COL 13.5-3-A

Emergency Procedures are developed in accordance with Section 13.5.2.1.4.

- CWR COL 13.5-4-A

A Plant Operating Procedures Development Plan is established in accordance with Section 13.5.2.1.

- STD COL 13.5-5-A

The scope of procedures in the Plant Operating Procedures Development Plan is addressed in Section 13.5.2.1.

- STD COL 13.5-6-A

The applicant states that procedures for calibration, inspection, and testing are included in the Plant Operating Procedures Development Plan.

Supplemental Information

- STD SUP 13.5-18 Classification of Procedures
- STD SUP 13.5-19 System Operating Procedures
- STD SUP 13.5-20 General Operating Procedures
- STD SUP 13.5-21 Abnormal (Off-Normal) Operating Procedures

- CWR SUP 13.5-22 Emergency Operating Procedures
- STD SUP 13.5-23 Alarm Response Procedures
- CWR SUP 13.5-24 Temporary Procedures
- STD SUP 13.5-25 Fuel Handling Procedures
- STD SUP 13.5-26 Maintenance and Other Operating Procedures
- STD SUP 13.5-27 Plant Radiation Protection Procedures
- STD SUP 13.5-28 Emergency Preparedness Procedures
- STD SUP 13.5-29 Instrument Calibration and Test Procedures
- STD SUP 13.5-30 Chemistry Procedures
- STD SUP 13.5-31 Radioactive Waste Management Procedures
- STD SUP 13.5-32 Maintenance, Inspection, Surveillance, and Modification Procedure
- STD SUP 13.5-33 Inspection Procedures
- STD SUP 13.5-34 Modification Procedures
- STD SUP 13.5-35 Heavy Load Handling Procedures
- STD SUP 13.5-36 Material Control Procedures
- STD SUP 13.5-37 Security Procedures
- STD SUP 13.5-38 Refueling and Outage Planning Procedures
- STD SUP 13.5-40 Procedure related to Refueling Cavity Integrity
- STD SUP 13.5-41 Special Nuclear Material (SNM) Material Control and Accounting Procedures

Each standard or site-specific supplement defines the procedure of interest.

13.5.2.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is in NUREG-1966. In addition, the relevant requirements of the Commission regulations for the plant operating and maintenance procedures, and the associated acceptance criteria, are in Subsection 13.5.2.1 of NUREG–0800.

In particular, the relevant provisions for reviewing plant procedures are based on (1) meeting the requirements of methods and criteria described in 10 CFR 52.79(a)(14), (26), (29)(i), (29)(ii), (33), and (34) and TMI Action Plan Items I.C.1 and I.C.9; and (2) meeting the guidance of NUREG–0800, Subsection 13.5.2.1. The review of FSAR information related to the development of emergency procedures is based on meeting the requirements of 10 CFR 52.79(a)(14), (26), (29)(i), (29)(ii), (33), and (34) and the guidance of NUREG–0800, Subsection 13.5.2.1.

13.5.2.4 Technical Evaluation

As documented in NUREG–1966, NRC staff reviewed and approved Section 13.5.2 of the certified ESBWR DCD, Revision 10 . The staff reviewed Section 13.5.2 of North Anna 3 COL FSAR and checked the referenced ESBWR DCD to ensure that the combination of the information in the COL FSAR and the information in the ESBWR DCD appropriately represents the complete scope of information relating to this review topic.[1] The staff's review confirmed that the information in the application and the information incorporated by reference address the required information relating to operating and maintenance procedures. In addition, the staff reviewed the resolution to the following COL and supplemental information

items included under Section 13.5.2 of the COL FSAR. In this review, the staff used the applicable sections of NUREG–0800 as guidance.

COL Items

- STD COL 13.5-2-A Plant Operating Procedures Development Plan

The third paragraph of Section 13.5.2 in DCD Tier 2 is replaced with the following:

> Operating Procedures are developed in accordance with Subsection 13.5.2.1 and Maintenance Procedures are developed in accordance with Subsection 13.5.2.2.6.1.

The ESBWR DCD Tier 2, Section 13.5.2 states that the development of operating and maintenance procedures is the responsibility of the applicant. The staff reviewed Subsection 13.5.2.1 and determined that it addresses the development of operating procedures, which will be developed at least 6 months before fuel load. The staff reviewed Subsection 13.5.2.2.6.1 and determined that it addressed the development of maintenance procedures. The staff concluded that these paragraphs meet the criteria in NUREG–0800, Subsection 13.5.2.1.

- STD COL 13.5-3-A Emergency Procedures Development

The last sentence of Section 13.5.2 in the ESBWR DCD Tier 2 is replaced with the following:

> Emergency Procedures are developed in accordance with Subsection 13.5.2.1.4.

The ESBWR DCD Tier 2, Section 13.5.2 states that the applicant will develop emergency procedures. In COL FSAR Section 13.5.2, the applicant states that the new Subsection 13.5.2.1.4 was added to address the development of emergency procedures. The staff reviewed Subsection 13.5.2.1.4 and determined that it addresses the development of emergency procedures.

The NUREG-0800, Section 13.5.2.1, states that the procedures generation package (PGP) should include a description of the process used to develop plant-specific technical guidelines (P-STG) from the GTG, the identification of significant deviations from the generic guidelines, and a description of the process used for identifying operator information and control requirements; a plant-specific writer's guide; a description of the program for V&V of EOPs; and a description of the program for training operators on EOPs. In FSAR Section 13.5.2.1.4, the applicant stated that the PGP would include the identification of significant deviations from the generic guidelines, and a description of the process used for identifying operator information and control requirements; a generic writer's guide; a description of the program for V&V of EOPs; and a description of the program for training operators on EOPs. The applicant also stated that the procedure development program, as described in the PGP for EOPs, is submitted to the NRC at least three months prior to the planned date to begin formal operator training on the EOPs. The PGP did not include a description of the process used to develop P-STGs from the GTGs or a plant-specific writer's guide. The staff concluded that the applicant-provided added paragraph did not meet the criteria in NUREG-0800, Section 13.5.2.1. The staff issued RAI 13.05.02.01, 13.05.02.01-3 and 13.05.02.01-4 requesting Dominion to address the missing P-STG development process description and plant-specific writer's guide. The applicant responded to RAI 13.05.02.01, 13.05.02.01-3, and 13.05.02.01-4, stating that it will provide a P-SWG, P-STGs, and identify the group within the operating organization responsible

for maintaining procedures. The staff determined that these responses are acceptable and has verified that the applicable standards have been incorporated into the North Anna 3 FSAR Revision 8, Section 13.5.2.1.4. The staff concluded that this new subsection meets the criteria in NUREG–0800, Subsection 13.5.2.1.

- CWR COL 13.5-4-A Plant Operating Procedures Development Plan

The COL Item CWR COL 13.5-4-A replaces the fifth paragraph of the DCD Tier 2 with the following:

> A Plant Operating Procedures Development Plan is established in accordance with Subsection 13.5.2.1.

The ESBWR DCD Tier 2, Section 13.5.2 states that the applicant will develop a Plant Operating Procedures Development Plan. In the North Anna 3 COL FSAR Section 13.5.2, the applicant states that the new Subsection 13.5.2.1 was added to address the establishment of a Plant Operating Procedures Development Plan. The staff reviewed paragraph 13.5.2.1 and determined that it addresses the establishment of a Plant Operating Procedures Development Plan. The staff concluded that this new paragraph meets the criteria in NUREG–0800, Subsection 13.5.2.1.

- STD COL 13.5-5-A Procedures Included in Scope of Plan

The COL Item STD COL 13.5-5-A replaces the second paragraph of the DCD Tier 2 with the heading “Procedures Related to Refueling Cavity Integrity” with the following:

> The scope of procedures in the Plant Operating Procedures Development Plan is addressed in Subsection 13.5.2.1.

The ESBWR DCD Tier 2, Section 13.5.2 states that the applicant will include procedures for handling heavy loads in the scope of the Plant Operating Procedures Development Plan. In North Anna 3 COL FSAR Section 13.5.2, the applicant states that the Plant Operating Procedures Development Plan is established in accordance with Section 13.5.2.1.

The staff reviewed Subsection 13.5.2.1 and determined that it included procedures for handling heavy loads within the scope of the Plant Operating Procedures Development Plan. The staff concluded that this new subsection meets the criteria in NUREG–0800, Subsection 13.5.2.1.

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

STD COL 13.5-6-A replaces the second sentence of the subsection “Procedures for Calibration, Inspection and Testing” to the DCD Tier 2 with the following:

> Procedures for calibration, inspection, and testing are included in the Plant Operating Procedures Development Plan.

The ESBWR DCD Tier 2, Subsection 13.5.2.1 states that the applicant will ensure that all portions of the safety-related logic circuitry are adequately covered in surveillance procedures described in GL 96-01, “Testing of Safety Related Logic Circuits.” In North Anna 3 COL FSAR Section 13.5.2.1, the applicant has added to the procedures for calibration, inspection, and testing to the Plant Operating Procedures Development Plan to ensure they are appropriately

developed and maintained. The staff of the Plant Operating Procedures Development Plan determined that procedures will be developed and maintained and the calibration, inspection, and testing procedures will adequately test all portions of safety-related logic circuitry in a manner that, is as described in GL 96-01. The staff concluded that this meets the criteria in NUREG–0800, Subsection 13.5.2.1.

Supplemental Information

- STD SUP 13.5-18 Classification of Procedures

STD SUP 13.5-18 states the following:

> The classifications of operating procedures are:
>
> - System Operating Procedures
> - General Operating Procedures
> - Abnormal (Off-Normal) Operating Procedures
> - Emergency Operating Procedures
> - Alarm Response Procedures.

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should identify the different classifications of procedures (e.g., system procedures, general plant procedures, abnormal procedures, emergency operating procedures, and alarm procedures) that the operators will use in the CR and locally in the plant for plant operations. In FSAR Section 13.5.2, the applicant states that the classifications of operating procedures are system operating procedures, general operating procedures, abnormal (off-normal) operating procedures, emergency operating procedures, and alarm response procedures. The staff concluded that the applicant has provided acceptable procedure classification information that meets the criteria in NUREG-0800, Subsection 13.5.2.1.

- STD SUP 13.5-19

System Operating Procedures in FSAR Subsection 13.5.2.1.1, STD SUP 13.5-19 states the following:

> Instructions for energizing, filling, venting, draining, starting up, shutting down, changing modes of operation, returning to service following testing or maintenance (if not contained in the applicable procedure), and other instructions appropriate for operation of systems are delineated in system procedures.
>
> System procedures contain check-off lists, where appropriate, which are prepared in sufficient detail to provide an adequate verification of the status of the system.

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the general format and content of the different classifications of procedures. In FSAR Section 13.5.2, Subsection 13.5.2.1.1 describes system operating procedures and their general format and content. The staff concluded that the applicant has provided descriptions of the system operating procedures that meet the criteria in NUREG–0800, Subsection 13.5.2.1.

- STD SUP 13.5-20

General Operating Procedures FSAR Subsection 13.5.2.1.2, STD SUP 13.5-20 states the following:

> General operating procedures provide instructions for performing integrated plant operations involving multiple systems, such as plant startup and shutdown.
>
> These procedures provide a coordinated means of integrating procedures together to change the mode of plant operation or to achieve a major plant evolution. Check-off lists are used for the purpose of confirming completion of major steps in proper sequence.
>
> Typical types of general operating procedures are described as follows:
>
> - Startup procedures provide instruction for starting the reactor from cold or hot conditions, establishing power operation, and recovering from reactor trips.
>
> - Shutdown procedures guide operations during and following controlled shutdown or reactor trips, and include instructions for establishing or maintaining hot standby and safe or cold shutdown conditions, as applicable.
>
> - Power operation and load changing procedures provide instruction for steady-state power operation and load changing.

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the different classifications of procedures (e.g., general plant procedures) and the general format and content of the different classifications of procedures. In FSAR Section 13.5.2, Subsection 13.5.2.1.2 describes general operating procedures and their general format and content. The staff concluded that the applicant has provided descriptions of general operating procedures that are acceptable and meet the criteria in NUREG–0800, Subsection 13.5.2.1.

- STD SUP 13.5-21 Abnormal Operating Procedures

In FSAR Subsection 13.5.2.1.3, STD SUP 13.5-21 states the following:

> Abnormal operating procedures for correcting abnormal conditions are developed for those events where system complexity might lead to operator uncertainty. Abnormal operating procedures describe actions to be taken during other than routine operations, which, if continued, could lead to either material failure, personnel harm, or other unsafe conditions.
>
> Abnormal procedures are written so that a trained operator knows in advance the expected course of events or indications that identify an abnormal situation and the immediate action to be taken.

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the different classifications of procedures (e.g., abnormal operating procedures) and the general format and content of the different classifications of procedures. In FSAR Section 13.5.2 Subsection 13.5.2.1.3 describes abnormal (off-normal) procedures and their general format and content.

The staff concluded that the applicant has provided descriptions of abnormal procedures that are acceptable and meet the criteria in NUREG–0800, Subsection 13.5.2.1.

- CWR SUP 13.5-22 Emergency Operating Procedures In FSAR

Subsection 13.5.2.1.4, CWR SUP 13.5-22 states the following:

> EOPs are procedures that direct actions necessary for the operators to mitigate the consequences of transients and accidents that cause plant parameters to exceed reactor protection system or ESF actuation setpoints.
>
> Emergency operating procedures include appropriate guidance for the operation of plant post-72-hour equipment, and are developed as appropriate per the guidance of:
>
> - NUREG-0737, "Clarification of TMI Action Plan Requirements," Items I.C.1 and I.C.9
> - The QAPD

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the different classifications of procedures (e.g., emergency operating procedures) and the general format and content of the different classifications of procedures. In FSAR, Section 13.5.2.1.4, the applicant added a new paragraph that described emergency operating procedures and their general format and content. The staff concluded that the applicant has provided descriptions of emergency operating procedures that meet the criteria in NUREG–0800, Subsection 13.5.2.1.

- STD SUP 13.5-23 Alarm Response Procedures

In FSAR Subsection 13.5.2.1.5, STD SUP 13.5-23 states the following:

> Procedures are provided for annunciators (alarm signals) identifying the proper operator response actions to be taken. Each of these procedures normally contains: a) the meaning of the annunciator or alarm, b) the source of the signal, c) any automatic plant responses, d) any immediate operator action, and e) the long range actions. When corrective actions are very detailed and/or lengthy, the alarm response may refer to another procedure.

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the different classifications of procedures (e.g., alarm response procedures) and the general format and content of the different classifications of procedures. In FSAR, Section 13.5.2.1.5, the applicant added a new paragraph that described alarm response procedures and their general format and content. The staff concluded that the applicant has provided descriptions of alarm response procedures that are acceptable and meet the criteria in NUREG–0800, Subsection 13.5.2.1.

- CWR SUP 13.5-24 Temporary Procedures

In FSAR Subsection 13.5.2.1.6, CWR SUP 13.5-24 states the following:

Temporary procedures are issued during the operational phase only when permanent procedures do not exist for the following activities: to direct operations during testing, refueling, maintenance, and modifications; to provide guidance in unusual situations not within the scope of the normal procedures; and to provide orderly and uniform operations for short periods when the plant, a system, or a component of a system is performing in a manner not covered by existing detailed procedures, or has been modified or extended in such a manner that portions of existing procedures do not apply.

Temporary operating procedures are developed under established administrative guidelines. They include designation of the period of time during which they may be used and adhere to the QAPD and Technical Specifications, as applicable.

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the different classifications of procedures (e.g., temporary procedures) and the general format and content of the different classifications of procedures. In FSAR, Section 13.5.2.1.6, the applicant added a new paragraph that described temporary procedures and their general format and content. The staff concluded that the applicant has provided descriptions of temporary procedures that meet the criteria in NUREG–0800, Subsection 13.5.2.1 and are therefore acceptable.

- STD SUP 13.5-25 Fuel Handling

Procedures in FSAR Subsection 13.5.2.1.7, STD SUP 13.5-25 states the following:

Fuel handling operations, including fuel receipt, identification, movement, storage, and shipment, are performed in accordance with written procedures. Fuel handling procedures address, for example, the status of plant systems required for refueling; inspection of replacement fuel and control rods; designation of proper tools; proper conditions for spent fuel movement and storage; proper conditions to prevent inadvertent criticality; proper conditions for fuel cask loading and movement; and status of interlocks, reactor trip circuits, and mode switches. These procedures provide instructions for use of refueling equipment, actions for core alterations, monitoring core criticality status, accountability of fuel, and partial or complete refueling operations.

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the different classifications of procedures (e.g., fuel handling procedures) and the general format and content of the different classifications of procedures. In FSAR, Section 13.5.2.1.7, the applicant added a new paragraph that described fuel handling procedures and their general format and content. The staff concluded that the applicant has provided descriptions of fuel handling procedures that meet the criteria in NUREG–0800, Subsection 13.5.2.1 and are therefore acceptable.

- STD SUP 13.5-26 Maintenance and Other Operating Procedures
  FSAR Subsection 13.5.2.2, STD SUP 13.5-26 states the following:

The QAPD provides guidance for procedural adherence. The technical review for elements of the QAPD for Dominion which addresses this STD SUP 13.5-26 is evaluated in Section 17.5 of this SER.

- STD SUP 13.5-27 Plant Radiation Protection

Procedures in FSAR Subsection 13.5.2.2.1, STD SUP 13.5-27 states the following:

> The plant radiation protection program is contained in procedures. Procedures are developed and implemented for such things as: maintaining personnel exposures, plant contamination levels, and plant effluents ALARA; monitoring both external and internal exposures of workers, considering industry-accepted techniques; performing routine radiation surveys; performing environmental monitoring in the vicinity of the plant; monitoring radiation levels during maintenance and special work activities; evaluating radiation protection implications of proposed modifications; management of radioactive wastes for offsite shipment, disposal, and treatment; and maintaining radiation exposure records of workers and others.

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the different classifications of procedures (e.g., plant radiation protection procedures) and the general format and content of the different classifications of procedures. In FSAR Section 13.5.2, the applicant adds new Subsection 13.5.2.2.1 that describes plant radiation protection procedures and their general format and content. The staff concluded that the applicant has provided plant radiation protection procedures that meet the criteria in NUREG–0800, Subsection 13.5.2.1 and are therefore acceptable.

- STD SUP 13.5-28 Emergency Preparedness

Procedures in FSAR Subsection 13.5.2.2.2, STD SUP 13.5-28 states the following:

> A discussion of emergency preparedness procedures can be found in the Emergency Plan. A list of implementing procedures is maintained in the Emergency Plan.

The technical review for STD SUP 13.5-28 is in Section 13.3 of this SER.

- STD SUP 13.5-29 Instrument Calibration and Test

Procedures In FSAR Subsection 13.5.2.2.3, STD SUP 13.5-29 states the following:

> The QAPD provides a description of procedural requirements for instrumentation calibration and testing.

The technical review for elements of the QAPD for Dominion which address this STD SUP 13.5-29 is in Section 17.5 of this SER.

- STD SUP 13.5-30 Chemistry Procedures

In FSAR Subsection 13.5.2.2.4, STD SUP 13.5-30 states the following:

> Procedures provided for chemical and radiochemical control activities include the nature and frequency of sampling and analyses; instructions for maintaining fluid quality within prescribed limits; the use of control and diagnostic parameters; and limitations on concentrations of agents that could cause corrosive attack, foul heat transfer surfaces or become sources of radiation hazards due to activation.
>
> Procedures are also provided for the control, treatment, and management of radioactive

wastes and control of radioactive calibration sources.

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the different classifications of procedures (e.g., chemistry procedures) and the general format and content of the different classifications of procedures. In FSAR, Section 13.5.2.2.4, the applicant added a new paragraph that described chemical and radiochemical control activities procedures and their general format and content. The staff concluded that the applicant has provided chemistry procedures that meet the criteria in NUREG–0800, Subsection 13.5.2.1 and are therefore acceptable.

- STD SUP 13.5-31 Radioactive Waste Management

Procedures In FSAR Subsection 13.5.2.2.5, STD SUP 13.5-31 states the following:

> Procedures for the operation of the radwaste processing systems provide for the control, treatment, and management of onsite radioactive wastes. These procedures are addressed in Section 13.5.2.1.1, System Operating Procedures.

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the different classifications of procedures (e.g., radioactive waste management procedures) and the general format and content of the different classifications of procedures. In FSAR, Section 13.5.2.2.5, the applicant added a new paragraph that described radioactive waste management procedures and their general format and content. The staff concluded that the applicant has provided radioactive waste management procedures that meet the criteria in NUREG–0800 Subsection 13.5.2.1 and are therefore acceptable.

- STD SUP 13.5-32 Maintenance, Inspection, Surveillance, and Modification Procedures

In FSAR Subsection 13.5.2.2.6.1, STD SUP 13.5-32 states the following:

> Maintenance procedures describe maintenance planning and preparation activities. Maintenance procedures are developed considering the potential impact on the safety of the plant, license limits, availability of equipment required to be operable and possible safety consequences of concurrent or sequential maintenance, testing, or operating activities.

In NUREG-0800, Section 13.5.2.1, the staff stated that the application should describe the different classifications of procedures, e.g., maintenance, inspection, surveillance, and modification procedures, and the general format and content of the different classifications of procedures should be described, though maintenance, inspection, surveillance, and modification procedures are not specifically required to be described. In FSAR, Section 13.5.2.2.6 and Section 13.5.2.2.6.1, the applicant added a new section that described maintenance, inspection, surveillance, and modification procedures and their general format and content. The staff concluded that the applicant-provided maintenance, inspection, surveillance, and modification procedures meet the criteria found in NUREG-0800, Section 13.5.2.1. The staff determined that this is acceptable, as the requirements of NUREG-0800, Chapter 13.5.2.1 are met.

- STD SUP 13.5-33 Inspection Procedures

In FSAR Subsection 13.5.2.2.6.2, STD SUP 13.5-33 states the following:

> The QAPD provides a description of procedural requirements for inspections.

In FSAR Subsection 13.5.2.2.6.3, STD SUP 13.5-33 states the following:

> The QAPD provides a description of procedural requirements for surveillance testing. Surveillance testing procedures are written in a manner that adequately tests all portions of safety-related logic circuitry as described in Generic Letter 96-01, "Testing of Safety Related Logic Circuits."

The technical review for elements of the QAPD for Dominion which address this STD SUP 13.5-33 is in Section 17.5 of this SER.

- STD SUP 13.5-34 Modification Procedures

In FSAR Subsection 13.5.2.2.6.4, STD SUP 13.5-34 states the following:

> Plant modifications and changes to setpoints are developed in accordance with approved procedures. These procedures control necessary activities associated with the modifications such that they are carried out in a planned, controlled, and orderly manner. For each modification, design documents such as drawings, equipment and material specifications, and appropriate design analyses are developed, or the as-built design documents are utilized. Separate reviews are conducted by individuals knowledgeable in both technical and QA requirements to verify the adequacy of the design effort.
>
> Proposed modifications that involve a license amendment or a change to Technical Specifications are processed as proposed license amendment request.
>
> Plant procedures impacted by modifications are changed to reflect revised plant conditions prior to declaring the system operable and cognizant personnel who are responsible for operating and maintaining the modified equipment are adequately trained.

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the different classifications of procedures (e.g., modification procedures) and the general format and content of the different classifications of procedures. In FSAR, Section 13.5.2.2.6.4, the applicant added a new section that described modification procedures and their general format and content. The staff concluded that the applicant has provided modification procedures that meet the criteria in NUREG–0800, Subsection 13.5.2.1 and are therefore acceptable.

- STD SUP 13.5-35 Heavy Load Handling Procedures In FSAR

Subsection 13.5.2.2.6.5, STD SUP 13.5-35 states the following:

> This topic is discussed in Subsection 9.1.5.8 of this SER.

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the different classifications of procedures (e.g., heavy-load handling procedures) and the general format and content of the different classifications of procedures. In FSAR Section 13.5.2, the applicant

refers to the revised Subsection 9.1.5.8 that describes heavy-load handling procedures and their general format and content. The staff concluded that the applicant has provided heavy-load handling procedures that meet the criteria in NUREG–0800, Subsection 13.5.2.1 and are therefore acceptable.

- STD SUP 13.5-36 Material Control Procedures

In FSAR Subsection 13.5.2.2.7, STD SUP 13.5-36 states the following:

> The QAPD provides a description of procedural requirements for material control.

The technical review for elements of the QAPD for Dominion which address this STD SUP 13.5-36 is in Section 17.5 of this SER.

- STD SUP 13.5-37 Security Procedures

In FSAR Subsection 13.5.2.2.8, STD SUP 13.5-37 states the following:

> A discussion of security procedures is provided in the Security Plan.

The technical review for STD SUP 13.5-37 is in Section 13.6 of this SER.

- STD SUP 13.5-38 Refueling and Outage Planning Procedures

In FSAR Subsection 13.5.2.2.9, STD SUP 13.5-38 states the following:

> Procedures provide guidance for the development of refueling and outage plans, and as a minimum address the following elements:
>
> - An outage philosophy which includes safety as a primary consideration in outage planning and implementation.
> - Separate organizations responsible for scheduling and overseeing the outage and provisions for an independent safety review team that would be assigned to perform final review and grant approval for outage activities.
> - Control procedures, which address both the initial outage plan and safety-significant changes to schedule.
> - Provisions that activities receive adequate resources.
> - Provisions that defense-in-depth during shutdown and margins are not reduced or provisions that an alternate or backup system must be available if a safety system or a defense-in-depth system is removed from service
> - Provisions that personnel involved in outage activities are adequately trained including operator simulator training to the extent practicable, and training of other plant personnel, including temporary personnel, commensurate with the outage tasks they are to perform.

- The guidance described in NUMARC 91-06, “Guidelines for Industry Actions to Assess Shutdown Management,” to reduce the potential for loss of reactor coolant system boundary and inventory during shutdown conditions (Reference 13.5-203).

The NUREG–0800, Subsection 13.5.2.1 states that the applicant should describe the different classifications of procedures (e.g., refueling and outage planning procedures) and the general format and content of the different classifications of procedures. In FSAR, Section 13.5.2.2.9, the applicant added a new section that described refueling and outage planning procedures and their general format and content. The staff concluded that the applicant has provided refueling and outage planning procedures that meet the criteria in NUREG–0800, Subsection 13.5.2.1 and are therefore acceptable.

- STD SUP 13.5-40 Procedure related to Refueling Cavity Integrity

In FSAR Subsection 13.5.2.2.10, STD SUP 13.5-40 states the following:

Procedures will be established and implemented for:

- Monitoring refueling cavity seal leakage,
- Responding to refueling cavity and buffer pool drain down events, and
- Performing periodic maintenance and inspection of the refueling cavity seal and the Main Steam and Isolation Condenser System plugs in accordance with vendor recommendations.

In NUREG-0800, Section 13.5.2.1, the staff stated that the application should describe the different classifications of procedures, e.g., refueling cavity integrity procedures, and the general format and content of the different classifications of procedures should be described, though refueling cavity integrity procedures are not specifically required to be described. In FSAR, Section 13.5.2.2.10, the applicant added a new section that described refueling cavity integrity procedures and their general format and content. The staff concluded that the applicant-provided described refueling cavity integrity procedures meet the criteria found in NUREG-0800, Section 13.5.2.1. The staff determined that this is acceptable, as the requirements of NUREG-0800, Chapter 13.5.2.1 are met.

- STD SUP 13.5-41 Special Nuclear Material (SNM) Material Control and Accounting Procedures

In FSAR Subsection 13.5.2.2.11, STD SUP 13.5-41 states the following:

A material control and accounting system consisting of special nuclear material accounting procedures is utilized to delineate the requirements, responsibilities, and methods of special nuclear material control from the time special nuclear material is received until it is shipped from the plant. These procedures provide detailed steps for SNM shipping and receiving, inventory, accounting, and preparing records and reports. The Special Nuclear Material (SNM) Material Control and Accounting (MC&A) Program description is provided in Appendix 13CC.

In NUREG-0800, Section 13.5.2.1, the staff stated that the application should describe the different classifications of procedures, e.g., SNM material control and accounting procedures, and the general format and content of the different classifications of procedures should be described, though SNM material control and accounting procedures are not specifically required to be described. In FSAR, Section 13.5.2.2.11, the applicant added a new section that described SNM material control and accounting procedures and their general format and content. The detailed program description is provided in North Anna 3 FSAR Appendix 13CC. The staff concluded that the applicant-provided SNM material control and accounting procedures meet the criteria found in NUREG-0800, Section 13.5.2.1. The staff determined that this is acceptable, as the requirements of NUREG-0800, Chapter 13.5.2.1 are met.

13.5.2.5 Post Combined License Activities

The applicant identified the following post COL activities in development of plant procedures:

- Procedures are developed prior to fuel load to allow sufficient time for plant staff familiarization and to allow NRC staff adequate time to review the procedures and to develop operator licensing examinations (STD SUP 13.5-4).

- Operating procedures are developed at least six months prior to fuel load to allow sufficient time for plant staff familiarization and to allow NRC staff adequate time to review the procedures and to develop operator licensing examinations (STD COL 13.5-6-A).

- The procedure development program, as described in the PGP [procedure generation package] for EOPs, is submitted to the NRC at least three months prior to the planned date to begin formal operator training on the EOPs (STD COL 13.5-3-A).

13.5.2.6 Conclusion

The NRC staff's finding related to information incorporated by reference is in NUREG–1966. NRC staff reviewed the application and checked the referenced DCD. The staff's review confirms that the applicant has addressed the required information, related to this section. Pursuant to 10 CFR 52.63(a)(5) and 10 CFR Part 52, Appendix E, Section VI.B.1, all nuclear safety issues relating to this section that were incorporated by reference have been reviewed and are acceptable.

In addition, the staff compared the additional COL and supplemental information items in the COL application to the relevant NRC regulations, the guidance in Section 13.5 of NUREG-0800, and other NRC RGs. The staff's review concludes that the applicant has provided the required information to satisfy the requirements of the NRC regulations. The applicant has adequately addressed COL Items STD COL 13.5-2-A, 13.5-3-A, 13.5-5-A, and 13.5-6-A; Supplemental Items STD SUP 13.5-18, 13.5-19, 13.5-20, 13.5-21, 13.5-23, 13.5-25, 13.5-26, 13.5-27, 13.5-28, 13.5-29, 13.5-30, 13.5-31, 13.5-32, 13.5-33, 13.5-34, 13.5-35, 13.5-36, 13.5-37, 13.5-38, 13.5-40 and 13.5.41; and site-specific COL and Supplemental Items CWR COL 13.5-4-A, CWR SUP 13.5-22, and CWR SUP 13.5-24 relating to plant procedures. The staff finds the applicant has provided the required procedure information in its application and therefore it is acceptable.

13.6 Physical Security

13.6.1 Introduction

The North Anna Unit 3 COL application describes the applicant's physical protection program, which is intended to meet the NRC regulations for protection against the design basis threat (DBT) to design safeguards systems to protect against acts of radiological sabotage as required by 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 applicant chose to update the site's Part 8 of the COL application concerning the NRC-endorsed security plan template. In this update, the applicant chose to change from NEI 03-12, Revision 6 to Revision 7, in order to maintain consistency with Dominion's fleet operating security plans.

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 ESBWR design, which includes design of physical protection systems within the design of the vital area and vital systems, as described in the ESBWR DCD including topical report, NEDE-33389, "ESBWR Security Enhancements Report," NEDE-33390, "ESBWR Interim Compensatory Measures Assessment Report," and NEDE-33391, "The ESBWR Safeguards Assessment Report." Part 8 of the COL application, consisting of the North Anna Physical Security Plan (PSP), Training and Qualification Plan (T&QP), and Safeguards Contingency Plan (SCP) (collectively, security plan), is referenced in Section 13.6 of the North Anna COL FSAR to describe the physical protection program and physical protection systems that are not addressed within the scope of the standard ESBWR design for meeting NRC performance and prescriptive requirements for physical protection stated in 10 CFR Part 73, "Physical Protection of Plants and Materials." Because of information security requirements, the NRC staff's evaluation of the physical security protection program presented in this publicly-available SER does not include the same level of detail as the safeguards information (SGI) version. Those persons with the correct access authorization and need-to-know may view the SGI version of the North Anna COL application Section 13.6 SER, which is located in the NRC's Secure LAN.

13.6.2 Summary of Application

Section 13.6, "Physical Security," of the North Anna COL FSAR, Revision 8, incorporates by reference Section 13.6 of the certified ESBWR DCD, Revision 10.

Part 8 – Safeguards/Security Plans

In a letter dated November 26, 2007, Dominion submitted a security plan to the NRC as part of the COL application for proposed North Anna 3. In a letter dated March 30, 2009, Dominion submitted Revision 1 to the North Anna security plan. In a letter dated June 28, 2010, Dominion submitted Revision 2 to the security plan. In a letter dated July 18, 2011, Dominion submitted Revision 3 to the security plan. In a letter dated July 31, 2013, Dominion submitted Revision 4 to the security plan. In a letter dated March 30, 2015, Dominion submitted Revision 5 to the security plan.

In a letter dated December 18, 2013, Dominion submitted revisions to the Safeguards Information documents in Part 8 of the North Anna 3 COLA for NRC review. Enclosure 1 provides the Evaluation of CAS/SAS Design for No Single Act, Revision 4. Enclosure 2 provides Figure North Anna 3 COL 13.6-16-A, Security Site Arrangement - Fields of Fire drawings. Enclosure 3 provides GE Hitachi Nuclear Energy licensing topical report LTR NEDC - 33844P, Bomb Blast Analysis for North Anna 3.

Additionally, in the North Anna COL FSAR Section 13.6, the applicant stated as follows:

COL Information Items

- STD COL 13.6-6-A

Site key control was addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.5. A key control program will be developed and implemented prior to the milestone for PSP implementation (Table 13.4-201).

- STD COL 13.6-7-A

Redundancy and equivalency of the central alarm station (CAS) and secondary alarm station (SAS) was addressed by the applicant through the North Anna PSP, Section 15.4, and in the "Evaluation of CAS/SAS Design for No Single Act," Revision 3.

- NAPS COL 13.6-8-A

The no single act requirement for the CAS and SAS was addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.2. A description of the design of the CAS and SAS and analysis of single act security events is contained in the North Anna, "Evaluation of CAS/SAS Design for No Single Act," Revision 3.

- STD COL 13.6-9-A

The requirement for operational alarm response procedures was addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.3. Operating alarm response procedures will be developed and implemented in accordance with milestone defined in Subsection 13.5.2.1.

- STD COL 13.6-10-A

The requirement for operational surveillance test procedures was addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.8. The establishment of these surveillance test procedures and frequencies will be completed in accordance with the milestone for PSP implementation (Table 13.4-201).

- STD COL 13.6-11-A

Maintenance test procedures were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.8. The establishment of these testing and maintenance milestones will be completed in accordance with the milestone for PSP implementation (Table 13.4-201).

- STD COL 13.6-12-A

Operational response procedures to security events were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.2. As part of the Security Plan, the applicant will develop an integrated response strategy to a confirmed security event that provides for manual actuation of plant systems by the operators to an evolving scenario necessitating escalating operator response. This action will be completed prior to the milestone for PSP implementation (Table 13.4-201).

- STD COL 13.6-13-A

Operational alarm response procedures were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.3. This action will be completed prior to the milestone for PSP implementation (Table 13.4-201).

- STD COL 13.6-14-A

Administrative controls to sensitive cabinets were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.5. Administrative procedures will be developed prior to the milestone for PSP implementation (Table 13.4-201) to control work being performed in cabinets containing the control circuitry for systems listed in Table 4-1 of NEDE-33391.

- STD COL 13.6-15-A

Administrative controls to sensitive equipment were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.5. Administrative procedures will be developed prior to the milestone for PSP implementation (Table 13.4-201) that will require two persons, each of whom are qualified to perform the intended work, to be present during the performance of any work on systems listed in Table 4-1 of NEDE-33391.

- NAPS COL 13.6-16-A

External bullet resisting enclosures (BRE) were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.2. The applicant provided site arrangement drawings, which show the location of the external BREs and indicate the fields of fire from these locations. The applicant also described the level of protection provided to security personnel in the BREs from the effects of the equipment available to the adversaries utilizing the DBT toolkit. These items are contained in the PSP.

- NAPS COL 13.6-17-A

Site-specific locations of security barriers were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.2. The applicant provided site arrangement drawings showing the site-specific locations of security barriers that are not part of the ESBWR Certified Design, in the PSP. Additionally, prior to the milestone for PSP implementation (Table 13.4-201) the applicant will demonstrate that the security strategy described in the ESBWR Safeguards Assessment Report (NEDE-33391) remains valid.

- STD COL 13.6-18-A

Ammunition for armed responders was addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.2. Prior to the milestone for PSP implementation (Table 13.4-201), the applicant will update the security plan with an analysis to determine if armed responders require ammunition greater than the amount normally carried to include the development of necessary procedures to assure adequate ammunition is available.

- STD COL 13.6-19-A

Site-specific update of the ESBWR Safeguards Assessment Report was addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.2. Prior to the milestone for PSP implementation (Table 13.4-201), the applicant will analyze the ESBWR Safeguards Assessment Report to reflect site-specific location of engagement positions including fields of fire, to demonstrate that the security strategy can be implemented as described and the effectiveness of neutralization in the report can be achieved. The PSP will be updated based on this revised analysis.

- STD COL 13.6-20-A

Physical security ITAAC is covered in part by the ESBWR standard ITAAC that addresses the physical plant security systems and those features that are part of the standard design. The ESBWR standard ITAAC were addressed by the applicant through the ESBWR DCD Tier 1, which was incorporated by reference. The plant and site-specific physical security ITAAC not covered by the ESBWR standard design, are contained in the North Anna COL FSAR, Part 10, Section 2.2.1, "Site-Specific Physical Security ITAAC."

Supplemental Information

- STD SUP 13.6-1

In Subsection 13.6.2 of the North Anna Unit 3 COL FSAR, the applicant provides supplemental information addressing the security plans which are submitted as separate licensing documents to fulfill the requirements of 10 CFR 52.79(a)(35) and (36). The applicant also states that the security plan meets the requirements of 10 CFR Part 73 and will be maintained in accordance with the requirements of 10 CFR 52.98 and protected in accordance with 10 CFR 73.21. The security plans are categorized as security safeguards information. The safeguards version of the North Anna COL application Section 13.6 SER, which included the evaluation of STD SUP 13.6-1, is located in the NRC's Secure Local Area Network.

- NAPS ESP COL 13.6-1

In Subsection 13.6.2 of the North Anna Unit 3 COL FSAR, the applicant provides the design requirements for protected area barriers described in the Physical Security Plan. The barriers will be designed and located to support the security response strategy timelines. The specific designs for protected area barriers will be completed as part of detailed plant design before the milestone for Physical Security Plan implementation (Table 13.4-201).

The North Anna 3 ESP COL 13.6-1: A COL or CP applicant should provide specific designs for protected area barriers. Exact locations and the design of barriers are not known at the ESP stage

- CWR SUP-13.6-2

In Subsection 13.6.2 of the North Anna Unit 3 COL FSAR, the applicant provides supplemental information addressing a commitment that has been added to administrative procedures to meet the requirements of 10 CFR 73.58 for managing the safety/security interface.

- NAPS SUP 13.6-2 13.6.5 ESP Information

North Anna 3 ESP SSAR Section 13.6 is incorporated by reference.

License Conditions

- Part 10, Section 3.6

The applicant proposed a license condition in Part 10 of the North Anna COL application, which provides milestones for implementing applicable portions of the Physical Security Program.

13.6.3 Regulatory Basis

The regulatory basis of the information incorporated by reference is in NUREG–1966 related to the ESBWR DCD, Revision 10. In addition, the relevant requirements of the Commission regulations for the physical security, and the associated acceptance criteria, are summarized in Subsection 13.6.1 of NUREG-0800.

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 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 Appendix C, "Nuclear Power Plant Safeguards Contingency Plans," to 10 CFR Part 73, and a T&QP in accordance with Appendix B of 10 CFR Part 73. 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, and other related SGI in accordance with the requirements of 10 CFR 73.21, "Protection of Safeguards Information: Performance 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 it will meet the regulatory requirements of 10 CFR Part 73 that are applicable to nuclear power plants.

- The provisions of 10 CFR 52.79(a)(41) require an evaluation of the facility against the SRP in effect 6 months before the docket date of the application. The evaluation required by this section shall include an identification and description of all differences in design features, analytical techniques, and procedural measures proposed for a facility and those corresponding features, techniques, and measures given in the SRP acceptance criteria. Where a difference exists, the evaluation shall discuss how the

proposed alternative provides an acceptable method of complying with the Commission's regulations, or portions thereof, that underlie the corresponding SRP acceptance criteria. The SRP is not a substitute for the regulations, and compliance is not a requirement.

The NRC staff used NUREG-0800, Subsection 13.6.1, Revision 1, dated June 15, 2010, to complete the physical security COL review.

Regulatory guidance documents, technical reports (TR), accepted industry codes and standards that an applicant may apply to meet regulatory requirements include, but are not limited to the following:

- RG 5.7, Revision 1, "Entry/Exit Control for Protected Areas, Vital Areas, and Material Access Areas," May 1980.

- RG 5.12, "General Use of Locks in the Protection and Control of Facilities and Special Nuclear Materials," November 1973.

- RG 5.44, Revision 3, "Perimeter Intrusion Alarm Systems," October 1997.

- RG 5.62, Revision 1 "Reporting of Safeguards Events," November 1987.

- RG 5.65, "Vital Area Access Controls, Protection of Physical Protection System Equipment and Key and Lock Controls," September 1986.

- RG 5.66, Revision 1, "Access Authorization Program for Nuclear Power Plant," July 2009.

- RG 5.68, "Protection Against Malevolent Use of Vehicles at Nuclear Power Plants," August 1994.

- RG 5.74, "Managing the Safety/Security Interface," March 2009.

- RG 5.75, "Training and Qualification of Security Personnel at Nuclear Power Reactor Facilities," June 2009.

- NRC letter dated November 10, 2011, 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 7) (ADAMS Accession No. ML112800379).

- 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 (ADAMS Accession No. ML052770257).

The following documents include security-related or SGI and are not publically 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,” June 2006.

- RG 5.76, “Physical Protection Programs at Nuclear Power Reactors,” July 2009.

- NEI 03-12, Revision 7, “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,” March 27, 2003.

- RG 5.77, “Insider Mitigation Program,” March 2009.

13.6.4 Technical Evaluation

As documented in NUREG–1966, NRC staff reviewed and approved Section 13.6 of the certified ESBWR DCD, Revision 10. The staff reviewed Section 13.6 of North Anna 3 COL FSAR, Revision 8, and checked the referenced ESBWR DCD to ensure that the combination of the information in the COL FSAR and the information in the ESBWR DCD appropriately represents the complete scope of information relating to this review topic.[1] The staff’s review confirmed that the information contained in the application and the information incorporated by reference address the relevant information related to this section.

The staff reviewed the information in the COL application:

COL Information Items

- STD COL 13.6-9-A

Operational alarm response procedures were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.3.

> Operating alarm response procedures will be developed and implemented in accordance with milestone defined in Subsection 13.5.2.1.

The staff reviewed STD COL 13.6-9-A and determined that it adequately references that the operational alarm response procedures were addressed and will be developed and implemented in accordance with the milestone defined in Subsection 13.5.2.1. The site protective strategy is 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).

- STD COL 13.6-10-A

Operational surveillance test procedures were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.8.

> The establishment of these surveillance test procedures and frequencies will be completed in accordance with the milestone for Physical Security Plan implementation (Table 13.4-201).

The staff reviewed STD COL 13.6-10-A and determined that it adequately references that the operational surveillance test procedures and frequencies were addressed and will be completed in accordance with the milestone for Physical Security Plan implementation (Table 13.4-201). The site protective strategy is 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).

- STD COL 13.6-11-A

Maintenance test procedures were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.8.

> The establishment of these testing and maintenance milestones will be completed in accordance with the milestone for Physical Security Plan implementation (Table 13.4-201).

The staff reviewed STD COL 13.6-11-A and determined that it adequately references that the maintenance test procedures were addressed and will be completed in accordance with the milestone for Physical Security Plan implementation (Table 13.4-201). The site protective strategy is 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).

- STD COL 13.6-12-A

Operational response procedures to security events were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.2.

> As part of the Security Plan, the applicant will develop an integrated response strategy to a confirmed security event that provides for manual actuation of plant systems by the operators to an evolving scenario necessitating escalating operator response. This action will be completed prior to the milestone for PSP implementation (Table 13.4-201).

The staff reviewed STD COL 13.6-12-A and determined that it adequately references that the operational response procedures to security events were addressed and will be completed in accordance with the milestone for Physical Security Plan implementation (Table 13.4-201). The site protective strategy is 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).

- STD COL 13.6-13-A

Operational alarm response procedures were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.3.

This action will be completed prior to the milestone for Physical Security Plan implementation (Table 13.4-201).

The staff reviewed STD COL 13.6-13-A and determined that it adequately references that the alarm response procedures were addressed and will be completed in accordance with the milestone for Physical Security Plan implementation (Table 13.4-201). The site protective strategy is 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).

- STD COL 13.6-14-A

Administrative controls to sensitive cabinets were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.5.

> Administrative procedures will be developed prior to the milestone for Physical Security Plan implementation (Table 13.4-201) to control work being performed in cabinets containing the control circuitry (contact elements) for the systems listed in Table 4-1 of NEDE-33391 (DCD reference 13.6-6).

The staff reviewed STD COL 13.6-14-A and determined that it adequately references that the administrative controls to sensitive cabinets were addressed and will be completed in accordance with the milestone for Physical Security Plan implementation (Table 13.4-201). The site protective strategy is 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).

- STD COL 13.6-15-A

Administrative controls to sensitive equipment were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.1.1.5.

> Administrative procedures will be developed prior to the milestone for Physical Security Plan implementation (Table 13.4-201) that will require two persons, each of whom are qualified to perform the intended work, to be present during the performance of any work on systems listed in Table 4-1 of NEDE-33391.

The staff reviewed STD COL 13.6-15-A and determined that it adequately references that the administrative controls to sensitive equipment procedures were addressed and will be completed in accordance with the milestone for Physical Security Plan implementation (Table 13.4-201). The site protective strategy is 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).

- NAPS COL 13.6-16-A

External BREs were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.2.

A site arrangement drawing that shows the location of the external Bullet Resisting Enclosures and indicates the fields of fire from these locations is provided in COLA Part 8: Security, drawing NA3 COL 13.6-16-A, Security Site Arrangement - Fields of Fire. A description of the level of protection provided to security personnel stationed in Bullet Resisting Enclosures (BREs) from the effects of the equipment available to the adversaries utilizing the Design Basis Threat (DBT) toolkit (defined in DCD Reference 13.6-8) is also provided in COLA Part 8: Security, drawing NA3 COL 13.6-16-A, Security Site Arrangement - Fields of Fire.

In RAI 13.06.01-63 the NRC staff asked the applicant for additional information concerning the Site Arrangement – Fields of Fire drawing that was provided in their December 18, 2013, submittal. The NRC requested additional information to evaluate and assess the proposed defensive strategy and to compare this strategy to the information incorporated by reference from NEDE-33391 Revision 3.

In a response dated May 29, 2014 (ADAMS Accession No. ML14155A338), the applicant provided information addressing Item 1, an updated fields of fire drawing addressing Item 2, and a Table addressing Items 3 and 4 of this RAI. In RAI 13.06.01-74, the NRC staff asked an additional follow up-question regarding the December 18, 2013 submittal concerning Enclosure number 3's topical report. Since North Anna 3 will share the PA perimeter with North Anna 1 and 2, the response to RAI 13.06.01-74, and items regarding unresolved issues (URIs) concerning North Anna's operating site may affect the response to a portion of RAI 13.06.03-63.

In May 2015, the final disposition of the North Anna Units 1 and 2 URI, and disposition of RAIs 13.06.01-63 and 13.06.01-74 was satisfied during the operating site's triennial force-on-force exercise. The final outcome of this URI required North Anna to appropriately identify in the site security plan and implementing procedures the minimum number of armed responders and armed security officers required to implement the site protective strategy. Therefore, RAIs 13.06.01-63 and 13.06.01-74 are resolved and closed.

- NAPS COL 13.6-17-A

Site-specific locations of security barriers were addressed by the applicant through the North Anna COL FSAR, Subsection 13.6.2.

A site arrangement drawing that shows the location of the Protected Area (PA) fence, the isolation zone on either side of the PA fence, the Vehicle Barrier System (VBS), any Red Zone or Delay Fences, and any buildings or structures inside the PA that are not part of the Certified Design is provided in Figure 13.6-201, Security Site Arrangement – Physical Layout.

Prior to the milestone for Physical Security Plan implementation (Table 13.4-201), a demonstration that the security strategy described in the ESBWR Safeguards Assessment Report (DCD Reference 13.6-6) remains valid will be conducted.

In RAI 13.06.01-64 dated May 6, 2014 (ADAMS Accession No. ML14126A406), the NRC staff asked the applicant if they would consider relocating the detailed North Anna 3 COL 13.6-17-A drawing, Figure 13.6-201 to the site's physical security plan. In its response dated May 29, 2014 (ADAMS Accession No. ML14155A338), the applicant provided a revised figure showing

the site-specific locations of security barriers, which will be incorporated into Part 2 of the North Anna COL FSAR. Dominion determined that it was not necessary to provide the detailed information on the site's security plan because the information was significantly in excess of that required by the PSP, an can create an unnecessary configuration management challenge when minor changes to the site are made.

The NRC staff finds the response to RAI 13.06.01-64, in regard to COL Information Item 13.6-17-A, acceptable as it provides a commitment to add a revised site arrangement drawing to the North Anna 3, FSAR Part 2 showing the location of the protected area (PA) fence, isolation zone on either side of the fence, the vehicle barrier system (VBS), any red zone or delay fences, and any buildings or structures inside the PA that are not part of the design.

In FSAR Part 2, Revision 8, dated June 2014, the applicant provided a revised site arrangement drawing that shows the location of the PA fence, isolation zone on either side of the fence, the VBS, any red zone or delay fences, and any buildings or structures inside the PA that are not part of the design. Therefore, RAI 13.06.01-64 is resolved and closed.

- STD COL 13.6-18-A

Ammunition for armed responders was addressed by the applicant through the North Anna COL FSAR Subsection 13.6.2.

> Prior to the milestone for Physical Security Plan implementation (Table 13.4-201), the security plan will be updated with an analysis to determine if armed responders require ammunition greater than the amount normally carried to provide reasonable assurance of successful engagement of adversaries from various engagement positions, including the development of necessary procedures to assure adequate ammunition is available.

The staff's evaluation of STD COL 13.6-18-A is contained in Subsection 13.6.4.1.9 of this SER. The staff reviewed STD COL 13.6-18-A and determined that it adequately references that an analysis to determine if ammunition greater than the amount that is normally carried and the development of necessary procedures will be completed in accordance with the milestone for the Physical Security Plan implementation table (Table 13.4-201).

The site protective strategy is 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).

- STD COL 13.6-19-A

Site-specific update of the ESBWR Safeguards Assessment Report was addressed by the applicant through the North Anna COL FSAR Subsection 13.6.2.

> Prior to the milestone for Physical Security Plan implementation (Table 13.4-201), the security plan will be updated with an analysis of the ESBWR Safeguards Assessment Report (DCD Reference 13.6-6) reflecting site-specific locations of engagement positions including fields of fire. This applies for the external Bullet Resisting Enclosures as well as any internal positions that have external engagement responsibilities. This will include an implementation analysis of the Security Strategy described in the report,

focusing on the effectiveness of neutralization of adversaries before significant radiological sabotage can occur.

In RAI 13.06.01-35, the NRC staff asked the applicant to describe how the specific security features identified in NEDE-33391 will be tracked, incorporated, verified, and demonstrated for the North Anna 3 physical protection program. In its response dated November 19, 2009 (ADAMS Accession No. ML093270043), the applicant stated that Revision 2 of NEDE-33391, ESBWR "Safeguards Assessment Report" will be used to develop a strategy that will be tested and implemented to protect North Anna 3 against the adversary characteristics of the Design Basis Threat. The assumptions in the report will be analyzed when developing the protective strategy.

During RAI reconciliations, it was noted that significant information in the NEDE-33391, ESBWR "Safeguards Assessment Report" Revision 2 was superseded by information in NEDE-33391, Revision 3. In a letter dated October 8, 2014 (ADAMS Accession No. ML14287A288), the applicant stated that the response to RAI 13.06.01-35 would be revised to reference the latest revision [Revision 3] of the ESBWR Safeguards Assessment report. In addition, it was stated in the North Anna RAI Review letter dated August 30, 2013 (ADAMS Accession No. ML13247A394) that the response to RAI 13.06.01-35 was valid with the exception of the reference to the New Plant Physical Security Program Milestone Implementation Schedule that was proposed by NEI but later deleted.

Development of the site protective strategy is a necessary milestone in the implementation of the North Anna Security Program. The applicant stated that the milestone for the development of the site protective strategy, as well as the major changes (modifications or revisions) resulting from the development of the protective strategy will be communicated to the NRC and tracked in the 14.3-201 Operational Programs Required by NRC Regulations. The applicant stated that it will submit, within 12 months after issuance of a COL, a schedule for implementation of the North Anna Security Program that supports planning for and conduct of NRC inspections. The schedule will be updated every 6 months until 12 months before scheduled fuel load, and every month thereafter until the North Anna Security Program has been fully implemented. This is documented in the SER section Subsection 13.6.5 as License Condition 13.6-1.

The NRC staff found the applicant response to RAI 13.06.01-35 acceptable, as it provides in the FSAR, STD COL 13.6-19-A a commitment to update the PSP with the analysis from the ESBWR Safeguards Assessment Report and the protective strategy to include plant specific features, as required by 10 CFR 73.55(b). Therefore, RAI 13.03.01-35 is resolved and closed.

- STD COL 13.6-20-A

Physical security ITAAC is covered in part by the ESBWR standard ITAAC that address the physical plant security systems and those features that are part of the standard design. In addition, this COL item was also addressed by the applicant through the North Anna COL FSAR Subsection 13.6.2.

> Features of the physical security system are covered, in part, by the standard ESBWR design, while other features are plant and site specific. Accordingly, the ESBWR standard ITAAC cover the physical plant security system and address those features that are part of the standard design. NRC guidance provides suggested ITAAC that cover both the standard design and the plant and site specific features. The plant and

site-specific Physical Security ITAAC not covered by the ESBWR Tier 1, Section 2.19, are contained in Part 10, ITAAC, Section 2.2.1 Site-Specific Physical Security ITAAC.

The NRC staff reviewed STD COL 13.6-20-A and found that between the information described in the ESBWR Design Certification and the site-specific information described in Part 10, ITAAC, Section 2.2.1, Site-Specific Physical Security ITAAC, the applicant adequately addressed the Physical Security ITAAC.

License Conditions

- Part 10, Section 3.6

In FSAR Part 10, Revision 6, dated December 2013 (ADAMS Accession No. ML14007A426), the applicant proposed a license condition in Part 10 of the North Anna COL application that provides milestones for implementing applicable portions of the Security Program. 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 the operational programs in the FSAR table have been fully implemented.

Condition 2. D.(11) of the Southern Nuclear Operating Company's, Vogtle Electric Generating Plant, Unit 3, COL (ADAMS Accession No. ML112991110), which governs the Operational Program Implementation Schedule, states:

> No later than 12 months after issuance of the COL, SNC shall submit to the Director of NRO, or the Director's designee, a schedule for implementation of the operational programs listed in FSAR Table 13.4-201, including the associated estimated date for initial loading of fuel. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until all the operational programs listed in FSAR Table 13.4-201 have been fully implemented.

The staff will use Vogtle Condition 2.D.(11) as a template for the corresponding condition in a North Anna COL.

13.6.4.1 Physical Security Plan

The applicant submitted in Part 8 of the COL application the North Anna Unit 3 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 North Anna Unit 3 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 that 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 PSP submitted by North Anna Unit 3 makes references to 10 CFR 50.34(c) and (d). Since this is a Combined Operating License Application which includes a common protected area (PA) for both operating and new reactors, the references also include 10 CFR 52.79(a)(35)(i), (36)(i) and (36)(ii). The staff evaluated the North Anna Unit 3 Security Plans only.

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) and 10 CFR 73.55(c)(1)(ii).

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, "Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors against Radiological Sabotage," 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.

In the July 18, 2011 cover letter response to RAI questions 13.06-26, 13.06-15, and 13.06-16, "SRP 13.06: RESPONSE TO RAI LETTER 55," the applicant provided the following statement to clarify the intent for the separation of the COL security plan and the operating site fleet security plan, and how it would be reassembled after receipt of license: "The COLA PSP was created by copying information from the operating fleet PSP applicable to North Anna Units 1 and 2 and then adding information applicable to North Anna Unit 3. The COLA PSP is submitted as part of the license application to provide assurance of physical protection of North Anna Unit 3 in accordance with applicable regulatory requirements. North Anna Units 1 and 2 will continue to operate in accordance with the operating fleet PSP. After receipt of the license, the information in the COLA PSP will be included in the operating fleet PSP, with changes provided to the next submission of the North Anna Unit 3 COLA."

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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(c) and (d), and therefore is acceptable.

13.6.4.1.1 Introduction and Facility Physical Layout

The provisions of 10 CFR 52.79(a)(35) require that the application include a physical security plan describing how the applicant will meet the requirements of 10 CFR Part 73 (and 10 CFR Part 11, "Criteria and Procedures for Determining Eligibility for Access to or Control over special nuclear material," 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; and a description of the implementation of the physical security plan.

The provisions of 10 CFR 52.79(a)(36) require that the application contain: (i) a safeguards contingency plan in accordance with the criteria set forth in Appendix C to 10 CFR Part 73. 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 contained in the applicant's safeguards contingency plan.(Implementing procedures required for this plan need not be submitted for approval.)

(ii) A training and qualification plan in accordance with the criteria set forth in Appendix B to 10 CFR Part 73.

(iii) A cyber security plan in accordance with the criteria set forth in 10 CFR 73.54, of this chapter;

(iv) A description of the implementation of the safeguards contingency plan, training and qualification plan, and cyber security plan; and

(v) Each applicant who prepares a physical security plan, a safeguards contingency plan, a training and qualification plan, or a cyber security plan, 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) requires a description of the fitness-for-duty (FFD) program required by 10 CFR Part 26, “Fitness for Duty Programs,” and its implementation.

Requirements are established in 10 CFR 73.55(c)(2) to ensure protection of SGI against unauthorized disclosure in accordance with 10 CFR 73.21. The applicant’s submittal in Part 8 of the COL application (page 1) acknowledges that the PSP the T&QP, and the SCP discuss specific features of the physical security system or response procedures and are SGI.

Section 1 of the PSP describes the applicant’s commitment to satisfying 10 CFR 50.34(c) and (d) and 10 CFR Part 73 by submitting a PSP, and to controlling the PSP and its appendices as SGI according to 10 CFR 73.21.

The provisions of 10 CFR Part 73, Appendix C, Section II.B.3.b, require a description and map of the physical layout of the site.

Section 1.1 of the PSP provides descriptions of location, site layout, and facility configuration. The PSP describes the physical structures and their locations on the site, description of the PA, and a description of the site in relation to nearby towns, 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 marshaling and coordinating response activities.

In addition, Section 1.1 of the North Anna COL application describes general plant descriptions that include details of the 16-to 80-kilometer (10- to 50-mile) radius of the geographical area of the North Anna Unit 3 site, a site area map, and general plant and site descriptions. North Anna COL FSAR, Chapter 2, references the ESBWR design certification for the principal design and operating characteristics for the design and construction of North Anna Unit 3. Part 1, “General Information,” of the North Anna COL application describes the name of the applicant and principal business locations.

In RAI 13.06.01-64, Item number 3, the staff questioned the added information provided in the applicant's PSP, pointing to the FSAR and ESP SSAR for information concerning the site's layout. In its response, the applicant stated that the sentence pointing to the FSAR and ESP SSAR will be removed from PSP Section 1.1. In addition, the applicant stated, in PSP Section 1.1, SCP Section 4.2, and PSP Figure 1, information pertaining to surrounding airports will be added. In a letter dated March 30, 2015, the licensee provided a revised security plan, Revision 5, with the above information. The applicant appropriately updated PSP Section 1.1, SCP Sections 4.2, and Figure 1. Therefore, RAI 13.06.01-64, Item number 3 is resolved and closed.

The NRC staff has reviewed the facility physical layout provided in PSP Section 1.1 and as supplemented by the North Anna COL FSAR. The NRC staff determined 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 on site and the site in relation to nearby towns, roads, and other environmental features important to the effective coordination of response operations. Also in Section 1.1, the applicant described which figures in the PSP that depicts the main and alternate entry routes for law-enforcement assistance and the location of control points for marshaling and coordinating response activities. The NRC staff concludes that the applicant's security plans have met the requirements for content of a PSP as stated above. Therefore, the NRC staff found the "Facility Layout" described in the PSP and the North Anna COL FSAR is acceptable.

13.6.4.1.2 Performance Objectives

The provisions of 10 CFR 73.55(b)(1) require, 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, and to provide defense-in-depth, supporting processes, and implementing procedures that will ensure the effectiveness of the physical protection program.

Section 2 of the PSP outlines regulatory 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 incorporates supporting processes such as defense-in-depth principles, including diversity and redundancy, to ensure that no single event can disable the security response capability. The physical protection systems and programs described in the PSP are designed to protect against the DBT of radiological sabotage in accordance with the requirements of 10 CFR 73.55(a) through (r) or NRC approved equivalent measures that meet the same high assurance objectives provided by paragraph (a) through (r). The applicant proposes to use 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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(b), and therefore is acceptable.

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. Regulations in 10 CFR 73.55(b)(6) prescribe 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, and 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 will be 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 provisions to conduct security force tactical drills and force-on-force exercises to evaluate the effectiveness of security systems and the 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 and the T&QP Section 4 (evaluated separately) 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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(b)(6), and therefore is 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, Section 4.0 of the PSP describes how the applicant meets the requirements of 10 CFR 73.55(d)(1).

Security Organization Management

Section 4.1 of the PSP 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 that are necessary to detect, assess, interdict, and neutralize threats up to and including the DBT of radiological sabotage. The security organization may be proprietary, contract, 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. Section 4.1 of the PSP also describes the roles and responsibilities of the security organization. The PSP provides that at least one full time, dedicated security shift supervisor, who has the authority for command and control of all security operations, is on site at all times.

The security force implementing the security functions as described in this section of the plan will either be a proprietary force, or contractor or other qualified personnel. The training and qualification provisions are described in the T&QP.

The NRC 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 Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in the 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 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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(d)(3) and therefore is acceptable.

13.6.4.1.6 Training of Non-Security Personnel

Consistent with requirements in 10 CFR 73.55(d)(3), 10 CFR 73.56, "Personnel Access Authorization Requirements for Nuclear Power Plants," 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, qualified, and re-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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.56 and 10 CFR Part 73, Appendix B, and therefore is acceptable.

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, Subsection 13.6.1, the staff found that the description provided in the PSP and the T&QP meets the requirements of 10 CFR 73.55(d) and therefore is acceptable. The NRC staff's review of the applicant's T&QP is located in Subsection 13.6.4.2 of this SER.

In RAI 13.06.01-70 dated May 6, 2014 (ADAMS Accession No. ML14126A406) , the staff requested information from the applicant regarding a discrepancy in training between the operating site's CTM and North Anna 3's COL CTM for the Remotely Operated Weapon System (ROWS) training for Task number 29, "Demonstrate Proficiency in use of ROWS:" for the column: "ROWS Operator (RO)." The staff also requested the applicant provide pertinent documentation concerning any planned use of ROWS at North Anna Unit 3, and revise Task number 29 as needed to reflect the planned use of ROWS as it applies to the North Anna Unit 3 COL application T&QP. In the applicant response dated May 29, 2014 (ADAMS Accession No. ML14155A338), the applicant clarified that the North Anna site does not have or plan to have ROWS. By letter dated March 30, 2015 (ADAMS Accession No. ML15093A050), the applicant revised their COL CTM with a clarified depiction of training regarding ROWS.

Accordingly, the NRC staff finds the response to RAI 13.06.01-70 acceptable, as it provides clarification that the North Anna combined site does not have ROWS. Therefore, RAI 13.06.01-70 is resolved and closed.

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 that the periodic licensee reviews of the physical protection program required by that section include an audit of the effectiveness of the response commitments by local, State, and Federal law enforcement authorities.

Section 8 of the PSP provides a detailed discussion of the ongoing relationship with local law enforcement agencies (LLEA). 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, Subsection 13.6.1, the staff found 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 therefore is 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. Regulations in 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 VI.G.2(c) delineate the minimum equipment requirements for security personnel and armed response personnel.

The applicant addresses STD COL 13.6-18-A as follows: 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 Commission-approved security plans, applicant's protective strategy, and implementing procedures.

The NRC staff has reviewed the applicant's description in PSP Section 9 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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(d)(3) and Appendix B, Section VI.G.2(a), VI.G.2(b) and VI.G.2(c), and therefore is acceptable.

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. The provisions of 10 CFR 26.205, "Work Hours," establish requirements for work hours. The provisions of 10 CFR 26.205(a) require that any individual who performs duties identified in 10 CFR 26.4(a)(1) through (a)(5) shall be subject to the requirements of Section 26.205(a).

Section 10 of the PSP describes how the applicant will implement work hour controls in accordance 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 FFD 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 licensee 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." 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."

Section 11 of the PSP provides a general description of how the applicant will implement its program for physical barriers, and that this implementation is in accordance with the performance objectives and requirements of 10 CFR 73.55(b).

Owner Controlled Area (OCA) Barriers

Section 11.1 of the PSP describes the use of OCA barriers at the site.

Vehicle Barriers

The PSP Subsections 11.2.1 and 11.2.2 provides for vehicle control measures to protect against the DBT of radiological sabotage. The staff has verified that such measures are in accordance with site-specific analysis. Further, the staff has determined that these measures integrate systems, technologies, programs, supporting processes, and implementing procedures to provide defense-in-depth against the DBT land vehicle bomb assault. The staff has also determined that such measures provide for a VBS at a stand-off distance adequate to protect personnel, equipment, and systems necessary to prevent significant core damage and spent fuel sabotage against the effects of such an assault. Further, the staff confirmed that the applicant's PSP provides that the inspection, monitoring, and maintenance of the VBS are included in facility procedures. In view of the above, the staff concludes that the PSP identifies measures taken to provide high assurance that a land vehicle bomb assault can be defended against.

In RAI 13.06.01-22 (ADAMS Accession No. ML092881296) dated October 1, 2009, the NRC staff asked the applicant to provide a general description of natural terrain features that make up

portions of the outer VBS; provide a reference to the criteria used to determine the acceptability of these features, and to provide a reference to the criteria used to determine that the current North Anna outer VBS location and stand-off distance are appropriate given the proximity of the proposed North Anna 3 to the current outer VBS location. In a letter dated August 24, 2009), the applicant responded: "The natural terrain features that make up portions of the outer VBS include water and trees which have been analyzed in accordance with NUREG–4250 for acceptability. A portion of the natural terrain of the current outer VBS will be removed and replaced with temporary man-made barriers during construction of North Anna 3. The location and design of the permanent VBS will be analyzed in accordance with the criteria of NUREG–4250." The NRC staff found the response to RAI 13.06.01-22 unacceptable, as it does not contain enough high assurance criteria that is used to determine applicable construction standards and stand-off distance for the final VBS for North Anna 1, 2, and 3.

In RAI 13.06.01-38 (ADAMS Accession No. ML092881296) dated October 1, 2009, the NRC staff requested additional information concerning the response to RAI 13.06.01-22. In its response dated November 19, 2009 (ADAMS Accession No. ML093270043), the applicant stated that the blast calculations used in the design and layout of the permanent VBS, including determination of stand-off distance, were developed in accordance with the guidance given in NUREG–4250 and NUREG–6190.

The NRC staff found the response to RAI 13.06.01-38 (ADAMS Accession No. ML093270043) dated October 29, 2009, acceptable, as it provides details on how the applicant determined the applicable construction standards and stand-off distance for the final VBS, in accordance with 10 CFR 73.55(b) and 10 CFR 73.55(e)(10). Therefore, RAIs 13.06.01-22 and 13.06.01-38 are resolved and closed.

Accordingly, the staff found that the proposed vehicle control measures are consistent with the physical protection program design requirements of 10 CFR 73.55(b) and 10 CFR 73.55(e)(10).

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."

In a portion of RAI 13.06.01-65 dated May 6, 2014 (ADAMS Accession No. ML14126A406), the staff requested additional information on why certain information was removed from the North Anna COL security plan concerning monitored views of certain sections of the adjacent waterways. In a letter dated May 29, 2014 (ADAMS Accession No. ML14155A338), the applicant came to the conclusion that the missing information was inadvertently removed and would be reinstated in the next revision update of their security plan. By letter dated March 30, 2015 (ADAMS Accession No. ML15093A050), the applicant submitted an update to the PSP providing the missing information.

The staff concludes that Subsection 11.2.3 of the PSP describes protection measures that are adequate to protect the North Anna Unit 3 site against waterborne threats.

Accordingly, the NRC staff finds the response to RAI 13.06.01-65 acceptable, as it provides details on how the applicant meets the regulatory requirements of 10 CFR 73.55(e)(10)(ii). Therefore, this portion of RAI 13.06.01-65 is resolved and closed.

Protected Area Barriers

The provisions of 10 CFR 73.55(e)(8)(i) require that the PA perimeter must be protected by physical barriers that are designed and constructed to: (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 PA barrier are provided in PSP Section 11.3.

Section 11.3 of the PSP describes the extent to which the PA barrier at the perimeter is separated from a vital area. The security plan identifies where the PA barrier is not separated from a vital area barrier, as required by 10 CFR 73.55(e)(8)(i)(c).

Section 11.3 of the PSP describes isolation zones. As required in 10 CFR 73.55(e)(7), the isolation zone is maintained in outdoor areas adjacent to the PA perimeter barrier and is designed to ensure the ability to observe and assess activities on either side of the PA perimeter.

These descriptions meet the definitions of physical barrier and PA in 10 CFR 73.2 and the requirements of 10 CFR 73.55(e)(8).

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 Commission 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.

Section 11.4 of the PSP describes that vital areas are restricted access areas surrounded by physical barriers with the capability to restrict access to only authorized individuals.

Accordingly, the staff found all vital areas are constructed in accordance with established regulatory requirements. Section 11.4 also describes that the reactor CR, CAS, SAS and the location within which the last access control function for access to the PA is performed, must be bullet resisting. Accordingly, the staff finds all vital areas are constructed in accordance with established regulatory requirements.

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.

Section 11.5 of the PSP 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.

In connection with the review of the ESBWR physical protection program, the staff identified several RAIs relating to target sets. In light of these RAIs, GE Hitachi [GEH] provided additional design detail to give the applicant insight into the development of site-specific target set analyses. The applicant incorporates by reference the design of physical protection systems within the design of the vital area and vital systems for the ESBWR, as described in the ESBWR DCD including topical reports, NEDE-33389, NEDE-33390, and NEDE-33391.

GE Hitachi stated in NEDE-33391, "ESBWR Safeguards Assessment Report," that target sets were created to aid in the development of the ESBWR physical security systems, which are not considered as final or fully comprehensive because of the simplified assumptions that were made, and that a comprehensive target set document must be developed following an approved development process. GE Hitachi also stated that the insights from the development of target sets described in the ESBWR Safeguards Assessment Report should be considered and included, as appropriate. However, the simplifying assumptions need to be expanded to include the necessary combinations of Target Set elements. In addition, the Target Set document should include adjustments to reflect site-specific conditions.

The NRC staff has reviewed the applicant's description in Sections 11.5 and 14.5 of the PSP, Section 7 of the SCP, and information in NEDE-33391, 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 Sections 11.5 and 14.5 of the PSP, Section 7 of the SCP, and the information in NEDE-33391, is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in Sections 11.5 and 14.5 of the PSP and Section 7 of the SCP 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 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).

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's physical protection program. The PSP describes the use of delay barriers at North Anna Unit 3.

Section 11.6 of the PSP includes a description of the use of delay barriers to meet the requirements of 10 CFR 73.55(e).

The NRC staff has reviewed the applicant's description in PSP Sections 11, 11.1, 11.2, 11.2.1, 11.2.2, and 11.2.3, and Sections 11.3 through 11.6 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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(e), and therefore is acceptable.

13.6.4.1.12 Security Posts and Structures

The provisions of 10 CFR 73.55(e)(5) require that the reactor CR, 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 states 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. Section 11.4 of the PSP states the reactor CR, the CAS, SAS, and the location within which the last access control function for access to the PA is performed must be bullet resisting.

In a portion of RAI 13.06.01-66 dated May 6, 2014 (ADAMS Accession No. ML14126A406), the staff questioned how many alarm stations North Anna has between the combined site. In addition, the staff requested the applicant to update all appropriate sections and Figures to reflect the appropriate amount of alarms stations for this combined site. In a letter dated May 29, 2014 (ADAMS Accession No. ML14155A338), the applicant responded with the amount of alarm stations between the combined site. In a letter dated March 30, 2015 (ADAMS Accession No. ML15093A050), the applicant revised Figure 7 of the PSP to depict the location of the SAS for the combined site.

Accordingly, the NRC staff finds the response to RAI 13.06.01-66 acceptable, as the applicant provided details on how many alarm stations the combined site has. Therefore, this portion of RAI 13.06.01-66 is resolved and closed.

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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(e)(5), and therefore is acceptable.

13.6.4.1.13 Access Control Devices

Regulations in 10 CFR 73.55(g)(1) state 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 applicant addresses STD COL 13.6-6-A by adhering to the provisions of 10 CFR 73.55(g)(6) which requires control of access control devices as stated in subparagraph (i): "The licensee shall control all keys, locks, combinations, passwords and related access control devices used to control access to PAs, 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 of Access Control Devices

Section 13.2 of the PSP describes the control of security related locks and 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 need 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, and 13.2, 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, Subsection 13.6.1, the staff found that the descriptions provided in the PSP meet the requirements of 10 CFR 73.55(g)(1) and (6), and therefore are 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 to establish, maintain, and implement an access authorization program in accordance with 10 CFR 73.56 and to describe the program in the PSP. The provisions of 10 CFR Part 26 require the applicant to establish and maintain an FFD program.

Section 14.1 of the PSP describes that the access authorization program implements regulatory requirements utilizing the provisions in RG 5.66, "Nuclear Power Plant Access Authorization Program," Revision 1, dated July 2009. RG 5.66 is an acceptable method for meeting the requirements of 10 CFR 73.55(b)(7).

The NRC staff has 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. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found 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 therefore is acceptable.

Insider Mitigation Program

The provisions of 10 CFR 73.55(b)(9) require that the applicant establish, maintain, and implement an insider mitigation program and 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.

Section 14.2 of the PSP describes how the applicant will establish, maintain, and implement an insider mitigation program utilizing the guidance in RG 5.77. The insider mitigation program requires elements from the access authorization program described in 10 CFR 73.56; the 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, Section 14.2 describes the integration of the programs mentioned above to form a cohesive and effective insider mitigation program. The applicant addresses the observations for the detection of tampering. RG 5.77 is an acceptable method for meeting the requirements of 10 CFR 73.55(b)(9).

The NRC staff has reviewed the applicant's description in PSP Section 14.2 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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(b)(9), and therefore is 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 PA 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.

Section 14.3 of the PSP describes the site picture badge system. Identification badges will be displayed while individuals are inside the PA or vital areas. When not in use, badges may be removed from the PA 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 PA. 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 NRC staff has reviewed the applicant's description in PSP Section 14.3 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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(g)(6)(ii) and (7)(ii), and therefore is acceptable.

Searches

The provisions of 10 CFR 73.55(h) require, in part, that the applicant 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, the applicant 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.

Section 14.4 of the PSP 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.

Vehicle Barrier System Access Control Point Searches

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 PA.

Subsection 14.4.1 of the PSP 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 states that it has developed specific implementing procedures to address vehicle and materials searches at these locations.

Protected Area Personnel Search

Subsection 14.4 of the PSP describes the process for searches of all personnel requesting access into PAs. 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 PA. All persons except official Federal, State, and Local Law Enforcement Agency personnel on official duty are subject to these searches upon entry to the PA. Detailed discussions of observation and control measures are found in the implementing procedures.

Protected Area Packages and Materials Search

Subsection 14.4.3 of the PSP 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 North Anna PA. Detailed provisions for conducting these searches are found in the applicant's implementing procedures and include the search and control of bulk materials and products. The applicant's 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

Subsection 14.4.4 of the PSP 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 PA. 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 PA under emergency conditions.

Protected Area Access Controls

Subsection 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 PA. The plan notes that all points of personnel access are through a lockable portal. The entry process is normally monitored by multiple security personnel. Personnel are normally allowed access through means that verify identity and authorization following the search process. Vehicles are controlled through positive control methods described in 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. Provisions in 10 CFR 73.55(g)(8) establish escort requirements. The applicant is required to implement procedures for processing, escorting, and controlling visitors. Procedures will address confirmation of identity of visitors, maintenance of a visitor control register, visitor badging and escort controls including, training, communications, and escort ratios.

Subsection 14.4.6 of the PSP 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 as described in the procedures. All visitors wear a badge that clearly indicates that an escort is required.

The NRC staff has 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 Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(h)(2), (h)(3), (g)(7) and (g)(8), and therefore is acceptable.

Vital Area Access Controls

The provisions of 10 CFR 73.55(g)(4) require that the applicant control access into vital areas consistent with established access authorization lists. In response to a site-specific credible threat or other credible information, the applicant 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 in order to perform their duties and responsibilities. The list must be approved by a cognizant manager or supervisor who is responsible for directing the work activities of the individual who is granted unescorted access to each vital area, and be updated and reapproved no less frequently than every 31 days.

Section 14.5 of the PSP describes vital areas and that the applicant maintains vitals 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.

The NRC staff has reviewed the applicant's description in PSP Section 14.5 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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(g)(4), and therefore is acceptable.

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)(5) require, in part, that the applicant implement, establish, and maintain intrusion detection and assessment, surveillance, and observation and monitoring systems to satisfy the design requirements of 10 CFR 73.55(b), and to conform to 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, and 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 and actual unauthorized 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 applicant addresses STD COL 13.6-7-A and NAPS COL 13.6-8-A as follows: The provisions of 10 CFR 73.55(i)(4) provides 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. The provisions of 10 CFR 73.55(i)(4)(iii) require, in part, that the CAS and SAS 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 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.

Subsection 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.

In a portion of RAI 13.06.01-65 dated May 6, 2014 (ADAMS Accession No. ML14126A406), the staff requested additional information to explain inconsistencies in the OCA patrols as described in North Anna 3, Revision 4, PSP Section 11.2.3 and SCP Section 7, with North Anna 1 and 2, Revision 18, same sections. In a letter dated May 29, 2014 (ADAMS Accession No. ML14155A338), the applicant came to the conclusion that the missing information was mistakenly removed and would be reinstated in the next revision update of their security plan. By letter dated March 30, 2015, (ADAMS Accession No. ML15093A050), the applicant submitted an update to the combined security plan providing the missing information**.**

The staff concludes that PSP Subsection 15.5.1, and SCP Section 7 describes surveillance and response measures adequate to protect the North Anna Unit 3 against intrusion.

Accordingly, the NRC staff found the response to RAI 13.06.01-65 acceptable, as it provided details on how the applicant meets the regulatory requirements of 10 CFR 73.55(e)(6). Therefore, this portion of RAI 13.06.01-65 is resolved and closed.

Protected and Vital Area

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.

Subsection 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. The staff verified that the PSP provided for the identification of openings, areas, and equipment that must be checked, inspected, or otherwise observed by armed patrols. Further, the staff has determined that the PSP provides for training of patrols and procedures to recognize obvious tampering and to initiate an appropriate response to recognized tampering. In view of these staff determinations, the applicant's description in the PSP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(b) and (i), and therefore are acceptable with respect to surveillance observation and monitoring.

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. An individual assigned to an alarm station 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, including that between LLEA and each alarm station and the between the CR and each alarm station. Non-portable communications must remain operable from independent 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 states that the applicant has 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, including areas where communications could be interrupted or not maintained. The North Anna site security personnel have access to both hard wired and alternate communications systems. Site security personnel are assigned communications devices 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 each CR. The applicant maintains a secondary power source, within a vital area, for all non-portable security communications equipment.

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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(j)(1) through (6), and therefore are acceptable.

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 be reviewed at least every 24 months. A review is required within 12 months after initial physical protection program implementation or a change in personnel, procedures, equipment, or facilities that could have a potentially adverse effect on security. A review is also required as necessary based on site-specific analysis assessments, or other performance indicators. Reviews must be conducted by individuals independent of those responsible for security program and those directly responsible for implementation of the onsite physical protection program. Reviews must include an audit of security plans, implementing procedures and local law enforcement commitments. Results of reviews shall be presented to management at least one level above the level responsible for day-to-day plant operations, 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.

The PSP also states that 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 PSP provides further that 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. The PSP provides that these reports are maintained in an auditable form and maintained for inspection.

The PSP states that findings from the onsite physical security program reviews are entered into the facility corrective action program.

The provisions of the PSP described above are virtually identical to the requirements of Section 73.55(m) summarized above, and the PSP satisfies those requirements. The NRC staff, however, raised a question regarding the requirements of 10 CFR 73.58.

In RAI 13.06.01-36 (ADAMS Accession No. ML092730215) dated September 30, 2009, 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 November 9, 2009 (ADAMS Accession No. ML093270043), the applicant stated that a procedure will be developed and used to review planned and emergent activities on safety and security with guidance from Regulatory Guide 5.74, "Managing the Safety/Security Interface." The procedure will be developed by March 31, 2010, for compliance with 10 CFR 73.58 for Safety/Security Interface. Additionally, a description of the North Anna Unit 3 safety/security interface program will be included in North Anna COL FSAR, Subsection 13.6.2.

The NRC staff finds that the response to RAI 13.06.01-36 meets the requirements of 10 CFR 73.58 and is acceptable, because it provides a commitment to implement administrative procedures to manage the safety/security interface. Specifically, the North Anna COL FSAR Revision 6, Subsection 13.6.2, dated July 2013, states in, CWR SUP-13.6-2:

> Administrative procedures have been implemented that meet the requirements of 10 CFR 73.58 for managing the safety/security interface.

The staff has verified that CWR SUP-13.6-2 has been included in the North Anna Unit 3 FSAR. Therefore, RAI 13.06.01-36 is resolved and closed.

The following clarification RAI was submitted to the ESBWR RCOL, Fermi 3:

> *In RAI 13.06.01-57, the NRC staff requested clarification pertaining to how the applicant, once licensed, will analyze and identify changes in the site specific conditions related to the ESBWR's structures, systems, and components (SSCs) (described in certain technical reports), resulting from changes made to the Fermi 3 COL between issuance of the COL and the security program implementation milestones provided in FSAR Table 13.4-201 to ensure that the security plan continues to meet 10 CFR 73.55(b)(4). Also, 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. During a public telephone call on August 4, 2014 (ML14281A128), the NRC staff provided feedback to the applicant concerning the addition of "NRC endorsed" and the removal of "currently accepted" to the RAI 13.06.01-57 response. In a letter dated August 4, 2014, the applicant submitted to the NRC a revised COLA markup associated with its response to RAI 13.06.01-57.*
>
> *In its response, the applicant stated that the description of the content of the administrative procedures implementing the 10 CFR 73.58 Fermi 3 COLA FSAR, Subsection 13.6.2 will be revised as follows:*
>
> > *These procedures are in effect at the time of issuance of the COL and were developed using NRC endorsed industry guidance.*
>
> *The NRC staff finds that the response to RAI 13.06.01-57 meets the requirements of 10 CFR 73.55(b)(4) and 10 CFR 73.58 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 incorporation of changes to the Fermi 3 COL FSAR, Section 13.6.2 is being tracked as Confirmatory Item 13.6-1. The staff verified that FSAR Revision 7 incorporated changes provided in response to RAI 13.06.01-57. Therefore, Confirmatory Item 13.6-1 is resolved.

North Anna 3 representatives were also present during the above stated public telephone call, and agreed to follow Fermi 3's response in a letter dated October 8, 2014 (ADAMS Accession No. ML14287A288).

> Administrative procedures have been implemented that meet the requirements of 10 CFR 73.58 for managing the safety/security interface. These procedures are in effect at the time of issuance of the combined license and were developed using NRC endorsed industry guidance.

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. As set forth above, the applicant's description in the PSP meets the requirements of 10 CFR 73.55(m), and therefore is acceptable. **The FSAR revision will be tracked as a confirmatory item [Item # 13.6-01].**

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 for use. The applicant must ensure training has been provided to all armed members of the security organization who will be available on site 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.

Section 18 of the PSP 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 the 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.

The NRC staff has reviewed the applicant's description in PSP Section 18 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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(k), and therefore is acceptable.

13.6.4.1.19 Special Situations Affecting Security

The provisions of 10 CFR 73.58 require that each nuclear power reactor applicant requesting a license under 10 CFR Part 50, or 10 CFR Part 52, 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.

The provisions of 10 CFR 73.55(a)(2) require the applicant's security plans to identify, describe, and account for site-specific conditions that affect its capability to satisfy the requirements of that section.

The provisions of 10 CFR 73.55(n)(8) require, in part, operational and post-maintenance performance testing to ensure operational readiness for security equipment and systems.

Refueling/Major Maintenance

Section 19.1 of 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 that post-maintenance performance testing is performed to ensure operational readiness of equipment in accordance with 10 CFR 73.55(n)(8).

Construction and Maintenance

Section 19.2 of the PSP states that during periods of construction and maintenance when temporary modifications are necessary, 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 19.1 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, Subsection 13.6.1, the staff found 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

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 its 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 at the beginning and end of the period for which it is used for security, or if the period of continuous use exceeds 7 days, at least once every seven days. 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 20.7 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 Revision 3, which specifies testing frequency.

The staff has determined that Section 20.7 does not apply to North Anna 3, due to North Anna not having ROWS. North Anna security plan Revision 5, dated March 2015 (ADAMS Accession No. ML15093A050), appropriately identifies that ROWS is not applicable to this site.

Accordingly, the staff has determined that the PSP provides for testing of each operational component credited for the implementation of the security program at a frequency in accordance with 10 CFR 73.55(n), the PSP, and implementing procedures.

The NRC staff has reviewed the applicant's description in PSP Sections 20 and 20.1 through 20.7 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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(n), and therefore is acceptable.

13.6.4.1.21 Compensatory Measures

The provisions of 10 CFR 73.55(o) requires, 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 section 73.55. 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 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 21.14 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, VBS, channeling barrier systems, other security related equipment, and uninterrupted power source (UPS).

In a portion of RAI 13.06.01-66, the NRC staff asked the applicant to explain the discrepancy between the operating site security plan and the combined site security plan concerning the site UPS. By letter dated May 29, 2015, the applicant stated that this discrepancy was made in error, and would be corrected. In Revision 5 of the North Anna COL security plan, dated March 30, 2015 (ADAMS Accession No. ML15093A050), the applicant revised PSP Section 14.5 to correct the discrepancy between the operating and combined site security plans.

Accordingly, the NRC staff found the response to this portion of RAI 13.06.01-66 acceptable, as it provides the corrected information in PSP Section 14.5 on how the applicant meets the regulatory requirements of 10 CFR 73.55(c)(1)(i) and 10 CFR 73.55(c)(1)(ii). Therefore, this portion of RAI 13.06.01-66 is resolved and closed.

The NRC staff has reviewed the applicant's description in PSP Sections 21 and 21.1 through 21.14, 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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(o), and therefore is acceptable.

13.6.4.1.22 Records

The provisions of 10 CFR 73.55(q) and 10 CFR Part 73, Appendix B, Section VI.H, and Appendix C, Section II.C, require, in part, 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 provisions of 10 CFR Part 26, Subpart N, 10 CFR 73.56(o), and 10 CFR 73.70 include requirements for records regarding fitness for duty, access authorization, and certain other security-related matters, respectively. Among other things, 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 3 years.

Section 22 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 mentioned regulations: access authorization; suitability, physical, and psychological qualification records for security personnel; PA and vital area access control records; PA visitor access records; PA vehicle access records; 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; LLEA records; records of audits and reviews; access control devices; security training and qualification records; firearms testing and maintenance records; and engineering analysis for the VBS.

In RAI 13.06.01-32 dated October 1, 2009 (ADAMS Accession No. ML092881296), the staff requested the applicant to clarify their commitment to RG 5.66 "Access Authorization Program," in the North Anna 3 COLA Part 2: FSAR - NAPS COL 1.9-3-A Table 1.9-202 “Conformance with Regulatory Guides.” In the applicant’s response (ADAMS Accession No. ML093270043) dated November 19, 2009, the applicant stated in part: “When the template [NEI 03-12] is revised and endorsed to include the sentence ["All elements of Regulatory Guide 5.66, Revision 1, have been implemented to satisfy the requirements of 10 CFR 73.56 and 10 CFR part 26 related to unescorted access and unescorted access authorization."], Dominion will include the sentence in the next revision to the Physical Security Plan.”

Accordingly, the NRC staff finds the response to RAI 13.06.01-32 acceptable, as the applicant provides a commitment to update the North Anna PSP with the statement "All elements of Regulatory Guide 5.66, Revision 1, have been implemented to satisfy the requirements of 10 CFR 73.56 and 10 CFR part 26 related to unescorted access and unescorted access authorization.," once the NRC endorsed NEI 03-12, Section 14.1 has been updated with the sentence "All elements of Regulatory Guide 5.66, Revision 1, have been implemented to satisfy the requirements of 10 CFR 73.56 and 10 CFR Part 26 related to unescorted access and unescorted access authorization." Therefore, RAI 13.06.01-32 is resolved and closed.

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, Subsection 13.6.1 the staff found that the descriptions provided in the PSP meet the requirements of 10 CFR Part 26, 10 CFR 73.55(q), 10 CFR 73.56(o), and 10 CFR 73.70, and are, therefore, acceptable.

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 (SSEP) functions are protected against the DBT. Once the NRC reviews and approves the plan, it is a condition of the site license and the program is implemented consistent with the approved schedule in the plan.

The NRC staff’s review of the cyber security plan is found in Section 13.8 of this SER.

13.6.4.1.24 Temporary Suspension of 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: (i) 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. (ii) 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 description of the conditions under which suspension is permissible, the level of authority necessary to suspend security measures, and the provisions for reporting such a suspension.

Suspension of Security Measures during Severe Weather or Other Hazardous Conditions

As required in 10 CFR 73.55(p), state in part, 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, Subsection 13.6.1, the staff found that the description provided in the PSP meets the requirements of 10 CFR 73.55(p), and therefore is acceptable.

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 7 template.

13.6.4.1.26 Conclusions on the Physical Security Plan

Accordingly, the NRC staff's review described in Subsections 13.6.4.1.1 through 13.6.4.1.25 of this SER, the North Anna Unit 3 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

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

13.6.4.2.1 Introduction

The provisions of 10 CFR 73.55(c)(4) state that the applicant shall 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 applicant indicates that 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. The T&QP describes, deficiencies identified during the administration of the 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

Provisions 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) have 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) not be disqualified from possessing or using firearms or ammunition in accordance with applicable State or Federal law, including 18 U.S.C. 922, for individuals in an armed capacity. 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) requires that 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 that those individuals who 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, Subsection 13.6.1, the staff found 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, Subsection 13.6.1, the staff found 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 therefore is 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.

Subsection 2.5.1 of the T&QP details that individuals whose security tasks and jobs are 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 Appendix B, Section VI.B.3(a), 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 Appendix B, Section VI.B.3(a), have no emotional instability that would interfere with the effective performance of assigned duties and responsibilities.

Subsection 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 Subsections 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, Subsection 13.6.1, the staff found 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 therefore are 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 in accordance with 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 as described in Subsection 13.6.4.1.22 of this SER.

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, Subsection 13.6.1, the staff

found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.H.1 and therefore is 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 and as has otherwise been described in 10 CFR Part 73, Appendix B, Section VI.B.5.

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, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.B.5 and therefore is 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 assigned duties and responsibilities identified in the Commission-approved security plans shall be trained before assignment in accordance with the requirements of 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.

Section 3.1 of the T&QP details the requirements that individuals assigned duties must be trained and qualified in their duties, meet minimum qualifications or re-qualification requirements, and be trained and qualified in all equipment or devices required prior to performing their duties.

The NRC staff has 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 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, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.C.1 and therefore are acceptable.

On-The-Job Training

The provisions of 10 CFR Part 73, Appendix B, Section 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 needed to effectively carry out assigned security duties and responsibilities. Individuals 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) redeployment; (8) communications (primary and alternate); (9) use of assigned equipment; (10) target sets; (11) table top drills; (12) command and control duties; and (13) applicant protective strategy.

The T&QP provides a comprehensive discussion of the applicant's approach to meeting the requirements for on-the-job training as identified above and covers each of the elements.

The NRC staff has reviewed the applicant's description in T&QP Section 3.2 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, Subsection 13.6.1, the staff found 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 therefore is acceptable.

Critical Task Matrix

The provisions of 10 CFR Part 73, Appendix B, Section VI.C.1(b) require, in part, that each individual who is assigned duties and responsibilities identified in the Commission-approved security plans, applicant 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 Table 1 of the T&QP. 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 NRC staff has reviewed the applicant's description in T&QP Section 3.3 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, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.C.1(b) and therefore is acceptable.

Initial Training and Qualification Requirements

The provisions of 10 CFR Part 73, Appendix B, Section 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 requirements for demonstration of qualification.

Section 3.4 of the T&QP describes that the individuals must be trained and qualified prior to performing security-related duties within the security organization, and must meet the minimum qualifying standards in Subsections 3.4.1 and 3.4.2.

Written Examination

The provisions of 10 CFR Part 73, Appendix B, Section VI.D.1(b)(1), 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, to include the recognition of potential tampering involving both safety and security equipment and systems.

Subsection 3.4.1 of the T&QP describes the measures that are implemented by the applicant to meet the requirements in 10 CFR Part 73, Appendix B, Section VI.D.1(b)(1).

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 that each individual demonstrates the knowledge, skills, and abilities required to effectively perform the task.

Subsection 3.4.2 of the T&QP describes 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 NRC staff has 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 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, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Sections VI.C.1(b)(1) and VI.D.1(b)(2), and therefore are 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 requalified at least annually in accordance with the requirements of this appendix and the Commission-approved T&QP. The results of requalification must be documented by a qualified training instructor and attested to by a security supervisor.

Section 3.5 of the T&QP provides a 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 NRC staff has reviewed the applicant's description in T&QP Section 3.5 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 T&QP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.D.2, and therefore is acceptable.

Annual Written Examination

The provisions of 10 CFR Part 73, Appendix B, Section VI.D.1.(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 Commission-approved T&QP to demonstrate an acceptable understanding of assigned duties and responsibilities.

Subsection 3.5.1 of the T&QP 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 NRC staff has reviewed the applicant's description in T&QP Subsection 3.5.1 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 T&QP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.D.1.(b)(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., and 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.

Subsection 3.5.2 of the T&QP provides that all knowledge, skills, and abilities will be demonstrated in accordance with a Systematic Approach to Training (SAT) program, similar to what is described in RG 5.75.

The NRC staff has reviewed the applicant's description in T&QP Subsection 3.5.2 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, Subsection 13.6.1, the staff found 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 therefore is acceptable.

Weapons Training and Qualification

General Firearms Training

The provisions of 10 CFR Part 73, Appendix B, Section VI.E require that armed members of the security organization shall be trained and qualified in accordance with the requirements of this appendix and the Commission-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.

Subsection 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 provisions 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 NRC staff has reviewed the applicant's description in T&QP Subsection 3.6.1 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 T&QP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.E.1 and therefore is 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 Commission requirements and the Commission-approved T&QP for assigned weapons. The results of weapons qualification and requalification must be documented and retained as a record.

Subsection 3.6.2 of the T&QP provides that all armed personnel are qualified and requalified with assigned weapons. All weapons qualification and requalification must be documented and retained as a record.

The NRC staff has reviewed the applicant's description in T&QP Subsection 3.6.2 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, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.F.1 and therefore is 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's T&QP must describe the firearms used, the firearms qualification program, and other tactical training required to implement the Commission-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.

Subsection 3.6.3 of the T&QP 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 that their required tactical knowledge, skills, and abilities remain proficient.

The NRC staff has reviewed the applicant's description in T&QP Subsection 3.6.3 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, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.F.2 and therefore is 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.

Subsection 3.6.4 of the T&QP provides a description of the firearms qualification scores for each of the 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, semiautomatic rifles, and enhanced weapons.

The NRC staff has reviewed the applicant's description in T&QP Subsection 3.6.4 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, Subsection 13.6.1, the staff found 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 therefore is 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 requalified for each assigned weapon at least annually in accordance with Commission requirements and the Commission-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. Subsection 3.6.5 of the T&QP states that armed members of the security organization will requalify at least annually with each weapon assigned, using the courses of fire provided in the T&QP.

The NRC staff has reviewed the applicant's description in T&QP Subsection 3.6.5 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 T&QP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.F.5 and therefore is 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 Commission-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 Commission-approved security plans, applicant protective strategy, and implementing procedures.

Section 3.7 of the T&QP describes that personnel are provided with weapons and personnel equipment necessary to meet the plans and the protective strategy. The equipment provided is described in Section 9 of the PSP, and maintenance is performed as described in Section 20 of the PSP. The staff's review of Section 9.0, "Security Personnel Equipment," and Section 20, "Maintenance, Testing, and Calibration," of the PSP is in Subsections 13.6.4.1.9 and 13.6.4.1.20 of this SER.

The NRC staff has reviewed the applicant's description in T&QP Section 3.7 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, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.G, and therefore is acceptable.

Documentation

The provisions of 10 CFR Part 73, Appendix B, Section VI.H require that the applicant retain all reports, records, or other documentation required by this appendix in accordance with the requirements of 10 CFR 73.55(q). The applicant shall retain each individual's initial qualification record for 3 years after termination of the individual's employment and shall retain each requalification 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.

Section 3.8 of the T&QP provides that records are retained in accordance with Section 22, "Records," of the PSP. The PSP Section 22.11 describes how the applicant will retain each individual's initial qualification record for three (3) years after termination of the individual's employment and shall retain each re-qualification record for three (3) years after it is superseded.

The NRC staff has reviewed the applicant's description in T&QP Section 3.8 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

T&QP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.H and therefore is acceptable.

13.6.4.2.4 Performance Evaluation Program

The provisions in 10 CFR Part 73, Appendix B, Section VI.C.3, "Performance Evaluation Program," state, in part, that:

> (a) [Applicants] shall develop, implement, and maintain a Performance Evaluation Program that is documented in procedures [and] 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].
>
> (l) The Performance Evaluation Program must be designed to ensure that:
>
> (1) 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 (1) tactical response drill on a quarterly basis and one (1) 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, Section 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, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, Section VI.C.3 and therefore is 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, "Domestic Licensing of Special Nuclear Material," 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". 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 the 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, Subsection 13.6.1, the staff found that the description provided in the T&QP meets the requirements of 10 CFR Part 73, Appendix B, and therefore is acceptable.

13.6.4.2.6 Conclusion on the Training and Qualification Plan

Accordingly, the NRC staff's review described in Subsections 13.6.4.2.1 through 13.6.4.2.5 of this SER, the North Anna Unit 3 T&QP meets the requirements of 10 CFR Part 73, Appendix B. The target sets, target set analysis, and site protective strategy will be in the facility implementing procedures, which are 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

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, indicate 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 states 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.a, 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, Subsection 13.6.1, the staff found that the description provided in the SCP meets the requirements of 10 CFR Part 73, Appendix C, Section II.B.1 and therefore is acceptable.

13.6.4.3.2 Generic Planning Base

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 and provides a list of objectives for each event and also provides objectives and data required for each event.

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, Subsection 13.6.1, the staff found that the description provided in the SCP meets the requirements of 10 CFR Part 73, Appendix C Section II.B.2 and therefore are 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 must include specific objectives to be accomplished, descriptions 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.

Section 3 of the SCP includes a responsibility matrix, as required by Appendix C, Section II.B.4.a. The responsibility matrix integrates the response capabilities of the security organization (described in Section 4 of the SCP) with the background information relating to decision/actions and organizational structure (described in Section 1 of the SCP), as required by Appendix C, Section II.B.4.a. The responsibility matrix provides an overall description of the response actions and their interrelationships, as required by Appendix C, Section II.B.4.b. 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 Appendix C, Section II.B.4.c. In part, the applicant shall ensure that predetermined actions can be completed under the postulated conditions as required by Appendix C, Section II.B.4.d.

The NRC staff has reviewed the applicant's description in SCP 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 SCP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in the SCP meets the requirements of 10 CFR Part 73, Appendix C, Section II.B.4 and therefore is 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's planning base include factors affecting the SCP that are 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

Subsection 4.1.1 of the SCP 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 Appendix C, Section II.B.3.a.

Security Chain of Command/Delegation of Authority

Subsection 4.1.2 of the SCP describes in detail the chain of command and delegation of authority during contingency events, and this 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 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.

Section 4.2 of the SCP references Sections 1.1 and 14.5 of the PSP 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 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 facility perimeter, and must move inward through those measures implemented to protect target set equipment.

Section 4.3 of the SCP describes that safeguards systems are described in PSP Sections 9, 11, 12, 13, 15 and 16, and in the facility implementing procedures/documents. Section 8 of the SCP describes how physical security systems will be used to respond to a threat at the site, as required by Appendix C, Section II.B.3.c. As further required by 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, a general description of their response capabilities, their criteria for response, and a discussion of working agreements or arrangements for communicating with these agencies.

Section 4.4 of the SCP states in detail the role of LLEA in the site protective strategy. In accordance with 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 Section 8 of the PSP and Section 5.6 of the SCP.

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 the applicant's response to incidents. These must include, but are 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.

Section 4.5 of the SCP 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 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 practices which influence how the security organization responds to a safeguards contingency event to include, but not limited to, a description of the procedures that will be used for ensuring that equipment needed to facilitate responses will be readily accessible, in good working order, and in sufficient supply.

Section 4.6 of the SCP outlines administrative duties of the Manager-Nuclear Security and the Security Shift Supervisor, and the use of facility procedures and administrative forms.

The NRC staff has 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 Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the SCP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in the SCP meets the requirements of 10 CFR Part 73, Appendix C, Section II.B.3 and therefore is 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 describes in detail how they protect against the DBT with onsite and offsite organizations, in accordance 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, 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 Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," of 10 CFR Part 50 and 10 CFR 52.79, "Contents of Applications; Technical Information and FSAR.

Response to Threats

Section 5.1 of the SCP describes the protective strategy design to defend the facility against all aspects of the DBT. Each organization has defined roles and responsibilities.

Armed Response Team

Section 5.2 of the SCP notes the individuals included in 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

Section 5.3 of the SCP describes in detail the use 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

Section 5.4 of the SCP describes the role of operations personnel in the site protective strategy, including responsibilities, strategies and conditions for operator actions as discussed in 10 CFR 50.54(hh).

Emergency Plan Response

Section 5.5 of the SCP notes the integration of the Emergency Plan (EP) with the applicant's protective strategy, and it gives some examples of how the EP 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 LLEA response are located in Section 8 of the PSP. Further SCP Section 5.6 provides a general description of the LLEA response capability and meets the corresponding portions of 10 CFR 73.55(k)(9).

State Response Agencies

Section 5.7 of the SCP 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 support the site as a part of the protective strategy. Further 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

Section 5.8 of the SCP 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 support the site as a part of the protective strategy. Further 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 Independent Spent Fuel Storage Installation (ISFSI) Events

Section 5.9 of the SCP meets the requirements of 10 CFR 73.55(k)(9) and 10 CFR Part 73, Appendix C, Section II.B.3.d, and describes the Response Requirements for Independent Spent Fuel Storage (ISFSI) as a part of the protective strategy.

The NRC staff has 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 Commission regulations and NUREG-0800 acceptance criteria. Because the applicant's description in the SCP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in the SCP meet 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 therefore are 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 EPs developed pursuant to Appendix E to 10 CFR Part 50 and 10 CFR 52.17.

13.6.4.3.6 Defense-In-Depth

Section 6 of the SCP lists site physical security characteristics, programs, and 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, Subsection 13.6.1, the staff found that the description provided in the SCP meets the requirements of 10 CFR 73.55(b)(3) and therefore are acceptable.

13.6.4.3.7 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 (r); 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.

Section 8 of the SCP describes the site protective strategy.

The NRC staff has reviewed the applicant's description in SCP 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 SCP is consistent with the acceptance criteria in NUREG-0800, Subsection 13.6.1, the staff found that the description provided in the SCP meets the requirements of 10 CFR 73.55(a) through (r) and 10 CFR Part 73, Appendix C and therefore is acceptable.

13.6.4.3.8 Conclusions on the Safeguards Contingency Plan

Accordingly, the NRC staff's review described in Subsections 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 will be in facility implementing procedures, which are 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 found the following license condition to track implementation of the Physical Security Program, the Safeguards Contingency Program, and the Training and Qualification Program, acceptable.

License Condition (COLA Part 10 Section 3.6)

Operational Program Readiness

The licensee shall submit to the Director of NRO, a schedule, no later than 12 months after issuance of the COL, for implementation of the operational programs listed 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 operational programs in the FSAR table have been fully implemented.

This schedule shall also address:

• The implementation of site-specific Severe Accident Management Guidelines

• The spent fuel rack coupon monitoring program implementation

13.6.6 Conclusions

The NRC staff reviewed the application and checked the referenced DCD. The NRC staff's review confirmed that the applicant addressed the required information relating to physical security, and there is no outstanding information that needs to be addressed in the North Anna COL FSAR related to this section. The results of the NRC staff's technical evaluation of the information incorporated by reference in the North Anna COL application are documented in NUREG-1966.

The staff concludes that the relevant information presented in the North Anna COL FSAR is acceptable based on the applicable regulations specified in Subsection 13.6.4 of this SER. The staff based its conclusion on the following:

The NRC staff's review of the PSP, T&QP and SCP has focused on ensuring the necessary programmatic elements are included in these plans in order 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.

As described in this section, the NRC staff has 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 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). As provided by Section 3 of the applicant's PSP, 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, the NRC's baseline inspections and force-on-force exercises, enhancements to the applicant's PSP, T&QP, and SCP may be necessary to ensure that the overall protective strategy can be effectively implemented. As such, the NRC 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 plans shall be corrected 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.

The COL applicant's security plan information is withheld from public disclosure in accordance with the provisions of 10 CFR 73.21.

13.6A Site-Specific Inspection, Test, Analysis, and Acceptance Criteria for Physical Security

13.6A.1 Introduction

The North Anna 3 COL application describes in Part 10, "Proposed License Conditions (Including ITAAC)" "Inspection, Test, Analysis, and Acceptance Criteria" of 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 the standard ESBWR design including physical protection systems within the design of the vital area and vital systems. The COL application incorporates by reference the ESBWR 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.

The design bases or supporting security analyses and assumptions related to the design descriptions of security-related features incorporated as reference from the ESBWR DCD is Tier 2 information, including NEDE-33391, "The ESBWR Safeguards Assessment Report," NEDE-33390, "The ESBWR Interim Compensatory Measures Report" and NEDE-33389, "The ESBWR Security Enhancement Report." Descriptions of site specific security structures, programs and contingency measures are located in the North Anna 3 Physical Security Plan, which includes the site physical security plan (PSP), training and qualification plan, and the safeguards contingency plan.

13.6A.2 Summary of Application

Section 14.3 of the North Anna 3 COL FSAR, Revision 7 incorporates by reference the Table 2.19-1 of the ESBWR DCD Revision 10 and TRs. Part 10, Revision 5, Section 2.2, of the North Anna 3 COL application incorporates by reference the Physical Security ITAAC (PS-ITAAC) for systems within the scope of the DCD Tier 1. Part 10, Revision 5, Section 2.2.1 also listed the Site Specific Physical Security ITAAC and Design Description.

In addition, in Dominion COL FSAR Section 14.3, the applicant provided the following:

Supplemental Information

- CWR COL 14.3-2-A Site-Specific ITAAC

The selection criteria and methodology provided in this section of the referenced DCD were utilized as the site-specific selection criteria and methodology for ITAAC. These criteria and methodology were applied to those site-specific (SS) systems that were not evaluated in the referenced DCD. The entire set of ITAAC for the facility, including DC-ITAAC, EP-ITAAC, PS-ITAAC, and SS-ITAAC, is included in a separate part of the COLA [COL Part 10].

License Condition

- Part 10, License Condition

  License Condition (COLA Part 10 Section 3.6)

  Operational Program Readiness

  The licensee shall submit to the Director of NRO, a schedule, no later than 12 months after issuance of the COL, for implementation of the operational programs listed 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 operational programs in the FSAR table have been fully implemented.

  This schedule shall also address:

  • The implementation of site-specific Severe Accident Management Guidelines

  • The spent fuel rack coupon monitoring program implementation

13.6A.3 Regulatory Basis

The regulatory basis on the information incorporated by reference is addressed in the FSER related to the ESBWR DCD. In addition, the acceptance criteria associated with the relevant requirements of the Commission regulations are given in 10 CFR Part 73. 10 CFR 73 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 SGI against unauthorized release.

Regulation in 10 CFR 52.80(a) requires that information submitted in a COL application 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, and the NRC's regulations.

The North Anna 3 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 that are based on physical protection systems or hardware provided for meeting requirements including the following Commission regulations:

- 10 CFR Part 50
- 10 CFR Part 52
- 10 CFR 73.1(a)(1), “Radiological sabotage”
- 10 CFR 73.55
- 10 CFR Part 73, Appendix B, “General Criteria for Security Personnel”
- 10 CFR Part 73, Appendix C, “Nuclear Power Plant Safeguards Contingency Plans”
- 10 CFR Part 73, Appendix G, “Reportable Safeguards Events”
- 10 CFR Part 73, Appendix H, “Weapons Qualification Criteria”
- 10 CFR Part 74, 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 Section 14.3.12 of NUREG-0800.

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
- 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
- RG 5.29, “Material Control and Accounting for Nuclear Power Reactors”
- RG 5.44, “Perimeter Intrusion Alarm Systems,” Revision 3
- RG 5.62, “Reporting of Safeguards Events,” Revision 1
- RG 5.65

- RG 5.66

- Information Notice 86-83, “Underground Pathways into Protected Areas, Vital Areas, and Controlled Access Areas,” September 19, 1986.

- Regulatory Information Summary 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)

- 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 (ADAMS Accession No. ML052770257).

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 demonstrate, if adequately implemented, high assurance of 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 specific and performance requirements of 10 CFR Part 26, 10 CFR 73.54, 10 CFR 73.55, 10 CFR 73.56, 10 CFR 73.57, and 10 CFR 73.58. Within this context, the DC applicant is required only to address those elements or portion of physical protection system or features that are considered within the scope of design. The technical basis for physical protection hardware within the scope of the design provides the basis for ITAAC verification and closure.

13.6A.4 Technical Evaluation

As documented in NUREG–1966, NRC staff reviewed Section 14.3 of the ESBWR DCD, Revision 10, and checked to ensure that the combination of the information in the COL FSAR and the information in the ESBWR DCD represents the complete scope of information relating to this review topic. The NRC 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 NRC staff’s evaluation of the information incorporated by reference in the North Anna 3 COL application are documented in NUREG-1966 and its supplements.

The staff reviewed the information in the North Anna Unit 3 COL FSAR:

Supplemental Information

- CWR COL 14.3-2-A Site-Specific ITAAC

The CWR COL 14.3-2-A adds the following after DCD Section 14.3.9.

> The selection criteria and methodology provided in this section of the referenced DCD were utilized as the site-specific selection criteria and methodology for ITAAC. These criteria and methodology were applied to those site-specific (SS) systems that were not evaluated in the referenced DCD. The entire set of ITAAC for the facility, including DC-ITAAC, EP-ITAAC, PS-ITAAC, and SS-ITAAC, is included in a separate part of the COLA [COL Part 10].

In Part 10, of the North Anna 3 COL application, Dominion describes the PS-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, Table 2.19-1 of the ESBWR 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, Table 2.19-1 includes the PS-ITAACs that are in the scope of the ESBWR standard design. Site-specific PS-ITAAC that are outside the scope of the ESBWR DCD Tier 1, Table 2.19-1 are provided in Table 2.2.1-1 of Part 10 of the North Anna 3 COL application.

The NRC staff's evaluation of the PS-ITAAC (CWR COL 14.3-2-A) is documented in the Sections 13.6A.4.1 through 13.6A.4.3 of this SER.

13.6A.4.1 Detection and Assessment Hardware

The applicant submitted PS-ITAAC, in Revision 5 of the North Anna 3 COL application, Part 10, Table 2.2.1-1, "ITAAC for the Site-Specific Security System." The North Anna 3 COL application incorporates by reference the ESBWR DCD Tier 1, Table 2.19-1, Revision 10, design commitments and ITAAC for the physical security system to be used at North Anna 3.

The physical security system provides physical features to detect, delay, assist in response to, and defend against the DBT for radiological sabotage. The physical security system consists of physical barriers and an intrusion detection system. The details of the physical security system are categorized as SGI. The physical security system provides protection for vital equipment and plant personnel.

The PS-ITAAC reference numbers listed below are from NUREG-0800, SRP Section 14.3.12, "Physical Security Hardware - Appendix "A"," and are used to provide clarification of the ITAAC related to "Detection and Assessment Hardware."

PS-ITAAC 2 Protected Area Barrier:

a. Physical barriers for the protected area perimeter will not be part of vital area barriers.

b. Penetrations through the protected area barrier will be secured and monitored.

c. Unattended openings that intersect a security boundary, such as underground pathways, will be protected by a physical barrier and monitored by intrusion detection equipment or provided surveillance at a frequency sufficient to detect exploitation.

PS-ITAAC 3 Isolation Zone:

a. Isolation zones will exist in outdoor areas adjacent to the physical barrier at the perimeter of the protected area and will be designed of sufficient size to permit observation and assessment on either side of the barrier.

b. Isolation zones will be monitored with intrusion detection and assessment equipment that is designed to provide detection and assessment of activities within the isolation zone.

c. Areas where permanent buildings do not allow sufficient observation distance between the intrusion detection system and the protected area barrier (e.g., the building walls are immediately adjacent to, or are an integral part of the protected area barrier) will be monitored with intrusion detection and assessment equipment that is designed to detect the attempted or actual penetration of the protected area perimeter barrier before completed penetration of the barrier and assessment of detected activities.

PS-ITAAC 4 Protected Area Perimeter Intrusion Detection and Assessment Systems:

a. The perimeter intrusion detection system will be designed to detect penetration or attempted penetration of the protected area perimeter barrier before completed penetration of the barrier, and for subsequent alarms to annunciate concurrently in at least two continuously manned onsite alarm stations (central and secondary alarm stations).

b. The perimeter assessment equipment will be designed to provide video image recording with real-time and playback capability that can provide assessment of detected activities before and after each alarm annunciation at the protected area perimeter barrier.

c. The intrusion detection and assessment equipment at the protected area perimeter will be designed to remain operable from an uninterruptible power supply in the event of the loss of normal power.

PS-ITAAC 6 Bullet-Resisting Barriers Requirements:

The external walls, doors, ceiling, and floors in the Secondary Alarm Station, and the last access control function for access to the protected area will be bullet resistant, to at least Underwriters Laboratories Ballistic Standard 752, “The Standard of Safety for Bullet-Resisting Equipment,” Level 4, or National Institute of Justice Standard 0108.01, “Ballistic Resistant Protective Materials,” Type III.

PS-ITAAC 9 Picture Badge Identification System Requirements:

An access control system with a numbered photo identification badge system will be installed and designed for use by individuals who are authorized access to protected areas and vital areas without escort.

Accordingly, the NRC staff determined that the North Anna 3 COL application, Part 10, Table 2.2.1-1 has adequately addressed, PS-ITAAC for Detection and Assessment Hardware Items 2(a), 2(b), 2 (c), 3(a), 3(b), 3(c), 4(a), 4(B), 4(c), 6 partially, and 9 identified in Appendix A to Section 14.3.12 of NUREG-0800.

The North Anna 3 COL application, Part 10, Table 2.2.1-1 partially addressed PS-ITAAC 6. The application references the ESBWR DCD, Revision 10, which also partially addressed PS-ITAAC 6. The NRC staff determined the between both the North Anna 3 COL and the ESBWR DCD all elements of the PS-ITAAC 6 PS-ITAAC 6 are adequately addressed as identified in Appendix A to Section 14.3.12 of NUREG-0800.

The staff has determined that the Detection and Assessment Hardware PS-ITAAC, described in NUREG-0800, Section 14.3.12 has been fully addressed between the North Anna 3 submission in FSAR, Revision 8 and the ESBWR DCD, Revision 10.

13.6A.4.2 Delay or Barrier Design

The applicant submitted PS-ITAAC, in Revision 5 of the North Anna 3 COL application, Part 10, Table 2.2.1-1, "ITAAC for the Site-Specific Security System." The Dominion, North Anna 3 COL incorporates by reference the ESBWR DCD Tier 1, Table 2.19-1, Revision 10, design commitments and ITAAC for the physical security system to be used at North Anna 3.

The PS-ITAAC listed below reference numbers are from NUREG-0800, SRP Section 14.3.12 Physical Security Hardware - Appendix "A" and are used to provide clarification of the ITAAC related to "Delay or Barrier Design."

PS-ITAAC 1. Vital Area and Vital Area Barrier:

a. Vital equipment will be located only within a vital area.

b. Access to vital equipment will require passage through at least two physical barriers.

PS-ITAAC 8. Personnel, Vehicle, and Material Access Control Portals and Search Equipment:

a. Access control points will be established and designed to control personnel and vehicle access into the protected area.

b. Access control points will be established and designed with equipment for the detection of firearms, explosives, and incendiary devices at the protected area personnel access points.

Accordingly, the NRC staff determined that the North Anna 3 COL application, Part 10, Table 2.2.1-1 has adequately addressed, PS-ITAAC for Delay or Barrier Design Items 8(a), 8(b), identified in Appendix A to Section 14.3.12 of NUREG-0800.

The North Anna 3 COL application, Part 10, Table 2.2.1-1 partially addressed PS-ITAAC 1(a) and 1(b). The application references the ESBWR DCD, Revision 10, which also partially addressed PS-ITAAC 1(a) and 1(b). The NRC staff determined that between both the North Anna 3 COL and the ESBWR DCD all elements of the PS-ITAAC 1(a) and 1(b) are adequately addressed as identified in Appendix A to Section 14.3.12 of NUREG-0800.

The staff has determined that PS-ITAAC described in NUREG-0800, Section 14.3.12 has been fully addressed between the North Anna 3 submission in FSAR, Revision 8 and the ESBWR DCD, Revision 10.

13.6A.4.3 Systems, Hardware, or Features Facilitating Security Response and Neutralization

The applicant submitted PS-ITAAC, in Revision 5 of the North Anna 3 COL application, Part 10, Table 2.2.1-1, “ITAAC for the Site-Specific Security System.” The Dominion, North Anna 3 COLA incorporates by reference the ESBWR DCD Tier 1, Table 2.19-1, Revision 10, design commitments and ITAAC for the physical security system to be used as the North Anna 3.

The below listed PS-ITAAC reference numbers are from NUREG-0800, SRP Section 14.3.12 Physical Security Hardware - Appendix "A" and are used to provide clarification of the ITAAC related to “Systems, Hardware, or Features Facilitating Security Response and Neutralization.”

PS-ITAAC 5 Illumination Requirements:

Isolation zones and exterior areas within the protected area will be provided with illumination to permit assessment in the isolation zones and observation of activities within exterior areas of the protected area.

PS-ITAAC 7 Vehicle Control Measures Requirements:

The vehicle barrier system will be designed, installed, and located at the necessary standoff distance to protect against the design-basis threat vehicle bombs.

PS-ITAAC 10 Vital Areas Access Control Requirements
Unoccupied vital areas will be designed with locking devices and intrusion detection devices that annunciate in the Secondary Alarm Station.

PS-ITAAC 11 Alarm Station:

a. Intrusion detection equipment and video assessment equipment will annunciate and be displayed concurrently in at least two continuously manned onsite alarm stations (Central and Secondary Alarm Stations).

b. The Secondary Alarm Station will be located inside the protected area and will be designed so that the interior of the alarm station is not visible from the perimeter of the protected area.

c. Central and Secondary Alarm Stations will be designed, equipped and constructed such that no single act, in accordance with the design-basis threat of radiological sabotage, can simultaneously remove the ability of both the central and secondary alarm stations to (1) detect and assess alarms, (2) initiate and coordinate an adequate response to alarms, (3) summon offsite assistance, and (4) provide effective command and control.

d. Both the Central and Secondary Alarm Stations will be constructed, located, protected, and equipped to the standards for the Central Alarm Station (alarm stations need not be identical in design but shall be equal and redundant, capable of performing all functions required of alarm stations).

e. ITAAC 11(new) In May 2010, Standard Review Plan (SRP) Section 14.3.12 was revised during the review of this application; an additional PS-ITAAC task was added to this section. This new task is addressed by the applicant in Section 15 of the North Anna 3 PSP. The ITAAC SRP dated January 2010, that was used for review is published in the *Federal Register*. The initial (2007) SRP on date of application meets the requirements under 10 CFR 50.34(H)

PS-ITAAC 12 Secondary Power Supplies for Alarm Annunciation and Communication Equipment Requirements:

The secondary security power supply system for alarm annunciator equipment contained in the Secondary Alarm Station and non-portable communications equipment contained in the Secondary Alarm Station is located within a vital area.

PS-ITAAC 13 Intrusion Detection Systems Console Display:

a. Security alarm devices, including transmission lines to annunciators, will be tamper indicating and self-checking (e.g., an automatic indication is provided when failure of the alarm system or a component occurs or when on standby power), and alarm annunciation indicates the type of alarm (e.g., intrusion alarms, emergency exit alarm) and location.

b. Intrusion detection and assessment systems will be designed to provide visual display and audible annunciation of alarms in the Secondary Alarm Station.

PS-ITAAC 14 Intrusion Detection Systems Recording Requirements:

Intrusion detection systems recording equipment will record onsite security alarm annunciation including the location of the alarm, false alarm, alarm check, and tamper indication and the type of alarm, location, alarm circuit, date, and time.

PS-ITAAC 15 Vital Area Emergency Exits Requirements:

Emergency exits through the protected area perimeter and vital area boundaries will be alarmed with intrusion detection devices and secured by locking devices that allow prompt egress during an emergency.

PS-ITAAC 16 Communication:

a. The Secondary Alarm Station will have conventional (land line) telephone service with the Main Control Room and local law enforcement authorities.

b. The Secondary Alarm Station will be capable of continuous communication with on-duty security force personnel.

c. Non-portable communications equipment in the Secondary Alarm Station will remain operable from an independent power source in the event of loss of normal power.

Accordingly, the NRC staff determined that the North Anna 3 COL application, Part 10, Table 2.2.1-1 has adequately addressed, PS-ITAAC for Systems, Hardware, or Features Facilitating Security Response and Neutralization Items 5, 7, 10 11(a), 11(b), 11(c), 11(d), (Note: 10 CFR 50.34(h), SRP Section 14.3.12 was revised during the review of this application, and an additional PS-ITAAC task was added to this section. This new task is addressed by the applicant in Section 15 of the North Anna 3 PSP), 12, 13(a), 13(b), 15, 16(a)16(b), 16(c), identified in Appendix A to Section 14.3.12 of NUREG-0800.

The North Anna 3 COL application, Part 10, Table 2.2.1-1 partially addressed PS-ITAAC Items 10, 11(b), 12, 13(a), 13(b) 14, 15, 16(a), 16(b), 16(c). The application references the ESBWR DCD, Revision 10, which also partially addressed PS-ITAAC Items 10, 11(b), 12, 13(a), 13(b) 14, 15, 16(a), 16(b), 16(c). The NRC staff determined the between both the North Anna 3 COL and the ESBWR DCD all elements of the PS-ITAAC Items 10, 11(b), 12, 13(a), 13(b) 14, 15, 16(a), 16(b), 16(c) are adequately addressed as identified in Appendix A to Section 14.3.12 of NUREG-0800.

The staff has determined that Systems, Hardware, or Features Facilitating Security Response and Neutralization PS-ITAAC described in NUREG-0800, Section 14.3.12 has been fully addressed between the North Anna 3 submission in FSAR Revision 8 and the ESBWR DCD, Revision 10.

License Condition

- Part 10, License Condition

The staff has reviewed the license condition below against the recommendations in SECY-05-0197 as endorsed by the related SRM, dated February 22, 2006. The staff concluded that the proposed license condition conforms to the guidance in SECY-05-0197. In December 2013, Dominion submitted a revised FSAR Table 13.4-201 and Part 10, of their COL application, which confirms the addition of the Operational Program Readiness milestone requirements for Physical Security.

In addition, the staff proposes the following License Condition for ITAAC for Physical Security:

License Condition (COLA Part 10 Section 3.6)

Operational Program Readiness

The licensee shall submit to the Director of NRO, a schedule, no later than 12 months after issuance of the COL, for implementation of the operational programs listed 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 operational programs in the FSAR table have been fully implemented. This schedule shall also address:

- The implementation of site specific Severe Accident Management Guidance.
- The spent fuel rack coupon monitoring program implementation.

The licensee shall perform and satisfy the ITAAC defined in FSAR Table 2.2.1-1, "ITAAC for the Site-Specific Physical Security".

13.6A.5 Post-Combined License Activities

3.6 Operational Program Readiness

The licensee shall submit to the Director of NRO, a schedule, no later than 12 months after issuance of the COL, for implementation of the operational programs listed 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 operational programs in the FSAR table have been fully implemented. This schedule shall also address:

- The implementation of site specific Severe Accident Management Guidance.
- The spent fuel rack coupon monitoring program implementation.

License Condition 13.6.1: The licensee shall perform and satisfy the ITAAC defined in FSAR Table 2.2.1-1, "ITAAC for the Site-Specific Physical Security" **and** as shown in Attachment 1 of this SER.

13.6A.6 Conclusions

The NRC staff's finding related to information incorporated by reference is in NUREG–1966. The NRC 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 Dominion's COL FSAR related to this section. The results of the NRC staff's technical evaluation of the information incorporated by reference in the North Anna 3 COL application are documented in NUREG-1966.

The NRC staff concludes that the relevant information presented in the North Anna 3 COL FSAR, is acceptable based on the applicable regulations specified in Section 13.6A.3 of this SER. The staff based its conclusion on the following:

CWR COL 14.3-2-A, as related to PS-ITAAC is acceptable due to the staff finding that the applicant adequately describes the physical security systems and provided the implementation of the site-specific protective strategy and security programs as documented in Section 13.6 of this SER. 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 North Anna 3 COL FSAR, Chapter 13 and referenced TRs. The applicant has provided adequate descriptions of objectives, prerequisites, test methods, data required, and acceptance criteria for security-related ITAAC for the approval of the North Anna 3 COL.

Attachment 1: FSAR Table 2.2.1-1, "ITAAC for the Site-Specific Physical Security"

Table 2.2.1-1 ITAAC for the Site-Specific Security System		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
1(a). Vital equipment will be located only within a vital area.	1(a). All vital equipment locations will be inspected.	1(a). Vital equipment is located only within a vital area.
1(b). Access to vital equipment will require passage through at least two physical barriers.	1(b). All vital equipment physical barriers will be inspected.	1(b). Vital equipment is located within a protected area such that access to the vital equipment requires passage through at least two physical barriers.
2(a). Physical barriers for the protected area perimeter will not be part of vital area barriers.	2(a). The protected area perimeter barriers will be inspected.	2(a). Physical barriers at the perimeter of the protected area are separated from any other barrier designated as a vital area barrier.
2(b). Penetrations through the protected area barrier will be secured and monitored.	2(b). All penetrations through the protected area barrier will be inspected.	2(b). All penetrations and openings through the protected area barrier are secured and monitored by intrusion detection equipment.
2(c). Unattended openings that intersect a security boundary, such as underground pathways, will be protected by a physical barrier and monitored by intrusion detection equipment or provided surveillance at a frequency sufficient to detect exploitation.	2(c). All unattended openings within the protected area barriers will be inspected.	2(c). All unattended openings (such as underground pathways) that intersect a security boundary (such as the protected area barrier), are protected by a physical barrier and monitored by intrusion detection equipment or provided surveillance at a frequency sufficient to detect exploitation.
3(a). Isolation zones will exist in outdoor areas adjacent to the physical barrier at the perimeter of the protected area and will be designed of sufficient size to permit observation and assessment on either side of the barrier.	3(a). The isolation zones in outdoor areas adjacent to the protected area perimeter barrier will be inspected.	3(a). The isolation zones exist in outdoor areas adjacent to the physical barrier at the perimeter of the protected area and are of sufficient size to permit observation and assessment of activities on either side of the barrier in the event of its penetration or attempted penetration.
3(b). Isolation zones will be monitored with intrusion detection and assessment equipment that is designed to provide detection and assessment of activities within the isolation zone.	3(b). The intrusion detection equipment within the isolation zones will be inspected.	3(b). Isolation zones are equipped with intrusion detection and assessment equipment capable of providing detection and assessment of activities within the isolation zone.

Table 2.2.1-1 ITAAC for the Site-Specific Security System		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
3(c). Areas where permanent buildings do not allow sufficient observation distance between the intrusion detection system and the protected area barrier (e.g., the building walls are immediately adjacent to, or are an integral part of the protected area barrier) will be monitored with intrusion detection and assessment equipment that is designed to detect the attempted or actual penetration of the protected area perimeter barrier before completed penetration of the barrier and assessment of detected activities.	3(c). Inspections of areas of the protected area perimeter barrier that do not have isolation zones will be performed.	3(c). Areas where permanent buildings do not allow sufficient observation distance between the intrusion detection system and the protected area barrier (e.g., the building walls are immediately adjacent to, or an integral part of, the protected area barrier) are monitored with intrusion detection and assessment equipment that detects attempted or actual penetration of the protected area perimeter barrier before completed penetration of the barrier and assessment of detected activities.
4(a). The perimeter intrusion detection system will be designed to detect penetration or attempted penetration of the protected area perimeter barrier before completed penetration of the barrier, and for subsequent alarms to annunciate concurrently in at least two continuously manned onsite alarm stations (central and secondary alarm stations).	4(a). Tests, inspections, or a combination of tests and inspections of the intrusion detection system will be performed.	4(a). The intrusion detection system can detect penetration or attempted penetration of the protected area perimeter barrier before completed penetration of the barrier, and subsequent alarms annunciate concurrently in at least two continuously manned on site alarms stations (central and secondary alarm stations).
4(b). The perimeter assessment equipment will be designed to provide video image recording with real-time and playback capability that can provide assessment of detected activities before and after each alarm annunciation at the protected area perimeter barrier.	4(b). Tests, inspections, or a combination of tests and inspections of the video assessment equipment will be performed.	4(b). The perimeter assessment equipment is capable of real-time and playback video image recording that provides assessment of detected activities before and after each alarm at the protected area perimeter barrier.
4(c). The intrusion detection and assessment equipment at the protected area perimeter will be designed to remain operable from an uninterruptible power supply in the event of the loss of normal power.	4(c). Tests, inspections, or a combination of tests and inspections of the uninterruptible power supply will be performed.	4(c). All 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.

Table 2.2.1-1 ITAAC for the Site-Specific Security System		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
5. Isolation zones and exterior areas within the protected area will be provided with illumination to permit assessment in the isolation zones and observation of activities within exterior areas of the protected area.	5. The illumination in isolation zones and exterior areas within the protected area will be inspected.	5. Illumination in isolation zones and exterior areas within the protected area is 0.2 foot candles measured horizontally at ground level or alternatively augmented, sufficient to permit assessment and observation.
6. The external walls, doors, ceiling, and floors in the Secondary Alarm Station, and the last access control function for access to the protected area will be bullet resistant, to at least Underwriters Laboratories Ballistic Standard 752, "The Standard of Safety for Bullet-Resisting Equipment," Level 4, or National Institute of Justice Standard 0108.01, "Ballistic Resistant Protective Materials," Type III.	6. Type test, analysis, or a combination of type test and analysis of the external walls, doors, ceiling, and floors in the Secondary Alarm Station, and the last access control function for access to the protected area will be performed.	6. A report exists and concludes that the walls, doors, ceilings, and floors in the Secondary Alarm Station, and the last access control function for access to the protected area are bullet resistant to at least Underwriters Laboratories Ballistic Standard 752, Level 4, or National Institute of Justice Standard 0108.01, Type III.
7. The vehicle barrier system will be designed, installed, and located at the necessary standoff distance to protect against the design-basis threat vehicle bombs.	7. Type test, inspections, analysis or a combination of type tests, inspections, and analysis will be performed for the vehicle barrier system	7. A report exists and concludes that the vehicle barrier system will protect against the threat vehicle bombs based on the standoff distance for the system.
8(a). Access control points will be established and designed to control personnel and vehicle access into the protected area.	8(a). Tests, inspections, or a combination of tests and inspections of installed systems and equipment will be performed.	8(a). Access control points exist for the protected area and are configured to control access.
8(b). Access control points will be established and designed with equipment for the detection of firearms, explosives, and incendiary devices at the protected area personnel access points.	8(b). Tests, inspections, or a combination of tests and inspections of installed systems and equipment will be performed.	8(b). Detection equipment exists and is capable of detecting firearms, explosives, and incendiary devices at the protected area personnel access control points.
9. An access control system with a numbered photo identification badge system will be installed and designed for use by individuals who are authorized access to protected areas and vital areas without escort.	9. The access control system and the numbered photo identification badge system will be tested.	9. The access authorization system with a numbered photo identification badge system is installed and provides authorized access to protected and vital areas only to those individuals with unescorted access authorization.

Table 2.2.1-1 ITAAC for the Site-Specific Security System		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
10. Unoccupied vital areas will be designed with locking devices and intrusion detection devices that annunciate in the Secondary Alarm Station.	10. Tests, inspections, or a combination of tests and inspections of unoccupied vital area intrusion detection equipment and locking devices will be performed.	10. Unoccupied vital areas are locked, and intrusion is detected and annunciated in the Secondary Alarm Station.
11(a). Intrusion detection equipment and video assessment equipment will annunciate and be displayed concurrently in at least two continuously manned onsite alarm stations (Central and Secondary Alarm Stations).	11(a). Tests, inspections, or a combination of tests and inspections of intrusion detection equipment and video assessment equipment will be performed.	11(a). Intrusion detection equipment and video assessment equipment annunciate and display concurrently in at least two continuously manned onsite alarm stations (Central and Secondary Alarm Stations).
11(b). The Secondary Alarm Station will be located inside the protected area and will be designed so that the interior of the alarm station is not visible from the perimeter of the protected area.	11(b). The Secondary Alarm Station location will be inspected.	11(b). The Secondary Alarm Station is located inside the protected area, and the interior of the alarm station is not visible from the perimeter of the protected area.
11(c). The alarm system will not allow the status of a detection point, locking mechanism or access control device to be changed without the knowledge and concurrence of the alarm station operator in the other alarm station.	11(c).Tests, inspections, or a combination of tests and inspections of intrusion detection equipment and access control equipment will be performed.	11(c). The alarm system will not allow the status of a detection point, locking mechanism or access control device to be changed without the knowledge and concurrence of the alarm station operator in the other alarm station.
11(d). Central and Secondary Alarm Stations will be designed, equipped and constructed such that no single act, in accordance with the design-basis threat of radiological sabotage, can simultaneously remove the ability of both the central and secondary alarm stations to (1) detect and assess alarms, (2) initiate and coordinate an adequate response to alarms, (3) summon offsite assistance, and (4) provide effective command and control.	11(d). Tests, inspections, or a combination of tests and inspections of the Central and Secondary Alarm Stations will be performed.	11(d). Central and Secondary Alarm Stations are designed, equipped, and constructed such that no single act, in accordance with the design-basis threat of radiological sabotage, can simultaneously remove the ability of both the central and secondary alarm stations to (1) detect and assess alarms, (2) initiate and coordinate an adequate response to alarms, (3) summon offsite assistance, and (4) provide effective command and control.

Table 2.2.1-1 ITAAC for the Site-Specific Security System		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
11(e). Both the Central and Secondary Alarm Stations will be constructed, located, protected, and equipped to the standards for the Central Alarm Station (alarm stations need not be identical in design but shall be equal and redundant, capable of performing all functions required of alarm stations).	11(e). Tests, inspections, or a combination of tests and inspections of the Central and Secondary Alarm Stations will be performed.	11(e). The Central and Secondary Alarm Stations are located, constructed, protected, and equipped to the standards of the Central Alarm Station and are functionally redundant (stations need not be identical in design).
12. The secondary security power supply system for alarm annunciator equipment contained in the Secondary Alarm Station and non-portable communications equipment contained in the Secondary Alarm Station is located within a vital area.	12. The secondary security power supply system will be inspected.	12. The secondary security power supply system for alarm annunciator equipment contained in the Secondary Alarm Station and non-portable communications equipment contained in the Secondary Alarm Station is located within a vital area.
13(a). Security alarm devices, including transmission lines to annunciators, will be tamper-indicating and self-checking (e.g., an automatic indication is provided when failure of the alarm system or a component occurs or when on standby power), and alarm annunciation indicates the type of alarm (e.g., intrusion alarms, emergency exit alarm) and location.	13(a). All security alarm devices and transmission lines will be tested.	13(a). Security alarm devices including transmission lines to annunciators are tamper indicating and self-checking (e.g., an automatic indication is provided when failure of the alarm system or a component occurs, or when the system is on standby power), and the alarm annunciation indicates the type of alarm (e.g., intrusion alarm, emergency exit alarm) and location.
13(b). Intrusion detection and assessment systems will be designed to provide visual display and audible annunciation of alarms in the Secondary Alarm Station.	13(b). Intrusion detection and assessment systems will be tested.	13(b). The intrusion detection and assessment systems provide a visual display and audible annunciation of alarms in the Secondary Alarm Station (concurrently with the display and annunciation in the Central Alarm Station).
14. No Site-Specific ITAAC specified.	14. No Site-Specific ITAAC specified.	14. No Site-Specific ITAAC specified.

Table 2.2.1-1 ITAAC for the Site-Specific Security System		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
15. Emergency exits through the protected area perimeter and vital area boundaries will be alarmed with intrusion detection devices and secured by locking devices that allow prompt egress during an emergency.	15. Tests, inspections, or a combination of tests and inspections of emergency exits through the protected area perimeter and vital area boundaries will be performed.	15. Emergency exits through the protected area perimeter and vital area boundaries are alarmed with intrusion detection devices and secured by locking devices that allow prompt egress during an emergency.
16(a). The Secondary Alarm Station will have conventional (land line) telephone service with the Main Control Room and local law enforcement authorities.	16(a). Tests, inspections, or a combination of tests and inspections of the Secondary Alarm Stations' conventional (land line) telephone service will be performed.	16(a). The Secondary Alarm Station is equipped with conventional (land line) telephone service with the Main Control Room and local law enforcement authorities.
16(b).The Secondary Alarm Station will be capable of continuous communication with on-duty security force personnel.	16(b). Tests, inspections, or a combination of tests and inspections of the Secondary Alarm Stations' continuous communication capabilities will be performed.	16(b). The Secondary Alarm Station is capable of continuous communication with on-duty watchmen, armed security officers, armed responders, or other security personnel who have responsibilities within the physical protection program and during contingency response events.
16(c). Non-portable communications equipment in the Secondary Alarm Station will remain operable from an independent power source in the event of loss of normal power.	16(c). Tests, inspections, or a combination of tests and inspections of the non-portable communications equipment will be performed.	l6(c). All non-portable communication devices (including conventional telephone systems) in the Secondary Alarm Station are wired to an independent power supply that enables those systems to remain operable (without disruption) during the loss of normal power.

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 (FFD) 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 their duties are managed commensurate with maintaining public health and safety.

13.7.2 Summary of Application

The COL applicant has provided Section 13.7 of the North Anna 3 COL Application, Final Safety Analysis Report (FSAR), Revision 5, for staff review. The COL applicant submitted the draft text of Revision 5 of COL FSAR Section 13.7 and Section 13.4-201 in March 16, 2012, NRC Docket No. 52-017 Dominion Virginia Power, North Anna 3 COL, SRP 13.07: Response to RAI Letter 52. In these documents, Dominion described conditions of the operations and construction FFD programs for North Anna 3. The staff review is based on the applicant's COL, Revision 5, dated March 2012.

Supplemental Information

The staff needed to obtain further clarity on the COL applicant's description of the FFD program. Information initially provided by the COL applicant was insufficient to perform a technical evaluation – additional site-specific information was needed from the COL applicant about the North Anna 3 FFD program. To accomplish this, the staff issued RAI 13.07-1, dated December 3, 2010 (ADAMS Accession No. ML103560107), Revisions to NEI 06-06 and question13.07-2, dated December 3, 2010 (ADAMS Accession No. ML103560107), Site-specific FFD Information) to the COL applicant. The COL applicant provided responses to the staff RAIs in a letter dated January 18, 2011, (ADAMS Accession No. ML103560139). The RAI responses described the FFD program for both the construction phase and the operations phase of North Anna 3. The FFD Program is implemented and maintained in two phases; the construction phase program and the operations phase program. The construction and operations phase programs are implemented as identified in North Anna COL FSAR Table 13.4-201. The construction phase program is consistent with the NRC-accepted NEI, "Fitness for Duty Program Guidance for New Nuclear Power Plant Construction Sites," NEI 06-06, Revision 5. The NRC Fitness for Duty technical staff and managerial oversight staff has determined the North Anna operations phase program complies with 10 CFR Part 26.

License Conditions

There are no FFD license conditions for North Anna 3.

13.7.3 Regulatory Basis

The applicable regulatory requirements for COL FSAR Section13.7-1 and Section 13.4-201 are as follows:

- 10 CFR Part 26
- 10 CFR 52.79(a)(44

Pending the issuance of an NRC regulatory guide for NEI 06-06, applicants may cite NEI 06-06, Revision 5 as a reference in the development of site-specific applications.

13.7.4 Technical Evaluation

The NRC staff reviewed COL application Part 2, FSAR Sections 13.7, and 13.4-201 and found that the required information relating to the FFD program and the complete scope of information relating to this review topic are met.

The staff reviewed the following information in the COL applicant FSAR:

Supplemental Information

The COL applicant provided a new COL FSAR Section 13.7, and has revised COL FSAR 13.4-201 as a change to the COL FSAR Revision 5.

The staff review of COL FSAR Section 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 program implementation milestones proposed by the COL applicant for both the construction phase and operations phase.

In RAI 13.07-1, dated December 3, 2010 (ADAMS Accession No. ML103560107), the staff asked 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. The Applicant intends 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 the January 18, 2011, response to RAI 13.07-1 (ADAMS Accession No. ML110270303), the COL applicant states the following:

> Dominion intends to update the construction phase FFD program to conform to the NRC-endorsed version of NEI 06-06, or provide justified alternative methods of conformance to regulations. After the COL is issued, Dominion will continue to meet the applicable FFD regulations.

In the January 18, 2011, response to RAI 13.07-1, the applicant committed to implement a construction phase (FFD) program to reflect the changes identified in response to RAI13.07-1.

The staff verified that the applicant has included the proposed changes in FSAR, Rev. 8. Therefore, RAI 13.07-01 is resolved and closed.

In RAI 13.07-2, dated December 3, 2010 (ADAMS Accession No. ML103560107), the staff asked 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. Describe how the COL Application, FSAR, Part 2, Table 13.4-201, item 20, (Sheet 13-58), comports with 10 CFR 26, Sections 26.3 and 26.4, and guidance in NRC's letter to the Nuclear Energy Institute 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” In particular, provide site-specific information to clearly and sufficiently describe your operational FFD program, in terms of the scope and level of detail to allow as reasonable assurance of finding of acceptability. For example, will North Anna base its Section 26.4(a) and (b) FFD program for Behavioral Observation Program and drug and alcohol testing on an operational unit program or develop its own specific program? Please describe substantial differences, if any.

In the January 18, 2011, response to RAI 13.07-2 (ADAMS Accession No. ML110270303), the COL applicant states the following:

> The COL Application, FSAR, Part 2, Table 13.4-201, item 20 references 10 CFR 26, Sections 26.3 and 26.4, as applicable, as requirements for implementation of the FFD Program for operation and for construction. Dominion will use both the current operational FFD program and a North Anna Unit 3 specific construction FFD program based on the individuals and the type of work being performed. In-particular, the 10 CFR Part 26.4(a) and (b) FFD program, which is the operational FFD program, will cover Dominion's employees and Dominion's subcontractors. Dominion's Engineering, Procurement, and Construction (EPC) contractor personnel and the EPC's subcontractors will be covered by a Dominion-approved contractor FFD program. The North Anna Unit 3 specific construction FFD program, 10 CFR Part 26.4(f), will cover the construction workers and first line supervisors. There are no substantial differences between the FFD programs, which are consistent with 10 CFR Part 26 and NEI 06-06, Revision 5. FSAR Table 13.4-201 and FSAR Section 13.7 will be revised to reflect the guidance provided in NRC's letter to the Nuclear Energy Institute 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”. Also, site-specific information, including the applicable 10 CFR Part 26 element subparts, will be added to clearly describe the FFD programs.
>
> FSAR, Part 2, Table 13.4-201 and Section 13.7 will be revised […].

In FSAR Part 2, Revision 6, the applicant revised COL FSAR Table 13.4-201(Operations Programs Required by NRC Regulations and Program Implementation) as follows:

COL FSAR Table 13.4-201 Operations Programs Required by NRC Regulations and Program Implementation

Program Title	Program Source	FSAR Section	Milestone	Requirement
FFD Program (Construction-Workers & First Line Supervisors)	10 CFR Part 26.4(f)	13.7	Prior to initiating 10 CFR 26 construction activities	10 CFR 26, Subpart K
FFD Program (Construction-Management & Oversight Personnel)	10 CFR Part 26.4(e)	13.7	Prior to initiating 10 CFR 26 construction activities	10 CFR 26, Subparts A through H, N and O
FFD Program for security personnel	10 CFR 26.4(e)(1)	13.7	Prior to initiating 10 CFR 26 construction activities	10 CFR 26, Subparts A through H, N and O
FFD Program for security personnel c'td	10 CFR 26.4(a)(5)	13.7	Prior to the earlier of: a. Receipt of SNM in the form of fuel assemblies, b. Establishment of a PA, or c. 10 CFR 52.103(g) finding	10 CFR 26, Subparts A through I, N and O

Program Title	Program Source	FSAR Section	Milestone	Requirement
FFD Program for FFD Program personnel	10 CFR Part 26.4(g)	13.7	Prior to initiating 10 CFR 26 construction activities	10 CFR 26, Subparts A, B, D through H, N, O and C per licensee's discretion
FFD Program for persons required to physically report to the Technical Support Center (TSC) or Emergency Operations Facility (EOF)	10 CFR Part 26.4(c)	13.7	Prior to the conduct of the first full participation emergency preparedness exercise under 10 CFR 50, Appendix E, Section F.2.a	10 CFR 26, Subparts A through I, N and O, except for 10 CFR 26.205 through 10 CFR 26.209
FFD Program for Operation	10 CFR 26.4(a) and 10 CFR 26.4(b)	13.7	Prior to the earlier of: a. Receipt of SNM in the form of fuel assemblies b. Establishment of a PA, or c. 10 CFR 52.103(g) finding	10 CFR 26, Subparts A through I, N and O, except for individuals listed in 10 CFR 26.4(b), who are not subject to 10 CFR 26.205 through 10 CFR 26.209

The COL applicant stated that their FFD program is implemented and maintained in two phases, the construction and operations phases, which are dependent on the activities, duties, or access afforded to certain individuals at the construction site.

The COL applicant stated that their construction FFD program conforms to the guidance in the NRC-accepted NEI 06-06, Revision 5, which 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. Other on-site, key personnel will be subject to the operations FFD program that complies with 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 COL applicant stated that their workforce population is subject to a random testing program and that the numbers are derived from weekly averages of active badges over a seven-day period and that persons to be tested are identified by a computerized testing generator.

The COL applicant stated their site-specific information at the construction site is provided:

- Dominion's Engineering, Procurement, and Construction (EPC) contractor personnel and the EPC's subcontractors working in the following areas are covered by a Dominion-approved contractor FFD Program (10 CFR Part 26, elements Subparts A-H, N and O):
  - FFD program personnel
  - Security personnel
  - Construction management and oversight personnel

- Dominion's EPC contractor personnel and the EPC's subcontractors working in the following area are covered by a Dominion-approved contractor FFD Program (10 CFR Part 26, elements Subpart K):
  - Construction workers and first-line supervisors

- Dominion's employees and Dominion's subcontractors working in the following areas are covered by the Dominion North Anna Units 1 and 2 Operations FFD Program (10 CFR Part 26, elements Subparts A-I, N and 0):
  - FFD program personnel
  - Security personnel protecting fuel assemblies
  - Personnel required to physically report to the Technical Support Center (TSC) or Emergency Operations Facility (EOF) by Emergency Plans and procedures (except for 10 CFR Part 26, Subsections 26.205-209 and Subpart K, which do not apply)

- All other Dominion employees and Dominion subcontractors working at the construction site are covered by the Dominion North Anna Units 1 and 2 Operations FFD Program (10 CFR Part 26, elements Subparts A-H, N and O)

In the January 18, 2011 response to RAI 13.07-2, the applicant committed to modify the FSAR to indicate a replacement to Section 13.7, Fitness for Duty. They also agreed to provide site-specific information, and to provide explanation of their construction FFD program to comply with certain clarification, additions, and exceptions in these future, endorsed revisions as necessary. The staff has determined that this response, which includes site-specific information and milestones is acceptable. The staff verified that the applicant had included the proposed changes in COL FSAR revision 6. Therefore, this RAI is resolved and closed.

License Conditions

There are no license conditions applicable to the North Anna COL application.

13.7.5 Post Combined License Activities

There are no post license activities associated with the North Anna 3 COL application.

13.7.6 Conclusion

NRC staff reviewed FSAR Section 13.7 and the applicant's proposed revision to this section. The staff's review confirmed that the applicant has addressed the required information relating to the FFD Program, and no outstanding information is expected to be addressed in the COL FSAR related to this section.

The staff compared the information in the proposed FSAR markup changes to the relevant NRC regulations and the guidance in NEI 06-06. The staff concludes that the information in the North Anna 3 COL FSAR is acceptable because it meets the regulatory requirements in 10 CFR Part 26 and 10 CFR 52.79(a)(44). The staff based this conclusion on the following:

STD SUP 13.7-1, which relates to the FFD Program, is acceptable because it conforms to 10 CFR Part 26 and 10 CFR 52.79(a)(44), as clarified in the NRC letter to NEI dated December 2, 2009 (ADAMS Accession No. ML092881085).

13.8 Cyber Security

13.8.1 Introduction

This section provides information relating to the preparations and plans for the Cyber Security program for North Anna 3. The purpose of this section is to demonstrate that the COL applicant will establish and maintain a Cyber Security Program to provide high assurance that digital systems, networks, and communication systems are protected from cyber-attacks.

13.8.2 Summary of Application

On December 5, 2011, Dominion submitted a Revision 2 of the Cyber Security Plan (CSP) for North Anna 3. The CSP applies to all critical digital assets (CDA) required for North Anna 3 operation. In the submittal, Dominion describes how it establishes, implements, and maintains a Cyber Security program that protects digital computer and communication systems and networks associated with safety-related and important-to-safety functions; security functions; emergency preparedness functions, including offsite communications; and support systems and equipment which, if compromised, would adversely impact safety, security, or emergency preparedness functions.

13.8.3 Regulatory Basis

The following NRC regulations include the relevant requirements and guidance for the CSP:

- 10 CFR 73.54, "Protection of Digital Computer and Communication Systems and Networks"
- 10 CFR 73.55(a)(1), 10 CFR 73.55(b)(8), and 10 CFR 73.55(m)
- 10 CFR 73, Appendix G

The 10 CFR 73.54 requires each applicant to build and operate a nuclear power plant under 10 CFR Part 52, to submit, a CSP that satisfies the requirements of 10 CFR 73.54 for Commission review and approval.

The NRC staff stated in a letter (Subject: Nuclear Energy Institute [NEI] 08-09, "Cyber Security Plan Template, Rev. 6), dated May 5, 2010 (ADAMS Accession No.: ML101190371), that an applicant may use the template in NEI 08-09, Revision 6, to prepare an acceptable CSP. Dominion submitted a CSP for North Anna 3 that was based on the template provided in NEI 08-09, Revision 6. The submitted CSP was reviewed against the template in NEI 08-09, Rev. 6, which has been found acceptable for use by NRC staff. NEI 08-09, Rev. 6 is comparable to Regulatory Guide (RG) 5.71, which is approved NRC guidance.

13.8.4 Technical Evaluation

The staff performed a technical evaluation of the applicant's CSP. The staff's review finds that the applicant's CSP conforms to the guidance in NEI 08-09, Revision 6, which is comparable to RG 5.71, to satisfy the requirements in 10 CFR 73.54. The staff also reviewed the applicant's CSP against the requirements of 10 CFR 73.54 in accordance with the guidance in RG 5.71. The staff's evaluation of each section of the applicant's CSP is discussed below.

13.8.4.1 Scope and Purpose

The North Anna 3 CSP establishes a means to achieve high assurance that digital computer and communication systems and networks associated with the following functions are adequately protected against cyber-attacks up to and including the design basis threat:

- Safety-related and important-to-safety functions;
- Security functions;
- Emergency preparedness functions, including offsite communications; and
- Support systems and equipment which, if compromised, would adversely impact safety, security, or emergency preparedness functions.

The submitted CSP describes achievement of high assurance of adequate protection of systems associated with the above functions from cyber-attacks by:

- Implementing and documenting the "baseline" security controls as described in Section 3.1.6 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3.3 described in RG 5.71; and
- Implementing and documenting a CSP to maintain the established cyber security controls through a comprehensive life cycle approach as described in Section 4 of NEI 08-09, Rev. 6, which is comparable to Appendix A, Section A.2.1 of RG 5.71.

The CSP states:

> Within the scope of NRC's cyber security rule at Title 10 of the Code of Federal Regulations 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 NRC staff reviewed the above information and found no substantive deviation from Regulatory Position C.3.3 in RG 5.71 and Appendix A, Section A.2.1 of RG 5.71. The NRC staff finds that the applicant established adequate measures to implement and document the Cyber Security Program, including baseline security controls. Based on the review, the NRC staff finds that the CSP adequately establishes the Cyber Security Program, including baseline security controls.

13.8.4.2 Analyzing Digital Computer Systems and Networks and Applying Cyber Security Controls

The Dominion North Anna 3 CSP describes that the Cyber Security Program is established, implemented, and maintained as described in Section 3.1 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3 described in RG 5.71 to:

- analyze digital computer and communications systems and networks; and
- identify those assets that must be protected against cyber-attacks to satisfy 10 CFR 73.54(a)

The submitted CSP states that the cyber security controls in Appendices D and E of NEI 08-09, Rev. 6, which are comparable to Appendices B and C in RG 5.71, are implemented to protect CDAs from cyber-attacks.

Based on the above, the NRC staff finds that the CSP adequately addresses security controls.

13.8.4.3 Cyber Security Assessment and Authorization

The CSP provided information addressing the creation of a formal, documented, cyber security assessment and authorization policy. This included a description concerning the creation of a formal, documented procedure comparable to Section 3.1.1 of NEI 08-09, Rev. 6.

The NRC staff finds that the applicant established adequate measures to define and address the purpose, scope, roles, responsibilities, management commitment, and coordination, and facilitates the implementation of the cyber security assessment and authorization policy.

Based on the review, the NRC staff finds that the CSP adequately established controls to develop disseminate and periodically update the cyber security assessment and authorization policy and implementing procedure.

13.8.4.4 Cyber Security Assessment Team

The Cyber Security Assessment Team (CSAT) responsibilities include conducting the cyber security assessment, documenting key findings during the assessment, and evaluating assumptions and conclusions about cyber security threats. The submitted CSP outlines the requirements, roles and responsibilities of the CSAT that are comparable to Section 3.1.2 of NEI 08-09, Rev. 6. It also states that that the CSAT has the authority to conduct an independent assessment.

The submitted CSP describes that the CSAT will consist of individuals with knowledge about information and digital systems technology; nuclear power plant operations, engineering, and plant technical specifications; and physical security and emergency preparedness systems and programs. The CSAT description in the CSP is comparable to Regulatory Position C.3.1.2 in RG 5.71.

The submitted CSP lists the roles and responsibilities for the CSAT which included performing and overseeing the cyber security assessment process; documenting key observations; evaluating information about cyber security threats and vulnerabilities; confirming information obtained during tabletop reviews, walk-downs, or electronic validation of CDAs; and identifying potential new cyber security controls.

Based on the above, the NRC staff finds that the CSP adequately establishes the requirements, roles, and responsibilities of the CSAT.

13.8.4.5 Identification of Critical Digital Assets

The submitted CSP states that the applicant will identify and document critical digital assets (CDA) and critical systems, including a general description, the overall function, the overall consequences if a compromise were to occur, and the security functional requirements or specifications as described in Section 3.1.3 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3.1.3 of RG 5.71.

Based on the above, the NRC staff finds that the CSP adequately describes the process to identify CDAs.

13.8.4.6 Examination of Cyber Security Practices

The submitted CSP describes how the CSAT will examine and document the existing cyber security procedures, and practices; existing cyber security controls; detailed descriptions of network and communication architectures (or network/communication architecture drawings); information on security devices; and any other information that may be helpful during the cyber security assessment process as described in Section 3.1.4 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3.1.2 of RG 5.71. The examinations will include an analysis of the effectiveness of the existing Cyber Security program and cyber security controls. The CSAT will document the collected cyber security information and the results of their examination of the collected information.

Based on the above, the NRC staff finds that the CSP adequately describes the examination of cyber security practices.

13.8.4.7 Reviews and Validation Testing

The submitted CSP describes tabletop reviews and validation testing, which confirm the direct and indirect connectivity of each CDA and identify direct and indirect pathways to CDAs. The CSP states that validation testing will be performed electronically or by physical walkdowns. The applicant's plan for tabletop reviews and validation testing is comparable to Section 3.1.5 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3.1.4 of RG 5.71.

Based on the above, the NRC staff finds that the CSP adequately describes tabletop reviews and validation testing.

13.8.4.8 Mitigation of Vulnerabilities and Application of Cyber Security Controls

In accordance with Section 3.1.6 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3.3 and Appendix A.3.1.6 to RG 5.71, the submitted CSP describes the use of information collected from Section 3.1.4 of the CSP to address cyber security controls.

The submitted CSP notes that before Dominion North Anna 3 can implement security controls on a CDA, it must assess the potential for adverse impact as per Section 3.1.6 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3.3 of RG 5.71.

Based on the above, the NRC staff finds that the CSP adequately describes mitigation of vulnerabilities and application of security controls.

13.8.4.9 Incorporating the Cyber Security Program into the Physical Protection Program

The submitted CSP states, that the Cyber Security program will be reviewed as a component of the Physical Security Program in accordance with the requirements of 10 CFR 73.55(m). This information is comparable to Section 4.1 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3.4 of RG 5.71.

Based on the above, the NRC staff finds that the CSP adequately describes review of the CSP as a component of the physical security program.

13.8.4.10 Cyber Security Controls

The submitted CSP describes how the technical, operational and management cyber security controls contained in Appendices D and E of NEI 08-09 Rev. 6, that are comparable to Appendices B and C in RG 5.71, are evaluated and dispositioned based on site specific conditions during all phases of the cyber security program. The CSP describes that many security controls have actions that are required to be performed on specific frequencies and that the frequency of a security control is satisfied if the action is performed within 1.25 times the frequency specified in the control, as applied, and as measured from the previous performance of the action as described in Section 4.2 of NEI 08-09, Rev. 6.

Based on the above, the NRC staff finds that the CSP adequately describes implementation of cyber security controls.

13.8.4.11 Defense-in-Depth Protective Strategies

The submitted CSP describes the implementation of defensive strategies that ensure the capability to detect, respond to, and recover from a cyber-attack. The CSP specifies that the defensive strategies consist of security controls, defense-in-depth measures, and the defensive architecture. The submitted CSP notes that the defensive architecture establishes the logical and physical boundaries to control the data transfer between these boundaries.

The applicant established defense-in-depth strategies by: implementing and documenting a defensive architecture as described in Section 4.3 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3.2 in RG 5.71; a Physical Security Program, including physical barriers; the operational and management controls described in Appendix E of NEI 08-09, Rev. 6, which is comparable to Appendix C to RG 5.71; and the technical controls described in Appendix D of NEI 08-09, Rev. 6, which is comparable to Appendix B to RG 5.71.

Based on the above review, the NRC staff finds that the "Defense-in-Depth Protective Strategies" described in Section 4.3 of North Anna 3 CSP are acceptable.

13.8.4.12 Ongoing Monitoring and Assessment

The submitted CSP describes how ongoing monitoring of cyber security controls to support CDAs is implemented comparable to Appendix E of NEI 08-09, Rev. 6, which is comparable to Regulatory Positions C.4.1 and C.4.2 of RG 5.71. The ongoing monitoring program includes configuration management and change control; cyber security impact analysis of changes and changed environments; ongoing assessments of cyber security controls; effectiveness analysis (to monitor and confirm that the cyber security controls are implemented correctly, operating as intended, and achieving the desired outcome) and vulnerability scans to identify new vulnerabilities that could affect the security posture of CDAs.

Based on the above, the NRC staff finds that the CSP adequately describes ongoing monitoring and assessment.

13.8.4.13 Modification of Digital Assets

The submitted CSP describes how cyber security controls are established, implemented, and maintained to protect CDAs. These security controls ensure that modifications to CDAs are evaluated before implementation that the cyber security performance objectives are maintained, and that acquired CDAs have cyber security requirements in place to achieve the site's CSP objectives. This information is comparable to Section 4.5 of NEI 08-09, Rev. 6, which is comparable to Appendices A.4.2.5 and A.4.2.6 of RG 5.71.
Based on the above, the NRC staff finds that the CSP adequately describes modification of digital assets.

13.8.4.14 Attack Mitigation and Incident Response

The submitted CSP describes the process to ensure that SSEP functions are not adversely impacted due to cyber-attacks in accordance with Section 4.6 of NEI 08-09, Rev. 6, which is comparable to Appendix C, Section C.8 of RG 5.71. The CSP includes a discussion about creating incident response policy and procedures, and addresses training, testing and drills, incident handling, incident monitoring, and incident response assistance. It also describes identification, detection, response, containment, eradication, and recovery activities comparable to Section 4.6 of NEI 08-09, Rev. 6.

Based on the above, the NRC staff finds that the CSP adequately describes attack mitigation and incident response.

13.8.4.15 Cyber Security Contingency Plan

The submitted CSP describes creation of a Cyber Security Contingency Plan and policy that protects CDAs from the adverse impacts of a cyber-attack described in Section 4.7 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3.3.2.7, and Appendix C.9 of RG 5.71. The applicant describes the Cyber Security Contingency Plan that would include the response to events. The plan includes procedures for operating CDAs in a contingency, roles and responsibilities of responders, processes and procedures for backup and storage of information, logical diagrams of network connectivity, current configuration information, and personnel lists for authorized access to CDAs.

Based on the above, the NRC staff finds that the CSP adequately describes the cyber security contingency plan.

13.8.4.16 Cyber Security Training

The submitted CSP describes a program that establishes the training requirements necessary for the applicant's personnel and contractors to perform their assigned duties and responsibilities in implementing the Program in accordance with Section 4.8 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3.3.2.8 of RG 5.71.

The CSP states that individuals will be trained with a level of cyber security knowledge commensurate with their assigned responsibilities in order to provide high assurance that individuals are able to perform their job functions in accordance with Appendix E of NEI 08-09, Revision 6, which is comparable to Regulatory Position C.3.3.2.8 of RG 5.71 and describes three levels of training: awareness training, technical training, and specialized cyber security training.

Based on the above, the NRC staff finds that the CSP adequately describes the cyber security training and awareness.

13.8.4.17 Evaluate and Manage Cyber Risk

The submitted CSP describes how cyber risk is evaluated and managed utilizing site programs and procedures comparable to Section 4.9 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.4 and Appendix C, Section C.13 of RG 5.71. The CSP describes the Threat and Vulnerability Management program, Risk Mitigation, Operational Experience Program; and the Corrective Action Program and how each will be used to evaluate and manage risk.

Based on the above, the NRC staff finds that the CSP adequately describes evaluation and management of cyber risk.

13.8.4.18 Policies and Procedures

The CSP describes development and implementation of policies and procedures to meet security control objectives in accordance with Section 4.10 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3.5 and Appendix A, Section A.3.3 of RG 5.71. This includes the process to document, review, approve, issue, use, and revise policies and procedures.

The CSP also describes the applicant's procedures to establish specific responsibilities for positions described in Section 4.11 of NEI 08-09, Rev. 6, which is comparable to Appendix C, Section C.10.10 of RG 5.71.

Based on the above, the NRC staff finds that the CSP adequately describes cyber security policies and implementing procedures.

13.8.4.19 Roles and Responsibilities

The submitted CSP describes the roles and responsibilities for the qualified and experienced personnel, including the CSP Sponsor, the Cyber Security Program Manager, Cyber Security Specialists, the Cyber Security Incident Response Team (CSIRT), and other positions as needed. The CSIRT initiates in accordance with the Incident Response Plan and initiates emergency action when required to safeguard CDAs from cyber security compromise and to assist with the eventual recovery of compromised systems. Implementing procedures establish roles and responsibilities for each of the cyber security roles in accordance with Section 4.11 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.3.1.2, Appendix A, Section A.3.1.2, and Appendix C, Section C.10.10 of RG 5.71.

Based on the above, the NRC staff finds that the CSP adequately describes cyber security roles and responsibilities.

13.8.4.20 Cyber Security Program Review

The submitted CSP describes how the Cyber Security program establishes the necessary procedures to implement reviews of applicable program elements in accordance with Section 4.12 of NEI 08-09, Rev. 6, which is comparable to Regulatory Position C.4.3 and Appendix A, Section A.4.3 of RG 5.71.

Based on the above, the NRC staff finds that the CSP adequately describes Cyber Security program review.

13.8.4.21 Document Control and Records Retention and Handling

The submitted CSP states that the applicant has established the necessary measures and 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.

The staff confirmed that the North Anna 3 discussion of records retention complies with 10 CFR 73.54(h).

Based on the above, the NRC staff finds that the CSP adequately describes cyber security document control and records retention and handling.

13.8.4.22 Implementation Milestone

The FSAR Table 13.4-201 contains the implementation milestone for the cyber security program. The milestone is “prior to receipt of fuel on-site.” The NRC staff’s review of the implementation milestone finds that it is satisfactory since it complies with 10 CFR 73.55(a)(4).

Based on the above review, the NRC staff finds that the “Implementation Milestone” described in Table 13.4-201 of North Anna 3 FSAR is acceptable.

13.8.5 Conclusion

The staff compared the Dominion North Anna 3 CSP and FSAR table 13.4-201 to the relevant NRC regulations and the criteria in RG 5.71 via NEI 08-09, Rev. 6.

The staff concluded that Dominion North Anna 3 is in compliance with the NRC regulations. The staff finds that the information in the Dominion North Anna 3 CSP adequately addresses the relevant requirements and guidance of 10 CFR 73.54 and RG 5.71, respectively. Therefore, the staff finds the information contained in this section acceptable.

The staff’s review confirmed that the applicant addressed the relevant information necessary to satisfy the requirements of 10 CFR 73.54, 10 CFR 73.55(a)(1), 10 CFR 73.55(b)(8), 10 CFR 73.55(m), and Appendix G to 10 CFR Part 73, as applicable. Thus, the staff finds that the North Anna 3 CSP meets applicable NRC requirements and guidance and therefore is acceptable.