1 INTRODUCTION AND INTERFACES

This chapter of the final safety evaluation report (FSER) is organized as follows:

- Section 1.1 provides an overview of the entire combined license (COL) application
- Section 1.2 provides the regulatory basis for the COL licensing process
- Section 1.3 provides an overview of the COL application principal review matters and where the staff's review of the 10 parts of the COL application is documented
- Section 1.4 documents the staff's review of Chapter 1 of the final safety analysis report (FSAR)
- Section 1.5 documents regulatory findings that are in addition to those directly related to the staff's review of the FSAR

1.1 Summary of Application

In a December 12, 2007, letter as supplemented by several additional letters, Duke Energy Carolinas, LLC (DEC or the applicant), a wholly owned subsidiary of Duke Energy Corporation, submitted an application to the U.S. Nuclear Regulatory Commission (NRC or the Commission) for a combined license (COL) for two Westinghouse AP1000 advanced passive pressurized water reactors (PWRs) pursuant to the requirements of Sections 103 and 185(b) of the *Atomic Energy Act*, and Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications and Approvals for Nuclear Power Plants." These reactors will be identified as William States Lee III Nuclear Station (WLS), Units 1 and 2, and will be located in the eastern portion of Cherokee County in north central South Carolina, approximately 35 miles southwest of Charlotte, North Carolina; approximately 25 miles northeast of Spartanburg, South Carolina; and approximately 7.5 miles southeast of Gaffney, South Carolina. DEC will be the licensed owner and operator of WLS Units 1 and 2.

According to the COL application, Duke Energy Carolinas, LLC, is a limited liability company duly organized and existing under the laws of the State of North Carolina. It is engaged in the business of generating, transmitting, distributing and selling electric power and energy. It is a "public utility" under the laws of North Carolina and subject to the jurisdiction of the North Carolina Utilities Commission (NCUC) with respect to its operations in that State. The company also transacts business and is an "electrical utility" under the laws of the State of South Carolina; accordingly, its operations in that State are subject to the jurisdiction of the Public Service Commission of South Carolina (PSCSC). DEC owns and operates regulated electrical facilities, including seven (7) nuclear units licensed by the NRC, as well as electrical distribution and transmission facilities.

The COL application incorporates the Design Control Document (DCD) for a simplified passive advanced light water reactor plant provided by Westinghouse Electric Corporation, the entity originally sponsoring and obtaining the AP1000 design certification documented in 10 CFR Part 52, Appendix D, Design Certification Rule for the AP1000 Design.

In addition, as discussed in Section 1.5.5 of this report, the applicant submitted a request for the associated material licenses under 10 CFR Part 30, “Rules of General Applicability to Domestic Licensing of Byproduct Material”; 10 CFR Part 40, “Domestic Licensing of Source Material”; and 10 CFR Part 70, “Domestic Licensing of Special Nuclear Material.”

Unless otherwise noted, this FSER (also referred to as the safety evaluation report (SER) or advanced safety evaluation (ASE) in later sections of this document) is based on Revision 11 of the WLS COL application, which was submitted in April 11, 2016.

As indicated in the applicant’s April 11, 2016 submission, the applicant incorporated by reference 10 CFR Part 52, Appendix D, “Design Certification Rule for the AP1000 Design,” and the Westinghouse Electric Corporation’s (Westinghouse’s) application for amendment to portions of the Design Control Document (DCD) Revision 19.

The AP1000 nuclear reactor design is a PWR with a power rating of 3400 megawatts thermal (MWt) and an electrical output of at least 1000 megawatts electric (MWe). The AP1000 design uses safety systems that rely on passive means, such as gravity, natural circulation, condensation and evaporation, and stored energy, for accident prevention and mitigation.

In developing the FSER for WLS Units 1 and 2, the staff reviewed the AP1000 DCD to ensure that the combination of the DCD and the COL application represents the complete scope of information relating to a particular review topic.

The WLS COL application is organized as follows:

- **Part 1 General and Administrative Information**

Part 1 provides an introduction to the application and includes certain corporate information regarding DEC pursuant to 10 CFR 50.33(a) – (d).

- **Part 2 Final Safety Analysis Report**

Part 2 includes information pursuant to the requirements of 10 CFR 52.79, “Contents of applications; technical information in final safety analysis report” and, in general, adheres to the content and format guidance provided in Regulatory Guide (RG) 1.206, “Combined License Applications for Nuclear Power Plants (LWR Edition).”

- **Part 3 Environmental Report**

Part 3 includes environmental information pursuant to the requirements of 10 CFR 52.80, “Contents of applications; additional technical information” and 10 CFR 51.50(c).

- **Part 4 Technical Specifications**

Part 4 addresses how the AP1000 Generic Technical Specifications (GTS) and Bases are incorporated by reference into the WLS Plant-Specific Technical Specifications (PTS) and Bases. Specifically, Section A addresses completion of bracketed information. Section B provides a complete copy of the WLS PTS and Bases.

- **Part 5 Emergency Plan**

Part 5 includes the WLS COL Emergency Plan, supporting information (e.g., evacuation time estimates (ETEs)), and applicable offsite State and local emergency plans.

- **Part 6 [Not Used - reserved for Limited Work Authorization/site redress information]**

- **Part 7 Departures Report**

Part 7 includes information regarding "departures" and "exemptions." "Departures" refers to departures from the AP1000 DCD, Revision 19, incorporated by reference into the COL application. For each departure, Part 7 of the COL application identifies the portions of the AP1000 DCD and FSAR affected and includes a description, a justification, an evaluation against criteria in 10 CFR 52.63(b), and a concluding statement about whether the departure requires NRC approval pursuant to 10 CFR Part 52, Appendix D, Section VIII.B.5.

"Exemptions" refers to requests for exemptions from NRC regulations. For each exemption request, Part 7 identifies the regulation and specific wording from which an exemption is being requested and provides a discussion supporting the request.

- **Part 8 Security Plan**

Part 8 addresses the WLS Safeguards/Security Plan, which consists of the Physical Security Plan, the Training and Qualification Plan, the Safeguards Contingency Plan, and the Special Nuclear Material (SNM) Physical Protection Program Description. These security plans are submitted to the NRC as a separate licensing document in order to fulfill the requirements of 10 CFR 52.79(a)(35) and 10 CFR 52.79(a)(36). The Safeguards/Security Plan is categorized as Security Safeguards Information and is withheld from public disclosure pursuant to 10 CFR 73.21, "Protection of safeguards information: performance requirements." The staff's evaluation of the Safeguards and Security Plans is documented separately from this SER and is withheld from the public in accordance with 10 CFR 73.21. A non-sensitive summary of the staff's evaluation of those plans is provided in Section 13.6 of this SER.

- **Part 9 Withheld Information**

Part 9 identifies sensitive information that is withheld from public disclosure under 10 CFR 2.390, "Public inspections, exemptions, requests for withholding." The information in this part includes sensitive unclassified non-safeguards information (SUNSI), proprietary financial information, and figures from Part 2 of the application that meet the SUNSI guidance for withholding from the public. In addition, this part of the application includes the following information:

- The withheld portion of the Mitigative Strategies Description and Plans for loss of large areas of the plant due to explosions or fire, as required by 10 CFR 52.80(d)

- WLS Units 1 and 2 Cyber Security Plan, as required by 10 CFR 73.54, "Protection of Digital Computer and Communication Systems and Networks"

- The withheld portions of the COL application Part 2 – FSAR

- The withheld portions of the COL application Part 5 – Emergency Plan

- Administrative and Financial Information

- The staff's evaluation of the Safeguards and Security Plans is documented separately from this SER and is withheld from the public in accordance with 10 CFR 73.21. A non-sensitive summary of the staff's evaluation of those plans is provided in Section 13.6 of this SER.

- **Part 10 Proposed Combined License Conditions (Including ITAAC)**

Part 10 includes WLS proposed license conditions including inspections, tests, analyses, and acceptance criteria (ITAAC) information in accordance with 10 CFR 52.80. A table of the proposed license conditions is provided in Appendix A of this report.

The contents of the environmental protection plan (and associated license conditions) are not evaluated in this report. Part 10 of the application incorporates by reference the AP1000 DCD Tier 1 information including ITAAC. In addition, the application includes site-specific ITAAC (e.g., emergency planning, physical security, electrical, and piping).

- **Part 11 Enclosures**

Part 11 provides information submitted by the applicant in support of the WLS Units 1 and 2 application. Specifically, these sections include:

- Part 11A describes the DEC new nuclear deployment Quality Assurance Program Description (QAPD). The QAPD is the top-level policy document that establishes the quality assurance (QA) policy and assigns major functional responsibilities for COL/construction/preoperation and operation activities conducted by or for DEC.

- Part 11B includes mitigative strategies description and plans for loss of large areas of the plant due to explosions or fire, as required by 10 CFR 52.80(d).

- Part 11C of the application includes the cyber security plan. The SUNSI version of the cyber security plan is provided in Part 9 of the application.

- Part 11D of the application includes WLS Special Nuclear Material Control and Accounting Program Description.

- Part 11E of the application includes the new fuel shipping plan.

- Part 11F of the application contains supplemental information in support of the 10 CFR Part 70, "Domestic licensing of special nuclear material," special nuclear material license application.

1.2 Regulatory Basis

1.2.1 Applicable Regulations

10 CFR Part 52, Subpart C, "Combined Licenses," sets out the requirements and procedures applicable to Commission issuance of a COL for nuclear power facilities. The following are of particular significance:

- 10 CFR 52.79, “Contents of applications; technical information in final safety analysis report,” identifies the technical information for the FSAR
- 10 CFR 52.79(d) provides additional requirements for a COL referencing a standard certified design
- 10 CFR 52.80, “Contents of applications; additional technical information,” provides additional technical information outside of the FSAR (ITAAC and the environmental report)
- 10 CFR 52.81, “Standards for review of applications,” provides standards for reviewing the application
- 10 CFR 52.83, “Finality of referenced NRC approvals; partial initial decision on site suitability,” provides for the finality of referenced NRC approvals (i.e., standard design certification)
- 10 CFR 52.85, “Administrative review of applications; hearings,” provides requirements for administrative reviews and hearing
- 10 CFR 52.87, “Referral to the Advisory Committee on Reactor Safeguards (ACRS),” provides for referral to the ACRS

The staff reviewed this application according to the standards set out in:

- 10 CFR Part 20, “Standards for Protection Against Radiation”
- 10 CFR Part 30, “Rules of general applicability to domestic licensing of byproduct material”
- 10 CFR Part 40, “Domestic licensing of source material”
- 10 CFR Part 50, “Domestic licensing of production and utilization facilities”
- 10 CFR Part 51, “Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions”
- 10 CFR Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants”
- 10 CFR Part 55, “Operators’ Licenses”
- 10 CFR Part 70, “Domestic Licensing of Special Nuclear Material”
- 10 CFR Part 73, “Physical Protection of Plants and Materials”
- 10 CFR Part 74, “Material Control and Accounting of Special Nuclear Material”
- 10 CFR Part 100, “Reactor Site Criteria”
- 10 CFR Part 140, “Financial Protection Requirements and Indemnity Agreements”

The staff evaluated the application against the acceptance criteria provided in the following:

- NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition"
- NUREG-1555: "Standard Review Plans for Environmental Reviews for Nuclear Power Plants"
- NUREG-1577, "Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance"
- NUREG-0800, "Standard Review Plan on Foreign Ownership, Control, or Domination"

In addition, the staff considered the format and content guidance in RG 1.206[1] for the COL application.

1.2.2 Finality of Referenced NRC Approvals

In accordance with 10 CFR 52.83, "Finality of referenced NRC approvals; partial initial decision on site suitability," if the application for a COL references a design certification rule (DCR), the scope and nature of matters resolved in the design certification (DC) for the application and any COL issued are governed by the relevant provisions. For the AP1000 DCR, finality is based on 10 CFR 52.63, "Finality of standard design certifications."

Based on the finality afforded to referenced certified designs, the scope of this COL application review, as it relates to the referenced certified design, is limited to items that fall outside the scope of the certified design (e.g., COL information items, design information replacing conceptual design information (CDI), and programmatic elements that are the responsibility of the COL, and departures from the certified design).

The contents of the application are specified in 10 CFR 52.79(a), which requires the information submitted in the FSAR to describe the facility; identify the design bases and the limits on its operation; and present a safety analysis of the structures, systems, and components (SSCs) of the facility as a whole. For a COL application that references a DC, Section 10 CFR 52.79(d) requires the AP1000 DCD to be included in the FSAR or incorporated by reference into the FSAR. Addition, a COL application the references a design certification (DC) must also contain the information and analysis required to be submitted within the scope of the COL application but is outside the scope of the AP1000 DCD. This combined information addresses plant- and site-specific information and includes all COL action or information items; design information the replaces CDI; and programmatic information that was not review and approved in connection with the DC rulemaking.

During its evaluation of the COL application, the staff confirmed that the complete set of information required to be addressed in the COL application was addressed in the DC, the DC

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[1] 10 CFR Part 52, Appendix D, Section IV.A.2.a requires the COL application to include a plant-specific DCD that describes the same type of information and uses the same organization and numbering as the generic DCD. The generic DCD used RG 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)," Revision 3 as a guide for the format and content. RG 1.206 was issued after the initial certification of the AP1000; thus, there are anticipated differences between the WLS Units 1 and 2 COL application and the guidance of RG 1.206.

as supplemented by the COL application or completely included in the COL application. Following this confirmation, the staff's review of the COL application is limited to the COL review items.

1.2.3 Overview of the Design-Centered Review Approach

The design-centered review approach (DCRA) is described in Regulatory Issue Summary (RIS) 2006-06, "New Reactor Standardization Needed to Support the Design-Centered Licensing Review Approach." The DCRA is endorsed by the Commission's Staff Requirements Memorandum (SRM) SECY-06-0187, "Semiannual Update of the Status of New Reactor Licensing Activities and Future Planning for New Reactors," November 16, 2006. The DCRA, which is the Commission's policy intended to promote standardization of COL applications, is beyond the scope of information included in the DC. This policy directs the staff to perform one technical review for each standard issue outside the scope of the DC, and use this decision to support decisions on multiple COL applications. In this context, "standard" refers to essentially identical information. In some cases the staff has expanded the use of this standard approach to other areas with essentially identical information for regulatory purposes. For example, the QA plan for the AP1000 COL applicants is essentially identical with the exception of title names being different. Other areas where this approach was used include cyber security, technical specifications, and loss of large area fire reviews and may include information provided by the applicant(s) to resolve plant-specific issues.

The first COL application submitted for staff review is designated in a design center as the reference COL (RCOL) application, and the subsequent applications in the design center are designated as subsequent COL (SCOL) applications. The WLS Units 1 and 2 COL application has been designated as an SCOL application in the AP1000 design center[2].

DEC, as an SCOL applicant in the AP1000 design center, organized and annotated its FSAR, Part 2 of the COL application, to clearly identify: (a) sections that incorporate by reference the AP1000 DCD; (b) sections that are standard for COL applicants in the AP1000 design center; and (c) sections that are site-specific and thus only apply to WLS Units 1 and 2. The following notations have been used by the applicant for the departures from and/or supplements to the referenced DCD included in this COL application:

- STD – standard (STD) information that is identical in each COL referencing the AP1000
- WLS – plant-specific information that is specific to this application
- DEP – represents a departure (DEP) from the AP1000 DCD
- COL – represents a COL information item identified in the AP1000 DCD

[2] In an April 28, 2009, letter, the NuStart Energy Development, LLC, consortium informed the NRC that it had changed the RCOL designation for the AP1000 design center from Bellefonte Nuclear Plant (BLN) Units 3 and 4 to the Vogtle Electric Generating Plant (VEGP) Units 3 and 4. The transition of the RCOL from BLN Units 3 and 4 to VEGP Units 3 and 4 occurred after the issuance of the BLN Units 3 and 4 SER with open items. As part of the transition, the staff concluded that the BLN evaluation material identified as Standard (STD COL, STD SUP, STD DEP and Interfaces for Standard Design) in the BLN SER was directly applicable to the VEGP review. As a result, standard content material from the SER for the RCOL (VEGP) application and referenced in the WLS SER includes evaluation material from the SER for the BLN COL application.

- SUP – represents information that supplements (SUP) information in the AP1000 DCD
- CDI – represents design information replacing conceptual design information (CDI) included in the AP1000 DCD but not addressed within the scope of the AP1000 DCD review

The following text is added to the Technical Evaluation sections in this report whenever the staff uses standard content evaluation material to resolve departures and/or supplements to the referenced DCD:

> Section 1.2.3 of this SER provides a discussion of the strategy used by the NRC to perform one technical review for each standard issue outside the scope of the DC and use this review in evaluating subsequent COL applications. To ensure that the staff's findings on standard content that were documented in the SER for the reference COL application (Vogtle Electric Generating Plant [VEGP] Units 3 and 4) were equally applicable to the WLS Units 1 and 2 COL application, the staff undertook the following reviews:
>
> - The staff compared the VEGP COL FSAR, Revision 5 to the WLS COL FSAR. In performing this comparison, the staff considered changes made to the WLS COL FSAR (and other parts of the COL application, as applicable) resulting from requests for additional information (RAIs).
> - The staff confirmed that all responses to RAIs identified in the corresponding standard content evaluation were endorsed.
> - The staff verified that the site-specific differences were not relevant.
>
> The staff has completed its review and found the evaluation performed for the standard content to be directly applicable to the WLS COL application. This standard content material is identified in this SER by use of italicized, double-indented formatting. Section 1.2.3 of this SER provides an explanation of why the standard content material from the SER for the reference COL application (VEGP) includes evaluation material from the SER for the BLN Units 3 and 4 COL application.

To support the text added to the Technical Evaluation sections as described above, the staff evaluated any differences between the information provided by the WLS applicant and that provided by the VEGP applicant, regarding details in the application for the standard content material, to determine whether the standard content material of the VEGP SER is still applicable to the WLS application. These evaluations are in the SER sections that reference the standard content.

The staff compared the VEGP COL FSAR Revision 2 to the WLS COL FSAR at the time of the development of the ASE. The ASE included confirmatory items. Subsequent to the issuance of the ASE, DEC updated the standard portions of its application to be consistent with the VEGP COL application to close the standard content confirmatory items. A complete comparison between the subsequent VEGP COL FSAR revisions to the WLS COL FSAR revisions was not performed. However, the staff confirmed that responses to standard content confirmatory items were endorsed by DEC and that the changes discussed in the standard confirmatory items were made in the WLS COL FSAR.

The staff applied the design-centered review approach described above in Chapter 21 “Design Changes Proposed In Accordance With ISG-11” of this SER in conducting its evaluation of the five requests by the applicant to depart from the AP1000 certified design. These five departure requests were identical to departure requests in the Levy Nuclear Plant (LNP) COL review. Therefore, consistent with the NRC’s DCRA, , the staff referenced evaluations that were completed for the first time in the LNP review. The referenced evaluations in Chapter 21 of this SER are captured by use of italicized, double-indented formatting.

1.3 Principal Review Matters

The staff’s evaluations related to the COL application review are addressed as follows:

- **Part 1 General and Administrative Information**

The staff’s evaluation of the corporate information regarding DEC pursuant to 10 CFR 50.33 is provided in Section 1.5.1 of this report.

- **Part 2 Final Safety Analysis Report**

The staff’s evaluation of information in the WLS COL FSAR is provided in the corresponding sections of this report.

There are two SER chapters that have been issued that do not have a corresponding chapter in the FSAR.

Chapter 20 describes the staff’s evaluations and conclusions relating to the Fukushima Near-Term Task Force (NTTF) recommendations that are applicable to the WLS Units 1 and 2 COL application. The applicable recommendations address four topics: a reevaluation of the seismic hazard (related to Recommendation 2.1), mitigation strategies for beyond-design-basis external events (related to Recommendation 4.2), spent fuel pool instrumentation (related to Recommendation 7.1), and emergency preparedness staffing and communications (related to Recommendation 9.3).

Chapter 21 describes the staff’s evaluations and conclusions for departures from the certified design identified by the applicant in accordance with Interim Staff Guidance DC/COL ISG-011, "Finalizing Licensing-Basis Information."

- **Part 3 Environmental Report**

The applicant submitted an Environmental Report pursuant to the requirements of 10 CFR 51.50(c). The staff’s evaluation of this information is provided in the Environmental Impact Statement.

- **Part 4 Technical Specifications**

Chapter 16 of this report includes the staff’s evaluation of the WLS Units 1 and 2 PTS and Bases (specifically completion of bracketed text).

- **Part 5 Emergency Plan**

Chapter 13 of this report includes the staff's evaluation of the WLS Emergency Plan, including related ITAAC, supporting information such as ETEs, and the applicable offsite State and local emergency plans.

- **Part 6 Limited Work Authorization**

Part 6 of the application is not used and, therefore, has no corresponding staff review.

- **Part 7 Departures Report**

The staff's evaluation of the departures and exemptions in Part 7 is provided in the applicable chapters of this SER. The Table 1-1, below, lists the departures identified in the application and identifies where the evaluation appears in this SER. Several of the departures, as marked, correspond to exemptions requested by the applicant.

Table 1-1. Departures Identified in Part 7 of the COL Application

Description of Departure	Location of Evaluation in this Report
STD DEP 1.1-1. Departure for organization and numbering for the FSAR sections	1.5.4
WLS DEP 1.8-1. Departure correcting an inconsistency in regulatory citation in an interface description	1.4.4
WLS DEP 2.0-1 Lee Site Foundation Response Spectra	3.7
WLS DEP 3.2-1. Departure adding downspouts and downspout screens to the condensate return portion of the Passive Core Cooling System	21.1
WLS DEP 3.8-1. Lee Passive Earth Pressures	3.8
WLS DEP 3.11-1. Departure revising the "Envir. Zone" numbers for Spent Fuel Pool Level instruments	3.11
WLS DEP 6.2-1. Departure revising the ITAAC Acceptance Criteria for the in-containment PXS compartment vents to reflect the current plant configuration.[3]	21.4
WLS DEP 6.3-1. Departure to quantify the term "indefinitely" as used in the AP1000 DCD for maintenance of safe shutdown conditions using the PRHR HX during non-LOCA accidents.	21.1

Description of Departure	Location of Evaluation in this Report
WLS DEP 6.4-1. Departure revising estimated maximum doses to control room operators to meet 10 CFR Part 50, Appendix A, General Design Criterion 19, "Control Room".[3]	21.2
WLS DEP 6.4-2. Departure revising the heat generated in the control room during accident conditions and the conditions for actuating the normal ventilation system supplemental filtration and the emergency ventilation system.[3]	21.3
WLS DEP 7.3-1. Departure modifying the engineered safety features to provide an operating bypass for the boron dilution block to meet the requirements of IEEE 603-1991 in accordance with 10 CFR 50.55a(h), "Protection and safety systems."[3]	21.5
WLS DEP 8.3-1. Departure for Class 1E voltage regulating transformer current limiting features	8.3.2
WLS DEP 18.8-1. Emergency Response Facility Locations	13.3

Part 7 of the COL application, Part B, requests seven exemptions, as listed in Table 1-2.

Table 1-2. Exemption Requests Identified in Part 7 of the COL Application

Description of Exemption	Location of Evaluation in this Report
Exemption from 10 CFR Part 52, Appendix D, Section IV.A.2.a related to COL application organization and numbering	1.5.4
Exemption from the requirements of 10 CFR 70.22(b), 10 CFR 70.32(c), 10 CFR 74.31, 10 CFR 74.41 and 10 CFR 74.51, for SNM Material Control and Accounting Program Description	1.5.4
Exemption from AP1000 DCD Tier 1 Tables 2.2.3-1 and 2.2.3-2 and TS Surveillance Requirement (SR) 3.5.4.7 related to Containment Cooling Changes in regard to Passive Core Cooling System Condensate Return	21.1

[3] These departures include revisions to either AP1000 Tier 1 information or generic Technical Specification (TS) and correspond to exemptions requested by the applicant.

Description of Exemption	Location of Evaluation in this Report
Exemption from AP1000 DCD Tier 1 Subsection 2.7.1 and Tables 2.2.5-1 and 2.2.5-5 and TS Limiting Condition for Operation 3.7.4 and TS SR 3.7.4.1 related to Main Control Room Dose	21.2
Exemption from AP1000 DCD Tier 1 Tables 2.2.5-1, 2.2.5-4, 2.5.2-3 and 2.5.2-4, and TS 3.3.2 and 3.7.6 related to Main Control Room Heatup	21.3
Exemption from AP1000 Tier 1 Table 2.3.9-3 related to Combustible Gas Control in Containment	21.4
Exemption from AP1000 TS Table 3.3.2-1 related to Source Range Neutron Flux Doubling Block Permissive	21.5
Exemption from 10 CFR 52.93(a)(1)[4]	1.5.4

- **Part 8 Security Plan**

The staff's evaluation of the Physical Security Plan, the Training and Qualification Plan, and the Safeguards Contingency Plan is documented separately from this report and is withheld from the public in accordance with 10 CFR 73.21. A non-sensitive summary of the staff's evaluation of those plans is provided in Section 13.6 of this SER.

- **Part 9 Withheld Information**

The staff's evaluation of the withheld information occurs in the context of the specific subject being reviewed and is documented accordingly. A summary of the staff's evaluation of the Mitigative Strategies Description and Plans for loss of large areas of the plant due to explosions is provided in Appendix 19A of this report. The staff's complete evaluation is documented separately from this SER and is withheld from the public in accordance with 10 CFR 2.390.

The staff's evaluation of the WLS Units 1 and 2 Cyber Security Plan is provided in Section 13.8 of this SER.

- **Part 10 Proposed Combined License Conditions (Including ITAAC)**

The staff's evaluation of the proposed COL conditions and ITAAC is provided in the applicable SER chapters. Appendix A identifies the proposed license conditions and ITAAC and the location of the evaluations. Each license condition is sequentially numbered in individual

[4] Part 7 of the WLS COL application does not include an exemption request related to the requirements found in 10 CFR 52.93(a)(1). As discussed in Section 1.5.4 of this report, the staff determined that an exemption from this regulation is necessary.

chapters of this SER. The license conditions and ITAAC are based on the provisions of 10 CFR 52.97, "Issuance of combined license."

- **Part 11 Enclosures**

Part 11 includes enclosures submitted by the applicant in support of the WLS Unis 1 and 2 COL application. Specifically, these enclosures include:

- Part 11A of the WLS COL application regarding the QAPD is documented in Chapter 17 of this SER.

- Part 11B of the WLS COL application regarding mitigative strategies description and plans for loss of large areas of the plant due to explosions is provided in Appendix 19A of the SER. The staff's complete evaluation is documented separately from this SER and is withheld as non-public in accordance with 10 CFR 2.390.

- Part 11C of the application regarding the cyber security plan is in Section 13.8 of this SER.

- Part 11D of the application regarding the SNM, material control and accounting (MC&A) program description is in Section 1.5.5 of this SER.

- Part 11E of the application regarding the new fuel shipping plan is in Section 1.5.5 of this SER.

- Part 11F of the application regarding supplemental information in support of the 10 CFR Part 70 license is in Section 1.5.5 of this SER.

Organization of this SER

The staff's SER is structured as follows:

- The SER adheres to the "finality" afforded to COL applications that incorporate by reference a standard certified design. As such, this report does not repeat any technical evaluation of material incorporated by reference; rather, it points to the corresponding review findings of NUREG-1793 and its supplements. However, the referenced DCD and the WLS COL FSAR are considered in the staff's SER to the extent necessary to ensure that the expected scope of information to be included in a COL application is addressed adequately in either the AP1000 DCD or COL FSAR or in both.

- For sections that were completely incorporated by reference without any supplements or departures, the SER simply points to the AP1000 DCD and related NUREG-1793 and its supplements and confirms that all the relevant review items were addressed in the AP1000 DCD and the staff's evaluation was documented in NUREG-1793 and its supplements.

- For subject matter within the scope of the COL application that supplements or departs from the AP1000 DCD, this SER generally follows a six-section organization as follows:

    - "Introduction" section provides a brief overview of the specific subject matter.

    - "Summary of Application" section identifies whether portions of the review have

received finality and clearly identifies the scope of review for the COL.

- "Regulatory Basis" section identifies the regulatory criteria for the information addressed by the COL application.
- "Technical Evaluation" section focuses on the information addressed by the COL application.
- "Post Combined License Activities" section identifies the proposed license conditions, ITAAC or FSAR information commitments that are post-COL activities.
- "Conclusion" section summarizes how the technical evaluation resulted in a reasonable assurance determination by the staff that the relevant acceptance criteria have been met.

1.4 Staff Review of WLS COL FSAR Chapter 1

1.4.1 Introduction

There are two types of information provided in WLS COL FSAR Chapter 1:

1. General information that enables the reviewer or reader to obtain a basic understanding of the overall facility without having to refer to the subsequent chapters. A review of the remainder of the application can then be completed with a better perspective and recognition of the relative safety significance of each individual item in the overall plant description.
2. Specific information relating to qualifications of the applicant, construction impacts and regulatory considerations that applies throughout the balance of the application (e.g., conformance to the acceptance criteria in NUREG-0800).

This section of the report will identify the information incorporated by reference, summarize all of the new information provided, and document the staff's evaluation of the sections addressing regulatory considerations.

1.4.2 Summary of Application

The information related to COL/SUP items included in WLS COL FSAR, Revision 11, Chapter 1 encompasses the statements of fact or information recommended by RG 1.206. No staff technical evaluation was necessary where the statements were strictly background information. However, where technical evaluation of these COL/SUPs was necessary, the evaluation is not in this section of the report, but in subsequent sections as referenced below.

WLS COL FSAR Section 1.1 Introduction

WLS COL FSAR Section 1.1, incorporates by reference AP1000 DCD Section 1.1, "Introduction," with the following supplements.

- STD SUP 1.1-1

The applicant specified the incorporation of Revision 19 of the Westinghouse AP1000 DCD in all sections of the WLS COL FSAR. Additionally, the applicant incorporated by reference Nuclear Energy Institute (NEI) technical reports as identified in WLS COL FSAR Table 1.6-201.

- WLS SUP 1.1-2

The applicant clarified that the WLS COL FSAR was submitted to NRC by DEC under Section 103 of the *Atomic Energy Act* to construct and operate two nuclear power plants under the provisions of 10 CFR Part 52, Subpart C, "Combined Licenses."

- WLS COL 2.1-1

The applicant provided additional information in WLS COL FSAR Section 2.1-1 to address COL Information Item 2.1-1 (COL Action Item 2.1.1-1). Specifically, WLS Units 1 and 2 are to be located in the eastern portion of Cherokee County in north central South Carolina (SC); approximately 35 miles southwest of Charlotte, North Carolina (NC); approximately 25 miles northeast of Spartanburg, SC; and approximately 7.5 miles southeast of Gaffney, SC. This is a brief introductory summary of the plant location. An expanded discussion of WLS COL 2.1-1 is included in WLS COL FSAR Section 2.1.

- WLS COL 1.1-1

The applicant provided the anticipated schedule for site preparation and construction of two AP1000 reactors at WLS Units 1 and 2 in WLS COL FSAR Table 1.1-203. The applicant committed to provide a site-specific construction plan and startup schedule after issuance of the COL and after a positive decision had been made to construct the plant.

- STD SUP 1.1-6

The applicant identified that, while the WLS COL FSAR generally follows the AP1000 DCD organization and numbering, there were some organization and numbering differences that were adopted, where necessary, to include additional material, such as additional content identified in RG 1.206.

Related to this is STD DEP 1.1-1, "Administrative departure for organization and numbering of the FSAR sections," in WLS COL FSAR Section 1.8 and Part 7 of the WLS COL application. The staff's evaluation of this departure is included in Section 1.5.4 of this SER.

- STD SUP 1.1-3

The applicant provided additional information to describe annotations used in the left hand column of the WLS COL FSAR to identify departures, supplementary information, COL items, and CDI.

- STD SUP 1.1-4

The applicant provided additional information to indicate how proprietary, personal or sensitive information withheld from public disclosure pursuant to 10 CFR 2.390 and RIS 2005-026, "Control of Sensitive Unclassified Nonsafeguards Information Related to Nuclear Power Reactors," is identified in the WLS COL FSAR. Proprietary and sensitive material was provided in Part 9 of the COL application.

- WLS SUP 1.1-5

The applicant provided additional information to identify acronyms and system designations used in the WLS COL FSAR that are in addition to those identified in the AP1000 DCD.

WLS COL FSAR Section 1.2 General Plant Description

WLS COL FSAR Section 1.2, incorporates by reference Section 1.2, "General Plant Description," of the AP1000 DCD, Revision 19 with the following departures and supplements:

- WLS DEP 18.8-1

The applicant provided WLS COL FSAR Figure 1.2-201 to replace AP1000 DCD Figure 1.2-18 to reflect the proposed relocation of the Technical Support Center (TSC) and the Operations Support Center (OSC). The staff's evaluation of the locations of the TSC and OSC is discussed in Section 13.3 of this SER.

- WLS COL 2.1-1; WLS COL 3.3-1; and WLS COL 3.5-1

The applicant provided additional information on the site plan for WLS Units 1 and 2 summarizing the principal structures and facilities, parking areas, roads, and transmission lines. The location and orientation of the power block complex are also described. These COL information items are expanded in other sections of the WLS COL FSAR.[5]

WLS COL FSAR Section 1.3 Comparisons with Similar Facility Designs

WLS COL FSAR Section 1.3 incorporates by reference AP1000 DCD Section 1.3, "Comparisons with Similar Facility Designs" with no departures or supplements.

Section 1.4 Identification of Agents and Contractors

WLS COL FSAR Section 1.4 incorporates by reference AP1000 DCD, Revision 19, Section 1.4, "Identification of Agents and Contractors" with the following supplements:

- WLS SUP 1.4-1

The applicant provided additional information to identify Duke Energy Carolinas LLC (a subsidiary of Duke Energy Corporation) as the agent acting on behalf of itself for WLS Units 1 and 2. Additionally, the applicant identified Duke Energy Carolinas, LLC will own and operate WLS Units 1 and 2.

[5] WLS COL FSAR Table 1.8-202 provides a COL information item index of occurrences in the WLS COL FSAR.

Duke Energy Carolinas LLC is the principal subsidiary of Duke Energy Corporation. Duke Energy Corporation, one of the largest electric power companies in the United States, supplies and delivers energy to approximately 7.2 million U.S. customers. The company has nearly 50,000 megawatts of electric generating capacity in the Midwest, Florida, and the Carolinas.

- WLS SUP 1.4-2

The applicant addressed the contractors participating in the preparation of the COL application in WLS COL FSAR Section 1.4.2.8.

Further, the applicant addressed the specialized consulting firms that will assist with the design, construction, and operation of WLS Units 1 and 2 in proposed license condition 7, included in WLS COL application Part 10.

- WLS SUP 1.4-3

The applicant provided additional information related to specialized consulting firms that assisted in preparing the COL application for WLS.

WLS COL FSAR Section 1.5 Requirements for Further Technical Information

WLS COL FSAR Section 1.5, incorporates by reference AP1000 DCD, Revision 19, Section 1.5, "Requirements for Further Technical Information," with no departures or supplements. This section of the AP1000 DCD provides information related to testing conducted during the AP600 conceptual design program to provide input into the plant design and to demonstrate the feasibility of unique design features. The AP1000 DCD also describes the analyses performed to show that the AP600 and AP1000 exhibit a similar range of conditions such that the AP600 tests are sufficient to support the AP1000 safety analysis.

WLS COL FSAR Section 1.6 Material Referenced

WLS COL FSAR Section 1.6, incorporates by reference AP1000 DCD, Revision 19, Section 1.6, "Material Referenced," with the following supplements:

- STD SUP 1.6-1

The applicant provided additional information to identify the technical documents incorporated by reference in the WLS COL FSAR in addition to those technical documents incorporated by reference in the AP1000 DCD.

Section 1.7 Drawings and Other Detailed Information

WLS COL FSAR Section 1.7 incorporates by reference AP1000 DCD, Revision 19, Section 1.7, "Drawings and Other Detailed Information," with the following supplements:

- WLS SUP 1.7-1

The applicant identified the site-specific system drawings. These are the circulating water system, raw water system, and transmission switchyard and offsite power system diagram.

Section 1.8 Interfaces for Standard Design

WLS COL FSAR Section 1.8, incorporates by reference AP1000 DCD, Revision 19, Section 1.8, "Interfaces for Standard Design," with the following departures and supplements:

- WLS SUP 1.8-1

The applicant identified departures in WLS COL FSAR Table 1.8-201, "Summary of FSAR Departures from the AP1000 DCD." The departures are:

- STD DEP 1.1-1 related to numbering and organization of the WLS COL FSAR sections to be consistent with RG 1.206 and NUREG-0800

- WLS DEP 1.8-1 related to the correcting the regulatory citation error in AP1000 DCD.

- WLS DEP 1.8-1 – This departure addresses an error in DCD Table 1.8-1, Item 13.1, that incorrectly references Appendix O of 10 CFR Part 50. This departure is evaluated in Section 1.4.4 of this document.

- WLS DEP 3.2-1 – The condensate return portion of the Passive Core Cooling System has been upgraded to add downspouts and plug fabrication holes in the Polar Crane Girder in order to maximize the return of condensate to the In-Containment Refueling Water Storage Tank and ensure long-term operation of the Passive Residual Heat Removal Heat Exchanger to meet design requirements. This departure is evaluated in Section 21.1 of this document.

- WLS DEP 3.11-1 – DCD Table 3.11-1 "Envir. Zone" numbers for Spent Fuel Pool Level Instruments SFS-JE-LT019A, SFS-JE-LT019B, and SFS-JE-LT019C are revised to be consistent with the location of the instruments. This departure is evaluated in Section 3.11 of this document.

- WLS SUP 1.8-2

The applicant provided a list of the COL information items in the AP1000 DCD. In WLS COL FSAR Table 1.8-202, DEC provides the sections of the application addressing these issues. The table further identifies the AP1000 COL items as an "applicant" item, a "holder" item or both. An applicant item is completely addressed in the application. DEC's definition of a COL holder item is an item that cannot be resolved prior to issuance of the COL. These items are regulatory commitments of the COL holder and will be completed as specified in the appropriate section of the referenced DCD and their completion is the subject of a COL license condition presented in Part 10 of this COL application.

- WLS SUP 1.8-3

The applicant provided in WLS COL FSAR Table 1.8-203 a list of interface items from the AP1000 DCD and the corresponding WLS COL FSAR section(s) that address those interface items.

- WLS DEP 1.8-1

The applicant provided a departure to address an error in AP1000 DCD Table 1.8-1 listing of plant interfaces where Item 13.1 incorrectly references 10 CFR Part 50, Appendix O. This departure is evaluated in Section 1.4.4 of this report,

Section 1.9 Compliance With Regulatory Criteria

WLS COL FSAR Section 1.9, incorporates by reference AP1000 DCD, Revision 19, Section 1.9, "Compliance with Regulatory Criteria," with the following supplements:

- STD COL 1.9-1 and WLS COL 1.9-1

The applicant provided additional information in STD COL 1.9-1 (corresponding to COL Information Item 1.9-1) and WLS COL 1.9-1 related to regulatory guides cited in the WLS COL FSAR. WLS COL FSAR Table 1.9-201 identifies the regulatory guide revision and provides the WLS COL FSAR cross-references. In addition, WLS COL FSAR Appendix 1AA, "Conformance with Regulatory Guides," was developed by the applicant to supplement the detailed discussion presented in the referenced AP1000 DCD Appendix 1A, "Conformance with Regulatory Guides." Specifically, WLS COL FSAR Appendix 1AA delineates conformance to design aspects as stated in the AP1000 DCD and conformance to programmatic and/or operational issues as presented in the WLS COL FSAR. In certain regulatory guides, design aspects were beyond the scope of the AP1000 DCD and are also presented in the WLS COL FSAR.

- STD COL 1.9-2 and WLS COL 1.9-2

The applicant provided additional information in STD COL 1.9-2 and WLS COL 1.9-2 (corresponding to the first un-numbered COL information item identified at the end of AP1000 DCD Table 1.8-2) related to operational experience. WLS COL FSAR Table 1.9-204 provides a list of Bulletins and Generic Letters (GLs), the appropriate WLS COL FSAR cross-references and whether the subject matter was addressed in the AP1000 DCD.

- STD COL 1.9-3

The applicant provided additional information in STD COL 1.9-3 (related to the second un-numbered COL information item identified at the end of AP1000 DCD Table 1.8-2) related to review of unresolved safety issues and generic safety issues (GSIs). Specifically, WLS COL FSAR Table 1.9-203 lists Three Mile Island (TMI) Action Plan items, Task Action Plan items, New Generic Issues, Human Factors issues, and Chernobyl Issues and states how they were considered in the AP1000 DCD and COL application. In addition, the applicant provided discussion on four new generic issues: Issue 186 related to heavy load drops; Issue 189 related to susceptibility of certain containments to early failure from hydrogen combustion; Issue 191 related to PWR sump performance; and Issue 196 related to the use of Boral in long-term dry storage casks for spent reactor fuel.

- STD SUP 1.9-1

The applicant provided additional information related to conformance with NUREG-0800. Specifically WLS COL FSAR Table 1.9-202 delineates conformance with NUREG-0800 for design aspects as stated in the AP1000 DCD and conformance for subjects beyond the scope of the AP1000 DCD as presented in the WLS COL FSAR.

- STD SUP 1.9-2

The applicant clarified that the severe accident mitigation design alternatives evaluation for the AP1000 DCD Appendix 1B is not incorporated into the WLS COL FSAR; but is addressed in the COL application Environmental Report.

- STD SUP 1.9-3 and WLS SUP 1.9-4

The applicant provided information related to station blackout (SBO) procedures and training for operators to include actions necessary to restore offsite power after 72 hours by addressing alternating current (ac) power restoration and severe weather guidance in accordance with NUMARC-87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors."

WLS COL FSAR Section 1.10 Nuclear Power Plants to Be Operated On Multi-Unit Sites

The applicant provided an assessment of the potential impacts of construction of one unit on SSCs important to safety for an operating unit, in accordance with 10 CFR 52.79(a)(31). This section of the WLS COL FSAR provides an assessment of potential construction activity hazards, SSCs important to safety for the operating unit and related limiting conditions for operation (LCOs) for the operating unit, potentially impacted SSCs and LCOs and applicable managerial and administrative controls to be used to provide assurance that the LCOs for operating units are not exceeded as a result of construction activities at the multi-unit sites.

- STD SUP 1.10-1

The applicant identified this as a new section in the WLS COL application that was not part of the referenced AP1000 DCD.

- WLS SUP 1.10-1

The applicant identified that the power blocks for WLS Units 1 and 2 have a minimum separation of at least 800 feet between plant centerlines. In the standard portion of the application there is a discussion that the primary consideration in setting this separation distance is the space needed to support plant construction via the use of a heavy-lift crane.

License Conditions

- The applicant proposed that the ITAAC identified in the tables in WLS COL application, Part 10, Appendix B be incorporated into the COL.

1.4.3 Regulatory Basis

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

In addition, the acceptance criteria associated with the relevant requirements of NRC regulations for the introductory information in WLS COL FSAR Chapter 1 are given in NUREG-0800, Section 1.0.

The applicable regulatory requirements for the introductory information are as follows:

- 10 CFR 50.43(e), as it relates to requirements for approval of applications for a DC, COL, manufacturing license, or operating license that propose nuclear reactor designs that differ significantly from light-water reactor (LWR) designs that were licensed before 1997, or use simplified, inherent, passive, or other innovative means to accomplish their safety functions.

- 10 CFR 52.77, "Contents of applications; general information," and 10 CFR 52.79, as they relate to general introductory matters.

- 10 CFR 52.79(a)(17), as it relates to compliance with technically relevant positions of the TMI requirements.

- 10 CFR 52.79(a)(20), as it relates to proposed technical resolutions of those unresolved safety issues and medium- and high priority GSIs that are identified in the version of NUREG-0933, "Resolution of Generic Safety Issues (Formerly entitled 'A Prioritization of Generic Safety Issues')," current on the date up to 6 months before the docket date of the application and that are technically relevant to the design.

- 10 CFR 52.79(a)(31) regarding nuclear power plants to be operated on multi-unit sites, as it relates to an evaluation of the potential hazards to the SSCs important to safety of operating units resulting from construction activities, as well as a description of the managerial and administrative controls to be used to provide assurance that the LCOs are not exceeded as a result of construction activities at the multi-unit sites.

- 10 CFR 52.79(a)(37), as it relates to the information necessary to demonstrate how operating experience insights have been incorporated into the plant design.

- 10 CFR 52.79(a)(41), as it relates to an evaluation of the application against the applicable NRC review guidance in effect 6 months before the docket date of the application.

- 10 CFR 52.79(d)(2) requires that for a COL referencing a standard DC, the FSAR demonstrate that the interface requirements established for the design under 10 CFR 52.47, "Contents of applications; technical information," have been met.

- 10 CFR 52.97(a)(1)(iv) regarding technical and financial qualifications.

The related acceptance criteria from NUREG-0800, Chapter 1 are as follows:

- For regulatory considerations, acceptance is based on addressing the regulatory requirements as discussed in FSAR Chapter 1 or in the referenced FSAR section. The NUREG-0800 acceptance criteria associated with the referenced section will be reviewed in the context of that review.

- For performance of new safety features, the information is sufficient to provide reasonable assurance that: (1) these new safety features will perform as predicted in WLS COL FSAR; (2) the effects of system interactions are acceptable; and (3) the applicant provides sufficient data to validate analytical codes. The design qualification testing requirements may be met with either separate effects or integral system tests; prototype tests; or a combination of tests, analyses, and operating experience.

For conformance to regulatory criteria, RG 1.206 states an applicant should perform a similar evaluation for conformance with RGs that were in effect six months prior to the submittal of the COL application.

1.4.4 Technical Evaluation

The staff reviewed WLS COL Section 1 and checked the referenced DCD to ensure that the combination of the DCD and the COL application represents the complete scope of information relating to this review topic.[6] The staff's review confirmed that the information in the application and incorporated by reference addresses the required information relating to this introduction. The results of the staff's evaluation of the information incorporated by reference in the WLS COL application are documented in NUREG-1793 and its supplements.

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

- The staff compared the VEGP COL FSAR, Revision 5 to the WLS COL FSAR. In performing this comparison, the staff considered changes made to the WLS COL FSAR (and other parts of the COL application, as applicable) resulting from RAIs.

- The staff confirmed that all responses to RAIs identified in the corresponding standard content evaluation were endorsed.

- The staff verified that the site-specific differences were not relevant.

The staff completed its review and concluded that the evaluation performed for the standard content directly applicable to the WLS COL application. This standard content material is identified in this SER by use of italicized, double-indented formatting. Section 1.2.3 of this report provides an explanation of why the standard content material from the SER for the reference COL application (VEGP) includes evaluation material from the SER for the Bellefonte Nuclear Station (BLN) Units 3 and 4 COL application. Any confirmatory items in the standard content material retain the numbers assigned in the VEGP SER. Confirmatory items that are first identified in this report section have a WLS designation (e.g., WLS Confirmatory Item 1.4-1).

The staff reviewed the information in the WLS COL FSAR:

<u>WLS COL FSAR Sections 1.1, 1.2, 1.3, 1.6, and 1.7</u>

There are no specific NUREG-0800 acceptance criteria related to the general information presented in Sections 1.1, 1.2, 1.3, 1.6, and 1.7, and no specific regulatory findings. The information provides the reader with a basic overview of the nuclear power plant and the construct of the WLS COL FSAR, itself.

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[6] See Section 1.2.2, "Finality of Referenced NRC Approvals" of this report for a discussion of the staff's review related to verification of the scope of information to be included within a COL application that references a DC.

In WLS COL FSAR Section 1.1, WLS COL 1.1-1 the applicant provided an overall anticipated schedule for site preparation and construction of two AP1000 reactors at the Lee Nuclear Site and is shown in WLS COL FSAR Table 1.1-203 and is based on various considerations.

The following portion of this technical evaluation section is reproduced from VEGP SER Section 1.4.4:

> *In a letter dated November 11, 2010, the applicant added a discussion of incorporation of the proprietary information and safeguards information referenced in the AP1000 DCD. This information is included to meet the requirements of 10 CFR Part 52, Appendix D, Section IV.A.3, which indicates the applicant must "include, in the plant specific DCD, the proprietary information and safeguards information referenced in the AP1000 DCD" and, therefore, is acceptable. The incorporation of the above information into a future revision of the VEGP COL FSAR is* ***Confirmatory Item 1.4-1.***
>
> *Resolution of Standard Content Confirmatory Item 1.4-1*
>
> *Confirmatory Item 1.4-1 is an applicant commitment to revise FSAR Section 1.1 to include a discussion of incorporation of the proprietary information and safeguards information referenced in the AP1000 DCD. The staff verified that the VEGP COL FSAR was appropriately revised. As a result, Confirmatory Item 1.4-1 is now closed.*

WLS COL FSAR Section 1.4

- WLS SUP 1.4-1 and WLS SUP 1.4-3

This evaluation is limited to DEC's technical qualification to hold a 10 CFR Part 52 license in accordance with 10 CFR 52.97(a)(1)(iv). The financial qualifications that are also a requirement of 10 CFR 52.97(a)(1)(iv) are evaluated in Section 1.5.1 of this report.

In WLS COL FSAR Section 1.4, DEC provided justification for why it believes it is qualified to hold a 10 CFR Part 52 license. The WLS COL FSAR states that it has over 45 years of experience in the design, construction and operation of nuclear power stations, and currently has seven nuclear operating units that generates over 7000 megawatts of electricity. DEC operates Catawba Units 1 and 2, McGuire Units 1 and 2, and Oconee Units 1, 2, and 3. Since DEC holds 10 CFR Part 50 licenses for nuclear power plants and has demonstrated its ability to build and operate these plants, the staff finds that DEC is qualified to hold a 10 CFR Part 52 license. The staff notes that WLS COL FSAR Section 17.5, discusses the QA program to be implemented at the receipt of the WLS COL. The staff's evaluation of WLS COL FSAR Section 17.5 is discussed in Section 17.5 of this report. Based on DEC's experience with building and operating nuclear power plants and the staff's evaluation of DEC's QA program, the staff finds that DEC is technically qualified to hold a 10 CFR Part 52 license in accordance with 10 CFR 52.97(a)(1)(iv).

- WLS SUP 1.4-2

In WLS SUP 1.4-2 the applicant provided the names of contractors and description of the specialized services provided in the preparation of the COL application.

DEC received support from the following contractors in preparing the COL:

- AMEC Environment & Infrastructure (MACTEC Engineering and Consulting, Inc.)
- Furgo Consultants Inc. (formerly William Lettis & Associates, Inc.)
- Enercon Services, Inc.
- Burns & Roe Enterprises, Inc.
- Chicago Bridge and Iron (Stone & Webster)
- Atkins
- HDR/DTA

The staff finds this acceptable because the applicant identified contractors beyond those identified in the DCD and provided a description of the specialized consulting services rendered in preparation of the COL application.

WLS COL FSAR Section 1.5

10 CFR 50.43(e) requires additional testing or analysis for applications for a DC or COL that propose nuclear reactor designs that differ significantly from LWR designs that were licensed before 1997, or use simplified, inherent, passive, or other innovative means to accomplish their safety functions. This requirement was addressed in the AP1000 DCD and evaluated by the staff in NUREG-1793, Chapter 21, "Testing and Computer Code Evaluation." The COL application does not include any additional design features that require additional testing.

WLS COL FSAR Section 1.6

There are no specific NUREG-0800 acceptance criteria related to the information presented in Section 1.6 and no specific regulatory findings.

WLS COL FSAR Section 1.7

There are no specific NUREG-0800 acceptance criteria related to the information presented in Section 1.7 and no specific regulatory findings.

WLS COL FSAR Section 1.8

- WLS SUP 1.8-1

As discussed in WLS COL FSAR Section 1.4.2, the applicant identified two departures in WLS COL FSAR Table 1.8-201 from the referenced AP1000 DCD (STD DEP 1.1-1 and WLS DEP 1.8-1). Section 1.3 of this report provides a cross-reference to where these departures are discussed in this report.

- WLS SUP 1.8-2

WLS SUP 1.8-2 includes the same type of information as VEGP SUP 1.8-2. Therefore, the following portion of this technical evaluation section is reproduced from VEGP SER Section 1.4.4:

In Sections 1.3 and 1.4.4 of the BLN SER, the staff identified a standard content ***Open Item 1-2*** *related to the decision regarding which of the BLN COL FSAR commitments, if any, should become a license condition. On January 21, 2010, the NRC issued ISG-15, "Final Interim Staff Guidance on the Post-Combined License Commitments," ESP/DC/COL-ISG-15. This guidance discusses options regarding completion of COL items that cannot be completed until after issuance of the COL. The VEGP applicant identified that certain COL information items cannot be resolved prior to the issuance of a COL. The applicant has identified proposed License Condition 2 in Part 10 of the COL application to ensure these COL items will be completed by the identified implementation milestones through completion of the action identified. The determination that these COL information items cannot be resolved prior to issuance of a COL is discussed in the relevant SER section related to the topic. In addition, using the guidance of ISG-15, the staff has identified certain FSAR commitments in individual sections of this SER and these FSAR commitments are listed in Appendix A.3 of this SER. The staff considers* ***Open Item 1-2*** *is resolved.*

- WLS SUP 1.8-3

AP1000 DCD Table 1.8-1 presents interface items for the AP1000. This section of the AP1000 DCD identifies certain interfaces with the standard design that have to be addressed in accordance with 10 CFR 52.47(a)(1)(vii).[7] As required by 10 CFR 52.79(d)(2), the COL application must demonstrate how these interface items have been met. In the WLS COL FSAR, the applicant provided WLS COL FSAR Table 1.8-203, which explicitly identifies the FSAR location of information addressing the interface items identified in AP1000 DCD Section 1.8. The staff's review of the identified FSAR locations confirmed that interface items are adequately addressed in the WLS COL FSAR. The technical discussions related to specific interface requirements are addressed in related sections of this report (e.g., Sections 8.2.2 and 11.3).

- WLS DEP 1.8-1

This Tier 2 departure, appearing in the WLS COL FSAR Table 1.8-203 listing of AP1000 plant interfaces, corrects an error in AP1000 DCD Table 1.8-1, Item 13.1. This interface addresses the design features that affect plans for coping with emergencies in the operation of the reactor facility or a major portion thereof. The departure changes the incorrect regulatory reference from 10 CFR Part 50, Appendix O, to 10 CFR 52.137(a)(11). In issuing the final rule for 10 CFR Part 52 in the *Federal Register* (FR) (see 72 FR 49352), the requirement relating to providing this interface information was moved from f 10 CFR Part 50, Appendix O to a new location in 10 CFR 52.137 (see 72 FR 49391). Therefore, the staff finds it reasonable that this departure does not require prior NRC approval because it made a technical correction only and did not make a substantive change to the interface item.

[7] Following the update to 10 CFR Part 52 (72 FR 49517), this provision has changed to 10 CFR 52.47(a)(25).

WLS COL FSAR Section 1.9

In this section of the application, the applicant demonstrates conformance to regulatory guides and NUREG-0800 and addresses unresolved safety issues, GSIs, TMI action items, and operating experience.

STD COL 1.9-1 and WLS COL 1.9-1

In comparing VEGP COL FSAR Table 1.9-201 and Appendix 1AA to the respective tables in the WLS COL FSAR, the staff notes that there are several differences. These differences are associated with site-specific information and are reflected in the WLS COL FSAR by a "WLS COL 1.9-1" designation. The staff reviewed the site-specific differences in the respective tables and appendices and determined that the WLS COL 1.9-1 information in these tables was updated consistent with the update provided for the standard information; therefore, the staff considers the standard content open item as it relates to issues associated with the site-specific information resolved.

The following portion of this technical evaluation section is reproduced from VEGP SER Section 1.4.4[8]:

AP1000 COL Information Item

- *STD COL 1.9-1*

Regarding RGs, the applicant provides in BLN COL FSAR Table 1.9-201 a cross-reference between the RG and where it is discussed in the application, and Appendix 1AA, "Conformance with Regulatory Guides," to supplement the detailed discussion presented in Appendix 1A, "Conformance with Regulatory Guides," of the referenced DCD. The technical discussions related to this appendix are addressed in the related technical sections of the BLN COL FSAR. In addition, BLN COL FSAR Table 1.9-201 provides a listing of all RGs, the specific revision, and provides BLN COL FSAR and DCD cross-references.

The staff issued three RAIs associated with how the RG information in Table 1.9-201 and Appendix 1AA of the BLN COL FSAR is presented. In addition, there were two specific RAIs associated with how an individual RG is discussed in Table 1.9-201 and Appendix 1AA. A description of the RAIs and their responses follows.

RAI 1-5

In RAI 1-5, the staff noted that BLN COL FSAR Appendix 1AA lists the later version of the RG when compared with DCD Table 1.9-1 but in some cases does not discuss compliance with the later version. In other cases, exceptions to the RG were identified but not justified.

[8] The text reproduced from VEGP SER Section 1.4.4 is unaltered, but is presented in sequential order of the COL and SUP items.

RAI 1-7

In RAI 1-7, the staff noted that not all RGs listed in Appendix 1AA provided a cross-reference to where they were discussed in accordance with the guidance in Section 1 of NUREG-0800.

RAI 1-11

In RAI 1-11, the staff noted that the information that TVA provided in response to RAIs 1-5 and 1-7 conflicted with information that TVA provided in response to another RAI. TVA was requested to reconcile these differences.

RAIs 1-1 and 1-10

These RAIs are associated with specific RGs and RAI 1-1 and RAI 1-10 are evaluated in Chapters 13 and 12, of this SER, respectively.

In TVA's response to RAIs 1-5 and 1-7, TVA committed to make changes to BLN COL FSAR Table 1.9-201 and Appendix 1AA to:

- *Add an additional statement to Appendix 1AA that specifically addresses the later version of the RG.*
- *Revise BLN COL FSAR Sections 1.9.1.1, 1.9.1.2, 1.9.1.3, and 1.9.1.4, to reflect that one method of identifying and justifying an alternative to an RG is the use of previous revisions of the RG for design aspects as stated in the DCD in order to preserve the finality of the certified design.*
- *Revise BLN COL FSAR Table 1.9-201 to address the RG listed in Appendix 1AA, thereby providing a more complete cross reference of where each RG is discussed in the COL application.*

In response to RAI 1-11, TVA committed to revising BLN COL FSAR Table 1.9-201 and Appendix 1AA to ensure that they are consistent with commitments made in other RAI responses.

The staff's evaluation of the RGs is addressed in Chapters 2 through 19 of this SER as needed. At a minimum the NRC staff's FSER sections will discuss any RG that involves an exception.

The staff finds TVA's responses to RAIs 1-5 and 1-7 acceptable. However, the staff notes that BLN COL FSAR Table 1.9-201 and Appendix 1AA will most likely need additional changes based on the staff's evaluation of the RGs in this SER and TVA's response to RAI 1-11. The NRC staff is still evaluating TVA's response to RAI 1-11 and has not yet made a determination of whether the response is acceptable. This is Open Item 1.4-2. The updating of BLN COL FSAR Table 1.9-201 to reflect changes committed to by TVA in response to RAI 1-11 and the updating of this information to reflect TVA's commitments in other RAI responses is Confirmatory Item 1.4-2.

Resolution of Standard Content Confirmatory Item 1.4-2

The NRC staff verified that VEGP COL FSAR Table 1.9-201 was updated to provide an acceptable cross reference of where each RG is discussed in the COL application. As a result, Confirmatory Item 1.4-2 is resolved for VEGP.

Resolution of Standard Content Open Item 1.4-2

In a letter dated September 21, 2009, the VEGP applicant provided clarification to a previously submitted response dated January 27, 2009 from the BLN applicant. Specifically, the applicant proposed to revise the discussion in the "General comment" portion related to preserving the finality of the certified design in VEGP COL FSAR Sections 1.9.1.1, 1.9.1.2, 1.9.1.3, 1.9.1.4 and Appendix 1AA Note (b); to clarify in VEGP COL FSAR Section 17.5 the "DCD scope" and the "remaining scope" discussion for QA-related RGs (including RG 1.28; RG 1.30, "Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment (Safety Guide 30)"; RG 1.33, "Quality Assurance Program Requirements (Operation)," Revision 2; RG 1.38, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants," Revision 2; RG 1.39, "Housekeeping Requirements for Water-Cooled Nuclear Power Plants," Revision 2; RG 1.94, "Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants," Revision 1; and RG 1.116, "Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems"). In addition, the applicant proposed to revise the VEGP COL FSAR, Appendix 1AA Note (c) to clarify the purpose of a "General" entry under the column labeled "Section Criteria" discussion. It is stated that a "Criteria Section" entry of "General" indicates a scope for the conformance statement of "all regulatory guide positions related to programmatic and/or operational aspects." Thus an associated conformance statement of "Conforms" indicates that the applicant "complies with all regulatory guide positions related to programmatic and or/or operational aspects." The proposed clarifications clearly provide the scope of conformance to the RGs and, therefore, they are acceptable. The staff verified that the VEGP COL FSAR was updated to reflect the above. The staff considers Open Item 1.4-2 resolved for VEGP.

STD COL 1.9-2, WLS COL 1.9-2, STD SUP 1.9-3, and STD SUP 1.9-1

The following portion of this technical evaluation section is reproduced from VEGP SER Section 1.4.4:

- *STD COL 1.9-2 (related to the first un-numbered COL information item identified at the end of DCD Table 1.8-2)*

Regarding demonstration of operating experience from Bulletins and GLs, as required by 10 CFR 52.79(a)(37), BLN COL FSAR Table 1.9-204 provides a list of Bulletins and GLs, the appropriate BLN COL FSAR cross-references, and whether the subject matter was addressed in the DCD. The technical discussions related to the specific safety issues are addressed in the related

sections of the BLN COL FSAR and are addressed in Chapters 2 through 19 of this SER as needed.

The evaluation of GSI 163, "Multiple Steam Generator Tube Leakage," is described below because otherwise its evaluation would be spread across several SER chapters.

GSI 163 identified a safety concern associated with the potential multiple steam generator (SG) tube leaks triggered by a main steam line break outside containment that cannot be isolated. The issue was evaluated as part of the AP1000 DCD review and was resolved for the AP1000 design. The evaluation was documented in NUREG-1793, Chapter 20. The evaluation states in part the following:

> *The staff agrees that the issue should be closed for the AP1000 design. Issue 163 concerns the possibility that a multiple steam generator tube rupture (SGTR), resulting from a main steam line break and degraded SG tubes, could result in core damage due to depletion of the reactor coolant and safety injection fluid in the refueling water storage tank. For the AP1000 design, an SGTR is mitigated using the passive core cooling system, initially through the passive residual heat removal heat exchanger, and the core makeup tanks (CMTs). After the CMTs drain to the low level to actuate the automatic depressurization system, the reactor coolant depressurization would result in gravity injection from the in containment refueling water storage tank (IRWST), and eventually from the containment recirculation. The scenario that the safety injection from the refueling water storage tank, which is outside the containment in the existing plants, will be depleted to result in core damage is not likely for the AP1000 design because the IRWST and containment recirculation will continue to provide core cooling.*

Since the resolution of Issue 163 is an ongoing NRC effort, any future requirements for the resolution of this issue will be required of the COL applicant, if applicable to the AP1000 design.

Subsequent to the original issuance of NUREG-1793, GSI 163 was closed via a July 16, 2009, memorandum. In the safety evaluation accompanying the closure of the issue, the following is stated.

> *the staff concludes that the technical specification requirements relating to SG tube integrity provide reasonable assurance that all tubes will exhibit acceptable structural margins against burst or rupture during normal operation and DBAs (including MSLB [main steam line break]), and that leakage from one or multiple tubes under DBAs will be limited to very small amounts, consistent with the applicable regulations for offsite and control room dose.*

Therefore, in addition to the unique design features of the AP1000 cited in NUREG-1793 and its supplements as a basis for closure of the issue, the staff

notes that for PWR designs in general the issue is resolved based on the technical specification requirements. The staff discusses these technical specification requirements in Section 5.4, "Component and Subsystem Design," of this SER. Based on the evaluation in NUREG-1793 and its supplements, and based on the staff's evaluation of the SG tube surveillance program in Section 5.4 of this SER, the staff considers GSI 163 resolved for VEGP.

- *STD COL 1.9-3*

Regarding consideration of new and generic safety issues as required by 10 CFR 52.79(a)(17) and 10 CFR 52.79(a)(20), BLN COL FSAR Table 1.9-203, provides a listing of the TMI Action Plan items, Task Action Plan items, New Generic Issues, Human Factors issues, and Chernobyl Issues and states how they were considered in the DCD and COL application. The technical discussions related to the specific safety issues are addressed in the related sections of the BLN COL FSAR.

In addition, the applicant provided discussion of four new generic issues: Issue 186 related to heavy load drops; Issue 189 related to susceptibility of certain containments to early failure from hydrogen combustion; Issue 191 related to PWR sump performance; and Issue 196 related to the use of Boral in long-term dry storage casks for spent reactor fuel.

The applicant identified that neither Issue 189 nor Issue 196 is applicable to the design or application and that therefore neither is addressed in the BLN COL FSAR. Issue 186 states that there are not any planned heavy load lifts outside those described in the DCD; nonetheless, special procedures to address heavy loads are discussed in Subsection 9.1.5.3. Related to Issue 191, the applicant provided a reference to the protective coatings program and containment cleanliness program in Subsections 6.1.2.1.6 and 6.3.8.1 of the BLN COL FSAR, respectively.

Issue 186 and Issue 196 are evaluated in Chapter 9 of this SER. Issues 189 and 191 are evaluated in Chapter 6 of this SER.

- *STD SUP 1.9-1*

Regarding conformance with regulatory review criteria as required by 10 CFR 52.79(a)(41), BLN COL FSAR Table 1.9-202 provides the applicant's review of conformance with the acceptance criteria of NUREG-0800. The technical discussions related to the specific acceptance criteria of NUREG-0800 are addressed in the related sections of the BLN COL FSAR and addressed in Chapters 2 through 19 of this SER as needed.

STD SUP 1.9-2

The applicant clarified that the severe accident mitigation design alternatives evaluation for the AP1000 in Appendix 1B to the AP1000 DCD is not incorporated into the WLS COL FSAR; but is addressed in the WLS COL Environmental Report. The staff reviewed this information as part of its development of the Final Environmental Impact Statement. Therefore, no further evaluation is needed for STD SUP 1.9-2.

STD SUP 1.9-3 and WLS SUP 1.9-4

The following portion of this technical evaluation section is reproduced from of VEGP SER Section 1.4.4:

- *STD SUP 1.9-3*

This COL supplemental item is addressed as VEGP SUP 8.1-2 [WLS SUP 8.1-2] *in SER Section 8.1*.

WLS COL FSAR Section 1.10

In this section of the application, the applicant provided an assessment of the potential hazards due to construction of one unit on SSCs important to safety for an operating unit, in accordance with 10 CFR 52.79(a)(31).

STD SUP 1.10-1

The following portion of this technical evaluation section is reproduced from VEGP SER Section 1.4.4:

- *STD SUP 1.10-1*

The NRC staff reviewed the information in BLN COL FSAR Table 1.10-201, identifying the potential hazards from construction activities, BLN COL FSAR Table 1.10-202 that cross-references the construction hazard with the impacted SSCs, and BLN COL FSAR Table 1.10-203, identifying the specific managerial and administrative controls to preclude or mitigate the construction hazard. There is the potential that review of other areas of the application could impact the hazards and management programs identified in the Bellefonte application. For example, site runoff from construction of Unit 4, if not properly controlled, could impact the operation of Unit 3. Site runoff is evaluated in Section 2.4 of this report. The staff has not yet completed its review of this application against the requirements of 10 CFR 52.79(a)(31). This is part of Open Item 1.4-3.

In the application, TVA stated that controls within Section 1.10 of the FSAR are not required unless there is an operating unit on the site. To clarify this FSAR commitment, the staff requests TVA to revise the application to positively state these programs will be in place when there is an operating unit on the site. This is Open Item 1.4-4.

Resolution of Standard Content Open Item 1.4-4

In a letter dated July 29, 2009, the applicant proposed to revise VEGP COL FSAR Section 1.10.3 to positively state that these programs will be in place when there is an operating unit on the site. The staff verified that the VEGP COL FSAR was appropriately updated to include the above. As a result, Open Item 1.4-4 is resolved.

WLS SUP 1.10-1

The supplemental information states that the power blocks for WLS Units 1 and 2 have a minimum separation of at least 800 feet between plant centerlines and notes that new units SSCs important to safety are described in WLS COL FSAR Chapter 3 and the LCOs for WLS Units 1 and 2 are identified in Part 4 of the WLS COL application. In the standard portion of WLS COL FSAR Section 1.10, there is a discussion that the primary consideration in setting the 800-ft separation distance is the space needed to support plant construction via the use of a heavy-lift crane.

The site-specific supplemental information is provided to supplement the standard information above and provides with specificity the location of the SSCs and LCOs required by 10 CFR 52.79(a)(31). The staff's review of this SUP item is included in the resolution of Open Item 1.4-3.

STD SUP 1.10-1

The following portion of this technical evaluation section is reproduced from of VEGP SER Section 1.4.4:

> *Resolution of Standard Content Open Item 1.4-3*
>
> *A new draft ISG-22 has been issued to assist the staff with the evaluation of COL applicants' compliance with the requirements of 10 CFR 52.79(a)(31). The above draft ISG document was made available to the public including the The regulation at 10 CFR 52.79(a)(31) requires, in part, that applicants for a COL intending to construct and operate new nuclear power plants on multi-unit sites provide an evaluation of the potential hazards to the SSCs important to safety for operating units resulting from construction activities on the new units. The requirement in 10 CFR 52.79(a)(31) can be viewed as having two subparts: applicant and was discussed at a public meeting on August 26, 2010.*
>
> 1. *The COL applicant must evaluate the potential hazards from constructing new plants on SSCs important to safety for existing operating plants that are located at the site.*
>
> 2. *The COL applicant must evaluate the potential hazards from constructing new plants on SSCs important to safety for newly constructed plants that begin operation at the site*
>
> *The interim guidance recommends that the applicant provide a construction impact evaluation plan that includes:*
>
> - *A discussion of the construction activity identification process and the impact evaluation criteria used to identify and evaluate the construction activities that may pose potential hazards to the SSCs important to safety for operating unit(s).*
>
> - *A table of those construction activities and the potential hazards that are identified using that construction impact evaluation plan, the SSCs important to safety for the operating unit potentially impacted by the construction activity, and expected mitigation method.*

- *Identification of the managerial and administrative controls, such as proposed license conditions that may involve construction schedule constraints or other restrictions on construction activities, that are credited to preclude and/or mitigate the impacts of potential construction hazards to the SSCs important to safety for the operating unit(s).*

- *A discussion of the process for communications and interactions planned and credited between the construction organization and the operations organization to ensure appropriate coordination and authorization of construction activities and implementation of the prevention or mitigation activities as necessary.*

- *A memorandum of understanding or agreement (MOU or MOA) between the COL applicant and the operating unit(s) licensee as a mechanism for communications, interactions, and coordination to manage the impact of the construction activities.*

- *An implementation schedule corresponding to construction tasks or milestones to ensure the plan is reviewed on a recurring basis and maintained current as construction progresses.*

The staff reviewed the VEGP COL FSAR Section 1.10, which provides information to address compliance with 10 CFR 52.79(a)(31). In order to complete the staff's review, in RAI 1.5-2, the staff requested that the applicant provide a construction impact evaluation plan that includes:

- *A discussion of the process for communications and interactions planned and credited between the construction organization and the operations organization to ensure appropriate coordination and authorization of construction activities and implementation of the prevention or mitigation activities as necessary.*

- *A memorandum of understanding or agreement (MOU or MOA) between the COL applicant and the operating unit(s) licensee as a mechanism for communications, interactions, and coordination to manage the impact of the construction activities.*

- *An implementation schedule corresponding to construction tasks or milestones to ensure the plan is reviewed on a recurring basis and maintained current as construction progresses.*

In addition, the applicant was requested to identify the managerial and administrative controls (VEGP COL FSAR Table 1.10-203) that are credited to preclude and/or mitigate the impacts of potential construction hazards to the SSCs important to safety for the operating units (VEGP Units 1 and 2).

In a letter dated November 2, 2010, the applicant stated:

- *VEGP COL FSAR Sections 1.10.2 and 13AA will be revised to include the discussion of the process for communications and interactions planned*

and credited between the construction organization and the operations organization.

- *The COL applicant and the operating unit(s) licensee are the same entity, thus, no MOU or MOA is considered necessary.*

- *VEGP COL FSAR Sections 1.10.3 and 13AA will be revised to include the discussion of the implementation schedule corresponding to construction tasks or milestones.*

- *VEGP COL FSAR will be revised to indicate that managerial and administrative controls are developed and implemented as work progresses on site. These controls are intended to preclude and/or mitigate the impacts of potential construction hazards to the SSCs important to safety for the operating units.*

The proposed changes to the VEGP COL FSAR meet the draft guidance of ISG-22 and, therefore, meet the requirements of 10 CFR 50.79(a)(31). The incorporation of the above proposed changes into a future revision of the VEGP COL FSAR is ***Confirmatory Item 1.4-2****.*

Resolution of Standard Content Confirmatory Item 1.4-2

Confirmatory Item 1.4-2 is an applicant commitment to revise FSAR Sections 1.10.2 and 1.10.3 and Appendix 13A to address guidance included in ISG-22. The staff verified that the VEGP COL FSAR was appropriately revised. As a result, Confirmatory Item 1.4-2 is now closed.

License Conditions

- *Part 10, License Condition 1, ITAAC*

The applicant proposed that the ITAAC identified in the tables in Appendix B of Part 10 of the VEGP COL application be incorporated into the COL. The proposed license condition also states that after the Commission has made the finding required by 10 CFR 52.103(g), "Operation under a combined license," the ITAAC do not constitute regulatory requirements; except for specific ITAAC, which are subject to a hearing under 10 CFR 52.103(a), their expiration will occur upon final Commission action in such proceeding.

The ITAAC identified in tables in Appendix B of Part 10 of the VEGP COL application are evaluated throughout this SER. The remaining text of the proposed license condition is already covered by regulatory requirements of 10 CFR 52.103(h). Therefore, there is no need for a license condition.

1.4.5 Post Combined License Activities

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

1.4.6 Conclusion

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

1.5 Additional Regulatory Considerations

1.5.1 10 CFR 52.97(a)(1)(iv) Applicant Financial Qualifications and Evaluation of Financial Qualification in accordance with 10 CFR 50.33

BACKGROUND:

Duke Energy Carolinas, LLC

According to the COL application, Duke Energy Corporation, the holding company of Duke Energy Carolinas LLC (Duke), is one of the largest electric holding companies in the United States. Through its regulated electric and gas utility operating companies, Duke Energy Corporation operates more than 36,000 MW of electric generation; over 75 percent of which is subject to cost of service ratemaking.

Duke is a wholly owned subsidiary of Duke Energy Corporation and is a limited liability company duly organized and existing under the laws of the State of North Carolina. Duke is engaged in the business of generating, transmitting, distributing and selling electric power and energy.

Duke owns and operates regulated electrical facilities, including seven (7) nuclear units licensed by the NRC, as well as electrical distribution and transmission facilities. Lee Units 1 and 2 (Lee 1 and 2) will be used to produce electricity for sale.

REGULATORY EVALUATION:

The applicant's request for the NRC to issue two combined licenses under Section 103 of the Atomic Energy Act of 1954, as amended, for construction and operation is subject to, among other things, the requirements of the Atomic Energy Act of 1954, as amended; Subpart C to 10 CFR Part 52, 10 CFR Part 50 and 10 CFR Part 140.

In its review, the NRC staff used guidance in NUREG-1577, "Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance," Revision 1, issued February 1999, to evaluate the financial qualifications of the applicant to construct, operate, and decommission the proposed facility.

In addressing foreign ownership, control, or domination (FOCD), the NRC staff used guidance in the Standard Review Plan (SRP), "Foreign Ownership, Control, and Domination of applicants for Reactor Licenses, "dated June 1999 (SRP on FOCD) to determine whether the applicant is owned, controlled or dominated by an alien, a foreign corporation, or a foreign government. The

NRC published the SRP on FOCD in the *Federal Register* on September 28, 1999 (64 FR 52357-52359).

The staff also used guidance in NUREG-1307, Revision 15, "Report on Waste Burial Charges: Changes in Decommissioning Waste Disposal Costs at Low-Level Waste Burial Facilities," to independently validate the licensee's calculation of the minimum funding needed for decommissioning.

The safety evaluation documents the staff's review and analysis of financial qualifications, decommissioning funding assurance, FOCD, and nuclear insurance and indemnity. In addition, this safety evaluation contains proprietary information that is withheld from public disclosure per 10 CFR 2.390 as commercially sensitive.

FINANCIAL QUALIFICATIONS:

Pursuant to 10 CFR 52.77, the application must include all of the information required by 10 CFR 50.33.

Construction:

Pursuant to 10 CFR 50.33(f)(1):

> [T]he applicant[s] shall submit information that demonstrates that the applicant[s] possess or [have] reasonable assurance of obtaining the funds necessary to cover estimated construction costs and related fuel cycle costs. The applicant[s] shall submit estimates of the total construction costs of the facility and related fuel cycle costs, and shall indicate the source(s) of funds to cover these costs.

Under 10 CFR Part 50, Appendix C, "A guide for the Financial Data and Related Information Required To Establish Financial Qualifications for Construction Permits and Combined Licenses," Section I.A.1:

> [E]ach applicant's estimate of the total cost of the proposed facility should be broken down as follows and be accompanied by a statement describing the bases from which the estimate is derived:
>
> (a) Total nuclear production plant costs; [and]
>
> (b) Transmission, distribution, and general plant costs; [and]
>
> (c) Nuclear fuel inventory cost for first core.
>
> If the fuel is to be acquired by lease or other arrangement than purchase, the application should so state. The items to be included in these categories should be the same as those defined in the applicable electric plant and nuclear fuel inventory accounts prescribed by the Federal Energy Regulatory Commission [FERC] or an explanation given as to any departure from therefrom.

In accordance with 10 CFR 50.33(f) and 10 CFR Part 50, Appendix C, the projected overnight costs for the construction of two AP1000 nuclear units at the Lee site are outlined below.

PROJECTED PROJECT COST
WILLIAM STATES LEE III NUCLEAR STATION, UNITS 1 & 2
(Combined, in millions 2015 $)[9]

	Unit 1 and Unit 2	Common	Total
Total Nuclear Production Plant Costs.....	[[		]]
Transmission, Distribution..... & General Plant Costs	[[		]]
Nuclear Fuel Inventory & Cost for First Core.....	[[		]]
TOTAL (OVERNIGHT COST)	[[		]]

The construction cost estimate is expressed in terms of "overnight cost," which is a term commonly used in describing the cost of large capital projects[10]. The applicant calculated combined Unit 1 and Unit 2 cost estimates for plant construction. According to the COL application, the assumed construction period for Unit 1 is from 2019 to 2024 and for Unit 2, 2020 to 2025. Lee Units 1 and 2 is expected to operate at an estimated combined gross electrical power output of approximately 2234 MWe. Therefore, the total overnight cost, including fuel costs as described above, is [[ ]] million. This is approximately [[ ]]/kWe installed. As stated in the application, in part, estimated plant costs are informed by project pricing from the Westinghouse Electric Corporation and Chicago Bridge and Iron (WEC/CB&I) consortium (escalated to 2015 dollars); evaluation of owner's costs including costs for transmission system ties and upgrades; and contingency costs for construction. In consideration of the information provided in the application and as summarized above, the NRC staff finds the applicant's AP1000 overnight construction cost estimate to be a reasonable projection based on a number of studies[11] that have been conducted by governmental agencies, universities and other entities, and is consistent with the publicly available cost estimates of other U.S. AP1000 projects. In particular, the U.S. Energy Information Administration's (EIA) June 2012 report, "Annual Energy Outlook 2012 with Projections to 2035," (DOE/EIA-0383(2012)), states that "…the overnight capital costs associated with building a nuclear power plant planned in 2012 are assumed to be $5,335 per kilowatt of capacity…" The staff applied a conservative annual adjustment factor ranging from 3% to 10% to the EIA overnight capital cost estimate to account for inflation beyond 2012, and determined that the EIA projected 2015 overnight cost would range from $5,830 to $7,101/kWe installed. The construction cost estimate is expressed in terms of "overnight cost," which is a term commonly used in describing

[9] Commercially sensitive data. The data in brackets cannot be released to the public.

[10] Overnight cost is the cost of a construction project if no interest was incurred during construction, as if the project was completed "overnight." An alternate definition is: the present value cost that would have to be paid as a lump sum up front to completely pay for a construction project. The overnight cost is frequently used when describing power plants.

[11] See, e.g., the 2003 the Massachusetts Institute of Technology (MIT) interdisciplinary study entitled The Future of Nuclear Power; the U.S. Department of Energy's Energy Information Agency (EIA) 2012 Annual Energy Outlook (AEO); the Nuclear Energy Agency (NEA) of the Organization for Economic Cooperation and Development 2005 update on Projected Costs of Generating Electricity; and the Keystone Center 2007 report entitled Nuclear Power Joint Fact-Finding.

the cost of large capital projects[12]. The applicant's overnight cost estimate of [[ ]]/kWe installed is slightly less than, but in line with, the most recent EIA 2012 range of overnight costs as adjusted for inflation. Accordingly, the NRC staff finds Duke's overnight cost estimate to be reasonable as presented in its COL application.

Sources of Construction Funds:

Pursuant to 10 CFR, Part 50, Appendix C, I.A.2:

> [t]he application should include a brief statement of the applicant's general financial plan for financing the cost of the facility, identifying the source or sources upon which the applicant relies for the necessary construction funds, e.g., internal sources such as undistributed earnings and depreciation accruals, or external sources such as borrowings.

Duke's Source of Construction Funds

According to the COL application, Duke intends to construct Lee as a regulated asset eligible for cost recovery under North Carolina Statute, G.S. 62-110.1, 62-110.7, 62-133(b) and South Carolina Title 58, Chapter 33, Sections 58-33-220, 58-33-225, 58-33-270, 58-33-280 outlining the recovery for reasonable and prudently incurred costs for a nuclear generation construction project

Duke expects to finance this project through a mixture of internally generated cash and external funding. The three primary sources are cash from operations, debt issued by Duke Energy Carolinas, LLC, and retained earnings and equity infused by its parent, Duke Energy Corporation, as needed, to balance the utility's regulated capital structure to a targeted level. Further, the applicant stated that it may borrow from Duke Energy Corporation to fund a portion of its capital requirements until such time as it is opportune to issue long-term debt securities (bonds or debentures). The staff concludes that Duke Energy Carolinas, LLC and Duke Energy Corporation have sufficient financing capacity to fund this project from the following sources: internally generated operating cash flows, commercial paper and bank facilities, and long-term and equity capital markets.

Financial Statements

Pursuant to 10 CFR, Part 50, Appendix C, I.A.3:

> [t]he application should also include the applicant's latest published annual financial report, together with any current interim financial statements that are pertinent. If an annual financial report is not published, the balance sheet and operating statement covering the latest complete accounting year together with all pertinent notes thereto and certification by a public accountant should be furnished.

Duke Energy Corporation Financial Statements

Duke Energy Corporation files financial statements with the U.S. Securities and Exchange Commission (SEC) at the time the COL application was submitted. Duke submitted, pursuant to

Appendix C.I.A 3, to 10 CFR Part 50, annual financial statements. The NRC staff did not identify anything in Duke's financial statements that warranted further inquiry.

Operating License

Pursuant to 10 CFR 50.33(f)(3),

> If the application is for a combined license under Subpart C of 10 CFR Part 52 of this chapter, the applicant shall submit the information described in paragraphs (f)(1) and (f)(2) of this section.

10 CFR 50.33(f) provides that each application shall state:

> [e]xcept for an electric utility applicant for a license to operate a utilization facility of the type described in 10 CFR 50.21(b) or 50.22, information sufficient to demonstrate to the Commission the financial qualification[s] of the applicant to carry out, in accordance with the regulations in this chapter, the activities for which the permit or license is sought.

10 CFR 50.2, "Definitions" states, in part, that an electric utility is:

> [a]ny entity that generates or distributes electricity and which recovers the cost of this electricity, either directly or indirectly, through rates established by the entity itself or by a separate regulatory authority.

The applicant is an electric utility as defined in 10 CFR 50.2. The applicant generates and distributes electricity and recovers the cost of this electricity through cost-of-service based rates established by the North Carolina Public Utility Commission, South Carolina Public Service Commission, and FERC.

Based on the foregoing, the staff finds that Duke is an electric utility and not subject to a financial qualifications review pursuant to 10 CFR 50.33(f)(2).

DECOMMISSIONING FUNDING ASSURANCE:

Regulatory Requirements:

Pursuant to 10 CFR 50.33(k)(1):

> [A]n application for [a …] combined license for a production or utilization facility, information in the form of a report, as described in 10 CFR 50.75, indicating how reasonable assurance will be available to decommission the facility.

Under 10 CFR 50.75, "Reporting and recordkeeping for decommissioning planning," the report must include a certification that the applicant will provide financial assurance for decommissioning using one or more of the methods allowed under the regulation at 10 CFR 50.75(e) no later than 30 days after the Commission publishes notice in the *Federal Register* under 10 CFR 52.103(a). In addition, the amount of the financial assurance may be more, but not less, than the amount stated in the table in 10 CFR 50.75(c)(1), as adjusted under 10 CFR 50.75(c)(2). Under 10 CFR 50.75(b)(4), a COL applicant need not obtain a financial instrument appropriate to the method to be used or submit a copy of the instrument to the

Commission. (Once the COL is granted, the holder of a COL must submit an instrument as provided in 10 CFR 50.75(e)(3)).

Additionally, the staff used the guidance in NUREG-1577, Rev. 1, in its review of the Lee 1 and 2 COL application.

Decommissioning Funding Estimate

The proposed plant is a simplified passive advanced light water reactor plant that is being licensed in accordance with the Westinghouse AP1000 certified design, as documented in the referenced DCD and its supplements. This design has a per unit thermal power rating of 3400 MWt. In its April 11, 2016 submittal, the applicant stated that it will provide decommissioning funding assurance in an amount of $517 million (2015 dollars) per unit. This value was derived using the methodology delineated in 10 CFR 50.75(c), and guidance in NUREG-1307, Revision 15. The NRC staff independently calculated the minimum funding needed for Lee Units 1 and 2 using the regulations and guidance described above, and obtained results similar to Duke's. Accordingly, the staff finds that the amount provided by Duke is acceptable.

Decommissioning Funding Mechanism

Pursuant to 10 CFR 50.75(b), a reactor licensee is required to provide decommissioning funding assurance by one or more of the methods described in 10 CFR 50.75(e), as determined to be acceptable to the NRC. According to the COL application, Duke has chosen to provide decommissioning funding assurance for Lee 1 and 2 using an external sinking fund. Duke's external sinking fund will be in the form of a trust; will be established in writing and maintained at all times in the United States with an entity that is an appropriate State or Federal government agency, or an entity whose operations are regulated and examined by a State or Federal agency; and will include the provisions required by 10 CFR 50.75(h)(2). The staff finds that Duke's use of an external sinking fund is acceptable since it will recover, either directly or indirectly, the estimated total cost of decommissioning through rates established by "cost of service" or similar ratemaking regulation. Therefore, the staff finds this method to be acceptable since it meets the requirements in 10 CFR 50.75(e)(1)(ii).

Certification Updates, Financial Instruments, and Annual Adjustment

According to the application, two years and one year before the scheduled date for initial loading of fuel, Duke will submit a report updating this certification in accordance with 10 CFR 50.75(e)(3) and providing copies of the financial instruments to be used. In addition, no later than 30 days after the NRC publishes the notice in the Federal Register under 10 CFR 52.103(a), Duke will submit a report containing a certification that the financial assurance for decommissioning is being provided in an amount specified in the most recent updated certification and will include a copy of the executed financial agreements obtained to satisfy the requirements of 10 CFR 50.75(e). Thereafter, the decommissioning funding amount will be adjusted annually using a rate at least equal to that stated in 10 CFR 50.75(c)(2). The staff finds Duke's proposed plan as described above and in the application to be reasonable.

ANTITRUST REVIEW:

The Energy Policy Act of 2005 (EPAct) removed the antitrust review authority contained in section 105.c of the Atomic Energy Act of 1954, as amended (AEA), regarding license

applications for production or utilization facilities submitted under sections 103 or 104b of the AEA after the date of enactment of the EPAct. Accordingly, the NRC is not authorized to conduct an antitrust review in connection with this combined license application.

FOREIGN OWNERSHIP, CONTROL, or DOMINATION:

Section 103 of the AEA, in relevant part, prohibits the Commission from issuing a license for a nuclear power plant to:

> an alien or any corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation or a foreign government.

10 CFR Part 50.38 "Ineligibility of certain applicants," is the regulatory provision that implements this statutory prohibition.

The NRC staff reviewed the application pursuant the guidance provided in the SRP on FOCD to determine whether the applicant is owned controlled, or dominated by an alien, a foreign corporation, or a foreign government.

Duke Foreign Ownership, Control, or Domination

According to the application, Duke is not owned, controlled or dominated by any alien, foreign corporation or foreign government. Duke is a limited liability company organized under the laws of the State of North Carolina and whose principal place of business is Charlotte, North Carolina. Duke is wholly owned by Duke Energy Corporation, a Delaware corporation whose principal place of business is Charlotte, North Carolina. The shares of common stock of Duke Energy Corporation are publicly traded and widely held. The application also contains the names and addresses of the directors and officers of Duke Energy Corporation and Duke and indicates that all are United States citizens.

The NRC Staff performed an independent analysis, including open-source research and verification of the information provided in the application related to the ownership of Duke, and found no evidence FOCD.

Based on this review, the staff does not know or have reason to believe that Duke is owned, controlled, or dominated by a foreign interest. Therefore, Duke conforms to the guidance provided in the SRP for FOCD and meets the requirements of 10 CFR 50.38.

NUCLEAR INSURANCE and INDEMNITY:

This section of the SER addresses the applicant's offsite and onsite insurance requirements found in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 140, "Financial protection requirements and indemnity agreements," and 10 CFR 50.54(w), respectively.

The provisions of the Price-Anderson Act (Section 170 of the Atomic Energy Act of 1954, as amended) and the Commission's regulations in 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," require, in part, that each holder of a license issued pursuant to 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," have and maintain financial protection. Further, 10 CFR 50.54(w) establishes requirements for each power reactor licensee to obtain insurance or provide an equivalent amount of protection for the onsite costs of an accident. Under these regulations, Duke is required to provide

satisfactory documentation that it has obtained the amount of financial protection required by (1) 10 CFR 140.13, "Amount of financial protection required of certain holders of construction permits and combined licenses under 10 CFR part 52," (2) 10 CFR 140.11(a)(4), and (3) 10 CFR 50.54(w). In addition, each licensee required to have and maintain financial protection under 10 CFR 140.11(a)(4) shall provide evidence that it maintains a guarantee of payment of deferred premiums pursuant to 10 CFR 140.21, "Licensee guarantees of payment of deferred premiums." Finally, as required by 10 CFR 140.20, "Indemnity agreements and liens," the NRC staff will amend Duke's current indemnity agreement to include the addition of Lee Units 1 and 2.

The regulation in 10 CFR 140.13 provides the amount of financial protection required by a Part 52 license holder, who also holds a license under 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," during the period before the Commission makes the finding under 10 CFR 52.103(g) (i.e., a finding that the acceptance criteria in the license are met, which allows the licensee to initially load fuel and operate). Because the 10 CFR Part 70 license will be issued with the COL, Duke must have and maintain $1,000,000 in financial protection from issuance of the COL until the 10 CFR 52.103(g) finding is made. In addition, as required by 10 CFR 140.11(a)(4), after the 10 CFR 52.103(g) finding is made, each licensee must have and maintain financial protection in an amount equal to the sum of primary financial protection ($375,000,000) and the amount available as secondary financial protection.

By letter dated February 19, 2016, (ADAMS Accession No. ML16056A014), Duke's insurance broker, Marsh USA, Inc., provided proof of insurance coverage from American Nuclear Insurers in the amount of $1,000,000. Duke's $1,000,000 insurance policy will remain in effect until the 10 CFR 52.103(g) finding. Therefore, the staff concludes that the proof of financial protection provided by DEC will satisfy the requirements in 10 CFR 140.13.

The staff notes that although licensees of large operating reactors under 10 CFR Parts 50 and 10 CFR Part 52 must have and maintain financial protection under 10 CFR 140.11 (a) (4) upon NRC action authorizing operation, the timing provisions for reporting under 10 CFR Part 140.21 do not explicitly address the 10 CFR Part 52 process. Under the requirements in 10 CFR 140.11(a)(4), 10 CFR 140.21, the coverage for secondary financial protection and the guarantee of payment of deferred premiums, are only required for reactors authorized to load fuel and operate. Under 10 CFR Part 52 COL process, the license authorizes operation only upon a Commission finding pursuant to 10 CFR 52.103(g). Therefore, these requirements apply as of the date the Commission makes such a finding. While 10 CFR 50.54(w) by its terms applies upon a Commission finding under 10 CFR 52.103(g), Duke also included a reporting requirement for 10 CFR 50.54(w) in its proposed condition.

Duke proposed the following license condition to address the reporting of 10 CFR Section 140.11(a)(4) requirements for secondary financial protection, and the reporting of 50.54(w) requirements for onsite financial protection. The staff agreed with the proposed license condition but made some modifications. The staff's recommended license condition is stated below:

- License Condition (1-1) – Before the scheduled date for initial fuel load, and within ninety (90) days after the NRC publishes the notice of intended operation in the Federal Register, Duke shall provide satisfactory documentary evidence to the Director of the Office of Nuclear Reactor Regulation, or designee, that it has obtained the appropriate amount of primary and secondary financial protection required of

licensees pursuant to 10 CFR 140.11(a)(4) and the appropriate amount of financial protection per 10 CFR 50.54(w).

With the license condition as described above, the staff concludes that Duke will satisfy the requirements of 10 CFR 140.11(a)(4) with respect to obtaining an appropriate amount of secondary financial protection and 10 CFR 50.54(w) with respect to obtaining the appropriate amount of financial protection. The staff notes that it will conform any license condition to the correct format if the Commission determines to issue the license. For example, the staff may change "the Director of the Office of Nuclear Reactor Regulation" to "the Director of the Office of New Reactors" and the like.

Duke also proposed the following license condition to address the reporting of 10 CFR 140.21 for guarantee of payment of deferred premiums. The staff agreed with the proposed license condition but made some modifications. The staff's recommended license condition is stated below:

- License Condition (1-2) – Before the scheduled date of initial fuel load, and within ninety (90) days after the NRC publishes the notice of intended operation in the *Federal Register,* Duke shall provide evidence to the NRC that it would have the ability to pay into the nuclear industry retrospective rating plan in the event of a nuclear incident and in the amount specified in 10 CFR Part 140.11(a)(4) [sic] for one calendar year using one of the following methods:

  (a) Surety bond,

  (b) Letter of credit,

  (c) Revolving credit/term loan arrangement,

  (d) Maintenance of escrow deposits of government securities, or

  (e) Annual certified financial statement showing either that a cash flow (i.e., cash available to a company after all operating expenses, taxes, interest charges, and dividends have been paid) can be generated and would be available for payment of retrospective premiums within three (3) months after submission of the statement, or a cash reserve or a combination of cash flow and cash reserve.

  Thereafter, Duke shall provide evidence of the guarantees of payment of deferred premiums in accordance with the provisions specified in 10 CFR 140.21.

With the license condition as described above, the staff concludes that Duke will satisfy the requirement in 10 CFR 140.21.

In consideration of the staff's evaluation and license conditions as described above, the staff concludes that DEC will satisfy the provisions of the Price-Anderson Act (Section 170 of the Atomic Energy Act of 1954, as amended) and the Commission's applicable regulations in 10 CFR Part 140, 10 CFR Part 52, and 10 CFR Part 50 for insurance and indemnity.

CONCLUSION:

Based on the foregoing evaluation above, in consideration of the proposed license conditions, the NRC staff finds reasonable assurance that Duke is financially qualified to engage in the proposed activities regarding William States Lee III, Units 1 and 2 and that Duke satisfies the NRC requirements relating to financial qualification, decommissioning funding assurance, FOCD, and nuclear insurance and indemnity. The staff finds this acceptable since it conforms to the guidance in NUREG-1577, the SRP on FOCD, NUREG-1307, and meets the applicable regulations in 10 CFR Part 52, 10 CFR Part 50, and 10 CFR Part 140 as described above.

1.5.2 Nuclear Waste Policy Act

Nuclear Waste Policy Act of 1982, as amended, Section 302(b), "The Commission, as it deems necessary or appropriate, may require as a precondition to the issuance or renewal of a license under Section 103 or 104 of the Atomic Energy Act of 1954 [42 U.S.C. 2133, 2134] that the applicant for such license shall have entered into an agreement with the Secretary for the disposal of high-level radioactive waste and spent nuclear fuel that may result from the use of such license."

On November 4, 2008, DEC entered into a contract with the United States Department of Energy (DOE) establishing the terms and conditions associated with the DOE's responsibility for disposal of spent nuclear fuel and high-level radioactive waste generated at the proposed WLS Units 1 and 2 (ADAMS Accession No. ML083510882). The COE contract numbers applicable to WLS Units 1 and 2 are DE-CR01-09RW09003 and DE-CR01-09RW09004 respectively.

Since DEC has entered into contracts with the DOE for the disposal of high-level radioactive waste and spent nuclear fuel for WLS Units 1 and 2, the staff considers the applicable requirements of Nuclear Waste Policy Act of 1982, Section 302(b) to be met.

1.5.3 Consultation with Department of Homeland Security and Notifications

1.5.3.1 *Consultation with Department of Homeland Security*

In accordance with *Energy Policy Act of 2005,* Section 657, the staff consulted with the Department of Homeland Security (DHS). By letter, dated July 16, 2008, DHS provided their New Reactor Consultation Report on the William S. Lee Nuclear Station proposed to be built in Gaffney, South Carolina. The New Reactor Consultation Report satisfies the requirements of Section 657 of the Energy Policy Act of 2005.

1.5.3.2 *Notifications*

As required by Section 182c of the Atomic Energy Policy Act of 1954, as amended, and 10CFR 50.43(a), on December 15, 2011, the NRC notified the Public Service Commission of South Carolina and the North Carolina Utilities Commission of the WLS COL Application (ADAMS Accession Nos. ML112450014 and ML112450028).

In accordance with Section 182c of the Atomic Energy Policy Act of 1954, as amended, the staff also published a notice of application in the *Federal Register* on November 18, November 25, December 2, and December 9, 2011, 76 (FR 71608, 72725, 75566, and 77021).

Based on the staff's complete of notifications to regulatory agencies and the public notices described above, the staff concludes that, for the purposes of issuing COLs for WLS Units 1 and 2, any required notifications to other agencies or bodies have been duly made.

1.5.4 Evaluation of Departures and Exemption Associated with Application Organization and Numbering (10 CFR Part 52, Appendix D) and Exemption Associated with Special Nuclear Material Material Control and Accounting Program Description (10 CFR Part 70, Subpart D and 10 CFR Part 74 Subparts C, D, and E)

Evaluation of Departures and Exemption Associated with Organization and Numbering in the Application

In STD DEP 1.1-1 the applicant renumbered WLS COL FSAR Sections 2.1.1, 2.1.4, 2.2.1, 2.2.4, 2.4.1, 2.4.15, 2.5, 2.5.6, 9.2.11, 9.2.12, 9.2.13, 9.5.1.8, 9.5.1.9, 13.1, 13.1.4, 13.5, 13.5.3, 13.7, 17.5, 17.6, 17.7, and 17.8 to include content consistent with RG 1.206 and NUREG-0800. The departure and the exemption associated with the numbering scheme of the WLS COL FSAR are closely related.

Pursuant to 10 CFR 52.7, "Specific Exemptions," and 10 CFR 52.93, "Exemptions and Variances," the applicant requested an exemption from 10 CFR Part 52, Appendix D, Section IV.A.2.a, to include "a plant-specific DCD containing the same type of information and using the same organization and numbering as the generic DCD for the AP1000 design…." In WLS COL application Part 7, "Departures and Exemptions," the applicant stated that the exemption will not result in any significant departures from the expected organization and numbering of a typical FSAR, and the information is readily identifiable to facilitate an NRC review. The applicant states that the subject deviations are considered to be purely administrative to support a logical construction of the document. Further, the revised organization and numbering generally follows the guidance provided in RG 1.206 and NUREG-0800.

Pursuant to 10 CFR 52.7, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 52. 10 CFR 52.7 further states that the Commission's consideration will be governed by 10 CFR 50.12, "Specific exemptions," which states that an exemption may be granted when: (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) special circumstances are present. Special circumstances are present whenever, according to 10 CFR 50.12(a)(2)(ii), "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule."

Before considering whether this numbering exemption should be granted, the staff needed to address a threshold question regarding the review standard applicable to the request. Under 10 CFR 52.93(a)(1), if a request for an exemption is from any part of a design certification rule, then the Commission may grant the exemption if the exemption complies with the appropriate change provision in the referenced design certification rule, or if there is no applicable change provision, if the exemption complies with 10 CFR 52.63. Here, there is no applicable change provision in the referenced design certification rule, so according to 10 CFR 52.93(a)(1), the exemption must meet 10 CFR 52.63. However, the standards of the appropriate provision of 10 CFR 52.63 applicable to requests for exemptions from a design certification rule in 10 CFR 52.63(b)(1), by their terms, also do not apply to this change. Specifically,

10 CFR 52.63(b)(1) applies to changes to "certification information," and not administrative or procedural design certification rule provisions such as this one under consideration. In the Statements of Consideration for 10 CFR 52.63, the Commission stated that it used the "phrase 'certification information' in order to distinguish the rule language in the DCRs from the design certification information (e.g., Tier 1 and Tier 2) that is incorporated by reference in the DCRs." (See 72 FR 49444). The exemption requested from the AP1000 DCD numbering scheme is an exemption from rule language, not Tier 1 or Tier 2 information; therefore, 10 CFR 52.63 should not be used to analyze this exemption.

Since there is not an applicable change provision in the referenced design certification, and because 10 CFR 52.63(b)(1) does not apply to this exemption, the exemption cannot comply with the plain language of 10 CFR 52.93(a)(1). In this situation, the language of 10 CFR 52.93(a)(1) does not appear to serve the underlying purpose of the regulation as described by the Commission in the Statements of Consideration to the rule, in which the Commission stated that only changes to certification information must meet 10 CFR 52.63. Instead, this exemption should have fallen under 10 CFR 52.93(a)(2), and, thus, be analyzed under the requirements in 10 CFR 52.7. Therefore, the staff finds that, pursuant to 10 CFR 52.7, an exemption to 10 CFR 52.93(a)(1) should be granted. This exemption is warranted because it meets the requirements in 10 CFR 50.12. First, because this is an administrative change regarding what exemption regulation applies, the exemption to 10 CFR 52.93(a)(1) is authorized by law, will not present an undue risk to public health or safety, and is consistent with the common defense and security. Additionally, application of the regulation in this case is not necessary to achieve the underlying purpose of the rule. The underlying purpose of the rule is to maintain the safety benefits of standardization by requiring any exemption from certification information to meet the requirements in 10 CFR 52.63(b)(1). This underlying purpose does not apply to this exemption, because the form and organization of the application does not affect the safety benefits of standardization of the certification information. Therefore, for the purpose of determining the standards applicable to the exemption related to STD DEP 1.1-1, the staff finds an exemption to 10 CFR 52.93(a)(1) acceptable for the review of the exemption related to STD DEP 1.1-1.

Pursuant to the exemption described above, the staff reviewed the exemption related to STD DEP 1.1-1 to determine whether the requirements in 10 CFR 52.7 are met. This exemption would allow the applicant to provide an FSAR with numbering and topics more closely related to NUREG-0800 and RG 1.206. The staff finds that this administrative change of minor renumbering will not present an undue risk to the public health and safety and is consistent with the common defense and security. In addition, this exemption is consistent with the Atomic Energy Act of 1954, as amended, and is authorized by law. Further, the application of the regulation in these particular circumstances is not necessary to achieve the underlying purpose of the rule. Therefore, the staff finds that the exemption to 10 CFR Part 52, Appendix D, Section IV.A.2.a is justified. Finally, for the same reasons the staff is granting the exemption request, the staff also finds the departure from the numbering scheme in the WLS COL FSAR acceptable.

Exemption Associated with Special Nuclear Material Material Control and Accounting Program

The applicant requested an exemption from the requirements of 10 CFR 70.22(b), 10 CFR 70.32(c) and, in turn, 10 CFR 74.31, 10 CFR 74.41, and 10 CFR 74.51. The provision of 10 CFR 70.22(b) requires an application for a license for SNM to include a full description of the applicant's program for MC&A of SNM under 10 CFR 74.31; 10 CFR 74.33, "Nuclear

material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance"; 10 CFR 74.41; and 10 CFR 74.51[13].
10 CFR 70.32(c) requires a license authorizing the use of SNM to include and be subjected to a condition requiring the licensee to maintain and follow an SNM MC&A program. However, 10 CFR 70.22(b), 10 CFR 70.32(c), 10 CFR 74.31, 10 CFR 74.41, and 10 CFR 74.51 include exceptions for nuclear reactors licensed under 10 CFR Part 50. The regulations applicable to the MC&A of SNM for nuclear reactors licensed under 10 CFR Part 50 are provided in 10 CFR Part 74, Subpart B, 10 CFR 74.11 through 10 CFR 74.19, excluding 10 CFR 74.17. The purpose of this exemption request is to seek a similar exception for this COL under 10 CFR Part 52, such that the same regulations will be applied to the SNM MC&A program as nuclear reactors licensed under 10 CFR Part 50. In addition, the exemption request is evaluated under 10 CFR 52.7, which incorporates the requirements of 10 CFR 50.12. As stated previously, that section allows the Commission to grant an exemption if: 1) the exemption is authorized by law; will not present an undue risk to the public health and safety; and is consistent with the common defense and security; and 2) special circumstances are present as specified in 10 CFR 50.12(a)(2). The criteria in 10 CFR 50.12 encompass the criteria for an exemption in 10 CFR 70.17(a) and 10 CFR 74.7, the specific exemption requirements for 10 CFR Part 70 and 10 CFR Part 74, respectively. Therefore, by demonstrating that the exemption criteria in 10 CFR 50.12 are satisfied, the staff concludes that this request would also demonstrate that the exemption criteria in 10 CFR 52.7, 10 CFR 70.17(a), and 10 CFR 74.7 are satisfied.

The subject exemption would allow nuclear reactors licensed under 10 CFR Part 52 to be explicitly exempted from the requirements of 10 CFR 70.22(b), 10 CFR 70.32(c), 10 CFR 74.31, 10 CFR 74.41, and 10 CFR 74.51. There is no technical or regulatory basis to treat nuclear reactors licensed under 10 CFR Part 52 differently than reactors licensed under 10 CFR Part 50 with respect to the MC&A provisions in 10 CFR Part 74. As indicated in the Statement of Considerations for 10 CFR 52.0(b) (72 FR 49352, 49372, 49436 (August 28, 2007)), applicants and licensees under 10 CFR Part 52 are subject to all of the applicable requirements in 10 CFR Chapter I, whether or not those provisions explicitly mention a COL under 10 CFR Part 52. This regulation clearly indicates that plants licensed under 10 CFR Part 52 are to be treated no differently than plants licensed under 10 CFR Part 50 with respect to the substantive provisions in 10 CFR Chapter I (which includes 10 CFR Part 70 and 10 CFR Part 74). In particular, the exception for nuclear reactors licensed under 10 CFR Part 50, as in 10 CFR 70.22(b), 10 CFR 74.31, 10 CFR 74.41, or 10 CFR 74.51, should also be applied to reactors licensed under 10 CFR Part 52.

The staff agrees with the applicant's justification that nuclear reactors licensed under 10 CFR Part 52 should be treated the same as the reactors licensed under 10 CFR Part 50 regarding the MC&A for SNM.

Pursuant to 10 CFR 70.17(a), the Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

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[13] While not including an explicit exception for 10 CFR Part 50 reactors, 10 CFR 74.33 applies only to uranium enrichment facilities and thus is not directly implicated in this exemption request.

In addition, pursuant to 10 CFR 74.7, "Specific exemptions," the Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security, and are otherwise in the public interest.

Pursuant to 10 CFR 52.7, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 52. 10 CFR 52.7 further states that the Commission's consideration will be governed by 10 CFR 50.12, "Specific exemptions," which states that an exemption may be granted when: (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present. Special circumstances are present whenever, according to 10 CFR 50.12(a)(2)(ii), "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule."

The staff reviewed the subject exemption, which will allow the applicant to have a similar exception for the COL under 10 CFR Part 52, such that the same regulations will be applied to the SNM MC&A program as nuclear reactors licensed under 10 CFR Part 50, and determined that this requested exemption will not present an undue risk to the public health and safety and is otherwise in the public interest. In addition, this exemption is consistent with the Atomic Energy Act of 1954, as amended, and is authorized by law. Therefore, granting this exemption will not adversely affect the common defense and security. Further, the application of the regulation in these particular circumstances is not necessary to achieve the underlying purpose of the rule. Since the exemption criteria in 10 CFR 50.12 are satisfied, the staff considers that this request also demonstrates that the exemption criteria in 10 CFR 52.7, 10 CFR 70.17(a), and 10 CFR 74.7 are satisfied. Therefore, the staff finds that the exemption from 10 CFR 70.22(b), 10 CFR 70.32(c) and, in turn, 10 CFR 74.31, 10 CFR 74.41, and 10 CFR 74.51, is justified.

1.5.5 Receipt, Possession, Use, and Transport of Source, Byproduct and Special Nuclear Material Authorized by 10 CFR Part 52 Combined Licenses

In DEC's Revision 4 of the COL application, dated August 9, 2011, including Part 1, "General and Financial Information," DEC requested material licenses for receipt, possession and use of source, byproduct and SNM in accordance with Commission regulations in 10 CFR Parts 30, 40, and 70. The reviews conducted for compliance with the requirements of 10 CFR Part 52 to support the issuance of the COLs encompass those necessary to support granting 10 CFR Parts 30, 40, and 70 licenses. In this respect, the 10 CFR Part 52 COLs for WLS will be consistent with the approach to 10 CFR Parts 30, 40, and 70 licensing followed for operating licenses for nuclear power plants licensed in accordance with 10 CFR Part 50. The staff considered the following proposed standard license provisions for the WLS COL as would relate to authorization pursuant to the regulations in 10 CFR Parts 30, 40, and 70[14].

[14] These proposed standard license conditions that the staff considered are based on similar license conditions found in other combined licenses.

Subject to the conditions and requirements incorporated herein, the Commission hereby licenses WLS:

(1) (a) pursuant to the Act and 10 CFR Part 70, to receive and possess at any time, special nuclear material as reactor fuel, in accordance with the limitations for storage and in amounts necessary for reactor operation, described in the FSAR, as supplemented and amended;

(b) pursuant to the Act and 10 CFR Part 70, to use special nuclear material as reactor fuel, after a Commission finding under 10 CFR 52.103(g) has been made, in accordance with the limitations for storage and amounts necessary for reactor operation, described in the FSAR, as supplemented and amended;

(2) (a) pursuant to the Act and 10 CFR Parts 30 and 70, to receive, possess, and use, at any time before a Commission finding under 10 CFR 52.103(g), such byproduct and special nuclear material (but not uranium hexafluoride) as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts not exceeding those specified in 10 CFR 30.35(d) and 10 CFR 70.25(d) for establishing decommissioning financial assurance, and not exceeding those specified in 10 CFR 30.72 and 10 CFR 70.22(i)(1);

(b) pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use, after a Commission finding under 10 CFR 52.103(g), any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as necessary;

(3) (a) pursuant to the Act and 10 CFR Parts 30 and 70, to receive, possess, and use, before a Commission finding under 10 CFR 52.103(g), any byproduct or special nuclear material (but not uranium hexafluoride) that is (1) in unsealed form; (2) on foils or plated surfaces, or (3) sealed in glass, for sample analysis or instrument calibration or other activity associated with radioactive apparatus or components, in amounts not exceeding those specified in 10 CFR 30.35(d) and 10 CFR 70.25(d) for establishing decommissioning financial assurance, and not exceeding those specified in 10 CFR 30.72 and 10 CFR 70.22(i)(1);

(b) pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use, after a Commission finding under 10 CFR 52.103(g), in amounts as necessary, any byproduct, source, or special nuclear material (but not uranium hexafluoride) without restriction as to chemical or physical form, for sample analysis or instrument calibration or other activity associated with radioactive apparatus or components; and

(4) pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

The staff notes that WLS COL FSAR Table 13.4-201 "Operational Programs Required by NRC Regulations," provides milestones for the implementation of various operational programs. Important milestone dates for various operational programs that support issuance of the license and requirements relative to 10 CFR Parts 30, 40, and 70 include the following:

- Radiation Protection Program (including as low as is reasonably achievable [ALARA] principles) – prior to initial receipt of byproduct, source, or special nuclear materials (excluding exempt quantities as described in 10 CFR 30.18, "Exempt quantities")

- Fire Protection Program – prior to initial receipt of byproduct, source, or special nuclear materials (excluding exempt quantities as described in 10 CFR 30.18, "Exempt quantities")

- Security Program including physical security, safeguards contingency programs, training and qualification program – prior to receipt of fuel onsite (protected area)

- Security Program including physical security, safeguards contingency, and transportation programs – prior to transport or receipt of special nuclear material of low strategic significance

- Non-licensed plant staff training program associated with receipt of the radioactive material – prior to initial receipt of byproduct, source, or special nuclear materials (excluding exempt quantities as described in 10 CFR 30.18, "Exempt quantities")

In WLS COL FSAR, Table 13.4-201, the applicant includes the appropriate milestones and requirements related to the SNM MC&A program. In addition, as documented in the following table WLS endorsed VEGP standard content letters related to this subject.

VEGP Letter Date	VEGP Letters ADAMS Accession Nos.	WLS Endorsement Letter Date	WLS Letters ADAMS Accession Nos.
July 29, 2009	ML092120064	December 18, 2009	ML093570280
July 9, 2010	ML101940025	January 6, 2011	ML110110399
October 15, 2010	ML102920120	April 25, 2011	ML11116A162
November 23, 2010	ML103300034	April 25, 2011	ML11116A162
March 16, 2011	ML110800088	April 25, 2011	ML11116A162

VEGP Letter Date	VEGP Letters ADAMS Accession Nos.	WLS Endorsement Letter Date	WLS Letters ADAMS Accession Nos.
March 3, 2011	ML110660153	April 25, 2011	ML11116A162
March 16, 2011[15]	ML110770137	April 25, 2011	ML11116A162
May 6, 2011	ML11129A155	May 18, 2011	ML11139A409
June 22, 2011	ML11175A169	July 28, 2011	ML11214A028

These letters identified the portions of the WLS COL application that demonstrate compliance with the requirements of 10 CFR Parts 30, 40, 70, and 74. The exemption request from the requirements of 10 CFR 70.22(b), 10 CFR 70.32(c) and, in turn, 10 CFR 74.31, 10 CFR 74.41, and 10 CFR 74.51 is addressed in Section 1.5.4 of this report.

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

- The staff confirmed that all responses to RAIs identified in the corresponding standard content evaluation were endorsed.

- The staff confirmed that the SNM Material and Control Accounting Program Description in Part 11 Enclosure D of the WLS COL application Revision 4 is identical to the November 23, 2010, VEGP submittal transmitting its SNM Material Control and Accounting Program Description. The only exceptions are that the title of the units are different and the identification that DEC and not Southern Nuclear Operating Company is responsible for implementation of the program is different.

- In an August 18, 2011, letter, the applicant concurred with the standard content of the VEGP SNMPPP description submitted in a March 16, 2011, letter. The staff confirmed that WLS SNMPPP description is identical with the only exception being the organization titles. However, there have been additional updates to the WLS SNMPPP in an October 16, 2014, letter from WLS. A specific review of the most recent WLS SNMPPP is discussed in Section 1.5.5 of this report.

[15] The March 16, 2011, letter from VEGP and the October 16, 2014, letter from WLS submitted the Special Nuclear Material Physical Protection Program (SNMPPP) Description for VEGP and WLS, respectively. Although the cover letters are publicly available, the SNMPP is considered safeguards information and is withheld from public disclosure.

- The staff confirmed that the VEGP new fuel shipping plan and the supplemental information in support of 10 CFR Part 70 special nuclear material found in Part 11 Enclosures E and F, respectively, of the VEGP COL application are identical to the material found in the WLS COL application Revision 8.

- The staff verified that the site-specific differences were not relevant and where the staff identified relevant differences, the staff performed additional review to determine the acceptability of the differences.

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

The following portion of this technical evaluation section is reproduced from VEGP SER Section 1.5.5:

> *In addition to the evaluation of the implementation milestones noted above, the staff's evaluation of the radiation protection program that supports the issuance of the 10 CFR Parts 30, 40, and 70 licenses is addressed in Chapter 12 of this SER. Additional staff evaluations that support the issuance of the 10 CFR Part 70 license are addressed in Chapter 9 of this SER (i.e., new fuel storage, spent fuel storage, and fire protection programs) and in the staff's evaluation of TVA's security program. The staff finds that the information in the Bellefonte COL application to support granting of the 10 CFR Part 70 license mentioned as part of the license above is sufficient, pending resolution of the open items in this report related to new and spent fuel, fire protection program, security program, and the implementation of the fire protection and security programs. However, TVA needs to provide a discussion of which parts of its COL application other than the reference to the radiation protection program provide sufficient information to support compliance with the applicable portions of 10 CFR Part 30 and 40, prior to the 10 CFR 52.103(g) finding. This is Open Item 1.5-1.*
>
> *Resolution of Standard Content Open Item 1.5-1*
>
> *In letters dated July 29, 2009, July 9, 2010, and October 15, 2010, the applicant provided additional information related to source, byproduct and SNM and its purposes, radiation safety personnel, personnel training, facilities and equipment, waste management, and the radiation safety program in general.*
>
> *Subsequent to the issuance of the SER with open items for the BLN application, the staff performed an additional review associated with granting the 10 CFR Parts 30, 40 and 70 licenses. For the 10 CFR Part 70 license, the staff considered SNM associated with the fuel (including security requirements) and SNM associated with non-fuel material (i.e., fission chambers). The staff also considered emergency plan requirements associated with SNM (fuel and non-fuel material). Based on these reviews, standard content Open Item 1.5-1 is resolved. These reviews are described below.*

Review of Parts 30 and 40 Materials

In a letter dated March 3, 2011, the applicant provided information regarding specific types of sources and byproduct material, the chemical or physical form, and the maximum amount at any time for the requested material licenses under 10 CFR Parts 30 and 40. The applicant also stated that SNM shall be in the form of reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the VEGP COL FSAR. Byproduct material and source material shall be in the form of sealed neutron sources for reactor startup and sealed sources for reactor instrumentation, radiation monitoring equipment, calibration, and fission detectors in amounts as required. The applicant also committed that no 10 CFR Part 40 specifically licensed source material, including natural uranium, depleted uranium and uranium hexafluoride will be received, possessed, or used during the period between issuance of the COL and the Commission's 10 CFR 52.103(g) finding for each of the VEGP Units 3 and 4. The applicant also stated that the quantity of any byproduct material with atomic numbers 1 through 93 would not exceed 100 millicuries for a single source and 5 Curies total. The maximum quantity for Americium 241 would not exceed 300 millicuries for single source and 500 millicuries total. Following the 10 CFR 52.103(g) finding for each of the VEGP Units 3 and 4, byproduct material, source material, and SNM in amounts as required, without restriction to chemical forms or physical form, would be used for the following:

- *Sample analysis,*
- *Instrument and equipment calibration, and*
- *Associated with radioactive apparatus or components.*

With respect to the requirements of 10 CFR Parts 30, 40, and 70 that are related to radiation protection (including administrative controls), the applicant provided information (in letters dated July 9, and November 23, 2010) on the purpose, storage and security of sources in VEGP COL FSAR Sections 12.2 and 12.5. Information related to the radiation protection program itself, including procedures for the use of these sources, is also described in VEGP COL FSAR Chapter 12. In addition, VEGP COL FSAR Section 13.4 states that the radiation protection program will be implemented according to the milestones listed in VEGP COL FSAR Table 13.4-201, Item 10. These milestones ensure that those portions of the program necessary to comply with the requirements of 10 CFR Parts 20, 30, 40, and 70, are implemented prior to the receipt of byproduct, source, SNM, or fuel, onsite.

The staff finds that the information provided by the applicant that describes the radiation protection measures (Chapter 12 of the VEGP COL FSAR) that will be implemented prior to receipt of byproduct, source or SNM, conforms to the applicable guidance in NUREG-1556, "Consolidated Guidance about Materials Licenses," and is, therefore, acceptable. The radiation protection program milestones included in the VEGP COL FSAR Table 13.4-201 are evaluated in Section 12.5 of this SER.

In a letter dated July 9, 2010, the applicant provided supplemental information relative to Item 14, Emergency Planning, in VEGP COL FSAR Table 13.4-201. In addition, the applicant proposed to revise the term 'portions applicable to SNM' to 'portions applicable to radioactive materials' for Item 14; Item 8, Fire Protection Program; Item 11, Non-Licensed Plant Staff Training Program; and Item 15, Physical Security Program. In addition, the applicant proposed to correct the references to regulatory citations of 10 CFR 30.32, "Application for specific licenses"; 10 CFR 40.31, "Application for specific licenses"; and 10 CFR 70.22, "Contents of applications." It also proposed to revise the "Requirements" column for Item 14 of the VEGP COL FSAR Table 13.4-201 to reference 10 CFR 30.32(i)(1), 10 CFR 40.31(j)(1), and 10 CFR 70.22(i)(1). It also proposed to revise Part 10 of the VEGP COL application, Proposed License Condition 3, "Operational Program Implementation," Section C, "Receipt of Materials," to include implementation of the portions of the emergency planning program applicable to SNM. In addition to the evaluation of the implementation milestones noted above, the staff's evaluation that supports the issuance of the 10 CFR Parts 30, and 40 licenses is addressed in Chapter 9 (the fire protection program).

The operational programs are specific programs that are required by regulations. VEGP COL FSAR Table 13.4-201 lists each operational program, the regulatory source for the program, the section of the FSAR in which the operational program is described, and the associated implementation milestone(s). The applicant proposed a license condition in Part 10, License Condition 3, Item C.3 of the VEGP COL application, which provides the milestones for implementing the portions of the non-licensed plant staff training program applicable to receipt of the radioactive material. However, Table 13.4-201 specifies implementation requirements (10 CFR 30.32(a), 10 CFR 40.31(a), and 10 CFR 70.22(a)) for the non-licensed plant staff training program associated with receipt of the radioactive material. Therefore, the staff determined that Item C.3 of proposed License Condition 3 is not needed because the implementation milestones for the non-licensed plant staff training program associated with receipt of radioactive material are governed by the applicable regulations.

The applicant proposed a license condition in Part 10 of the VEGP COL application to provide a schedule to support the NRC's inspection of operational programs, including the non-licensed plant staff training program applicable to receipt of the radioactive material. The proposed license condition is consistent with the policy established in SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," for operational programs and is acceptable.

In response to RAI 1.5-1, the applicant stated, in a letter dated October 15, 2010, that no byproduct material will be received, possessed, or used at AP1000 units of a physical form that is in unsealed form, on foils or plated sources, or sealed in glass, that exceeds the quantities in Schedule C of 10 CFR 30.72. Since the quantities do not exceed Schedule C, an emergency plan that meets the requirements of 10 CFR 30.32(i)(3) is not required. As such, the implementation of the emergency plan prior to the receipt of byproduct material will be removed from VEGP COL FSAR Table 13.4-201 and from Part 10 proposed License

Condition 3, Item C.4. The request for a 10 CFR Part 40 license does not involve authorization to receive, possess, or use uranium hexafluoride in excess of 50 kilograms in a single container or 1000 kilograms total. However, in a letter dated March 3, 2011, the applicant revised the request for a 10 CFR Part 40 license to state that no 10 CFR Part 40 specifically-licensed source material, including natural uranium, depleted uranium and uranium hexafluoride (UF_6), will be received, possessed, and used during the period between issuance of the COL and the Commission's 10 CFR 52.103(g) finding for each of the VEGP Units 3 and 4. Since the above quantities are not exceeded, an emergency plan for responding to the radiological hazards of an accidental release of source material and to any associated chemical hazards related to the material is not required. As such, the implementation of the emergency plan prior to the receipt of source material will be removed from VEGP COL FSAR Table 13.4-201. This applicant's proposal meets the requirements of 10 CFR 30.32 and 10 CFR 40.31 and is, therefore, acceptable. The incorporation of changes into a future revision of the VEGP COL FSAR is ***Confirmatory Item 1.5-1.***

Resolution of Standard Content Confirmatory Item 1.5-1

Confirmatory Item 1.5-1 is an applicant commitment to revise FSAR Table 13.4-201. The staff verified that the VEGP COL FSAR Table 13.4-201 was appropriately revised. As a result, Confirmatory Item 1.5- 1 is now closed.

The applicant also proposed an FSAR commitment to address the limitations during the period prior to the implementation of the emergency plan. In a letter dated March 16, 2011, the applicant stated that it has no plans to process UF_6 at the plant site at any time following the Commission's 10 CFR 52.103(g) finding, and consequently does not expect the requested 10 CFR Part 40 license to include receipt, storage, or use of UF_6 at the plant site. However, using the guidance of DC/COL-ISG-15, "Post-Combined License Commitments", the staff has determined that the commitment is not sufficient and instead the staff is proposing to add a restriction in the license condition related to 10 CFR Parts 30 and 40 (See License Condition 1-1.c(ii).

Review of Part 70 Materials

The staff reviewed information related to nuclear fuel as SNM included in the VEGP COL application including the AP1000 DCD against 10 CFR Part 70 requirements. Specifically, the staff's review included:

- *General information—financial qualification, site description, hydrology, geology, meteorology, the nearby population, and potential effects of natural phenomena (Part 1 of the application, FSAR Section 1.1 and Chapter 2, Section 4.1 and Table 4.1-1 of the AP1000 DCD against the requirements of 10 CFR 70.22(a)(1) through (a)(4));*

- *Organization and Administration—the responsibilities and associated resources for the receipt, possession, inspection, and storage of the SNM in the form of fresh fuel assemblies (Part 1 of the application, Quality Assurance Program included in Part 11 (Enclosure 11A) of the*

application, VEGP COL FSAR Section 13.1 for organization against the requirements of 10 CFR 70.22(a)(6) and (a)(8));

- *Radiation Protection—Radiation protection program implementation, organization and personnel qualification, written procedures, ALARA, radiation survey and monitoring (AP1000 DCD Section 9.1 and Chapter 12 of VEGP COL FSAR against the requirements of 10 CFR 70.22(a)(6) through (a)(8));*

- *Nuclear Criticality Safety—use of area radiation monitors in lieu of criticality accident alarms (AP1000 DCD Sections 9.1.1.3 and 11.5.6 against the requirements of 10 CFR 70.22(a)(6) through (a)(8) and 10 CFR 50.68(b));*

- *Fire safety—fire protection program (VEGP COL FSAR Section 9.5.1 and Table 13.4-201 against the requirements of 10 CFR 70.22(a)(6) through (a)(8));*

- *Emergency Preparedness—emergency preparedness program for the VEGP site (VEGP COL FSAR Section 13.3 and Table 13.4-201 and the Emergency Plan against the requirements of 10 CFR 70.22(i));*

- *Environmental Protection—organization, procedures and controls that ensures that the environment is protected during the conduct of activities (i.e., receipt, possession, inspection, and storage of SNM) (VEGP COL FSAR Section 11.5 and AP1000 DCD Sections 9.1.1 and 11.5 against the requirements of 10 CFR 70.22(a)(7) and (a)(8)); and*

- *MC&A Program and Security (MC&A program included in the application against requirements of 10 CFR 70.22(b) and 10 CFR Part 74, and the Physical Security Plan (PSP) against the requirements of 10 CFR 73.67, "Licensee fixed site and in-transit requirements for the physical protection of special nuclear material of moderate and low strategic significance").*

As indicated above, the applicant's compliance with several applicable 10 CFR Part 70 requirements regarding radiation protection, nuclear criticality safety, and environmental protection is already encompassed by the design information incorporated by reference from the AP1000 DCD and evaluated by the staff as part of the design certification proceeding. As explained further below, with respect to other applicable 10 CFR Part 70 requirements to be addressed by the COL applicant, the staff finds that the information provided regarding general information, organization and administration, radiation protection, nuclear criticality safety, fire safety, emergency preparedness, and environmental protection to support receipt, storage, and possession of SNM, conforms to the applicable guidance in NUREG-1520 and NUREG-0800 and, therefore, is acceptable. First, however, the staff's review of information regarding the MC&A program (10 CFR 70.22(b) and 10 CFR Part 74) and the PSP (10 CFR 73.67) is provided below.

MC&A Program for SNM (Fuel)

In RAI 1.5-3, the staff requested the applicant to review the requirements of 10 CFR 70.22(b) for the program addressing the control and accounting of SNM and provide descriptions of how the applicable requirements for material accounting and controls under 10 CFR Part 74 will be met for the possession and storage of SNM during construction and prior to the operation of the nuclear power plant. In addition, the staff requested the applicant to provide a proposed license condition to clearly establish full implementation of the MC&A program meeting the applicable requirements of 10 CFR Part 74 prior to receipt of SNM, consistent and concurrent with the proposed license condition for implementing the applicable security (i.e., physical protection) requirements of 10 CFR Part 73.

In response to RAI 1.5-3, the applicant, in a letter dated November 23, 2010, stated that all non-irradiated SNM for the AP1000 units is identified as Category III, SNM of low strategic significance, as defined in 10 CFR 74.4, "Definitions." No SNM at an AP1000 nuclear facility will exceed an uranium-235 isotope enrichment of 10 percent. The quantity of SNM will be documented, controlled, and communicated to the NRC as required in 10 CFR 74.13, "Material status reports"; 10 CFR 74.15, "Nuclear material transaction reports"; and 10 CFR 74.19, "Recordkeeping."

Subsequent to the applicant's endorsement of the standard content response to RAI 01.05-3 stating that no SNM onsite will exceed a 10-percent uranium-235 isotope enrichment level in an August 18, 2011, letter, the applicant updated its COL application to include Part 11F, "Supplemental Information of 10 CFR Part 70 Special Nuclear Material License Application" acknowledging that WLS would possess uranium sources containing uranium enriched to 93 percent uranium-235 in a quantity meeting the criteria of SNM of low strategic significance.

The following portion of this technical evaluation section is reproduced from VEGP SER Section 1.5.5:

In its response to RAI 1.5-3, the applicant also described the SNM MC&A program and stated that this program will be provided as an enclosure in the VEGP COL application, Part 11. The SNM MC&A program will be developed for control and accounting of SNM in accordance with the applicable requirements of 10 CFR Part 74, Subparts A and B. This program will be consistent with guidance of American National Standards Institute (ANSI) 15.8-2009, "Material Control Systems – Special Nuclear Material Control and Accounting Systems for Nuclear Power Plants." The SNM MC&A program will be implemented prior to receipt of SNM at the plant site and will remain in effect until the SNM is shipped from the plant site. The procedures constituting the SNM MC&A program will delineate the requirements, responsibilities, and methods of SNM control necessary to address the following programmatic elements:

1. *Establish, maintain, and follow written MC&A procedures to account for SNM.*

2. *Maintain adequate records of the initial receipt or current inventory of SNM, including records of isotopic content, material received, material*

shipped, and material lost (material balance reports and physical inventory listing reports).

3. *Develop adequate inventory procedures and maintain adequate perpetual inventory records.*

4. *Inventory SNM within the 12-month prescribed frequency.*

5. *Report SNM inventories on the applicable forms.*

6. *Establish an individual responsible for the control and accountability of SNM.*

7. *Report the loss of or inability to find SNM items in a timely manner.*

8. *Control access to SNM.*

9. *Control the shipping and transfer of SNM.*

The applicant proposed to add a new FSAR Section 13.5.2.2.9, which will summarize the use of plant procedures to address MC&A of SNM. The applicant also stated that VEGP COL FSAR Table 13.4-201 will be revised to provide information related to implementation of the SNM MC&A program.

In order to address the applicable 10 CFR Part 74 MC&A requirements prior to power operation, the applicant proposed a license condition that will require implementation of a MC&A program prior to receipt of SNM on site. Implementation of the SNM MC&A program prior to SNM receipt will also address the SNM possession and storage requirements during construction and prior to operation of the nuclear power plant.

The applicant's MC&A program for SNM is consistent with ANSI 15.8 and meets reporting and recordkeeping requirements of 10 CFR 74.11, "Reports of loss or theft or attempted theft or unauthorized production of special nuclear material"; 10 CFR 74.13; 10 CFR 74.15; and 10 CFR 74.19. The documentation, submitted by the applicant, for a program addressing the control and accounting of SNM provided descriptions of how the applicable requirements for material accounting and controls under 10 CFR Part 74 are met and, therefore, is acceptable, subject to the proposed revision to the VEGP COL application and the VEGP COL FSAR (this has been tracked as ***Confirmatory Item 1.5-2****). In addition, the proposed license condition includes a provision to provide a schedule to support the NRC's inspection of the MC&A program for the SNM. This is consistent with the policy established in SECY-05-0197 and is thus acceptable.*

<u>Resolution of Standard Content Confirmatory Item 1.5-2</u>

Confirmatory Item 1.5-2 is an applicant commitment to revise its FSAR Sections 13.4, 13.5 and Parts 7 and 11 (Enclosure 11D) of its application to address the SNM MC&A program. The staff verified that the VEGP COL FSAR and Parts 7 and 11 (Enclosure D) of its application were appropriately revised. As a result, Confirmatory Item 1.5-2 is now closed.

Security Review for 10 CFR Part 70 Materials

In accordance with 10 CFR 73.55(a)(4), current applicants for an operating license under 10 CFR Part 50, or a COL under 10 CFR Part 52 who have submitted their applications to the Commission prior to the effective date of this rule must amend their applications to include security plans consistent with this section.

The Commission worded 10 CFR 73.55(a)(4) to require implementation of 10 CFR 73.55, "Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage," "before fuel is allowed onsite (protected area)." The Commission explained this provision as follows:

> *This paragraph establishes when an applicant's physical protection program must be implemented. The receipt of special nuclear material (SNM) in the form of fuel assemblies onsite, (i.e., within the licensee's protected area) is the event that subjects a licensee or applicant to the requirements of this rule, and it is the responsibility of the applicant or licensee to complete the preliminary and preparatory actions required to implement an effective physical protection program at the time SNM is received onsite (within the protected area). 74 FR 13926, 13960 (Mar. 27, 2009).*

Further guidance is provided in the form of RGs to support implementation of this Rule. The following guidance is provided in RG 5.76, "Physical Protection Programs at Nuclear Power Reactors":

> *Except for mixed-oxide (MOX) fuel assemblies, the Commission requirements of 10 CFR 73.67, "Licensee Fixed Site and In-Transit Requirements for the Physical Protection of Special Nuclear Material of Moderate and Low Strategic Significance," apply and must be met until fuel assemblies are received inside an operational protected area. Consistent with 10 CFR 73.55(a)(4), applicants for an operating license under the provisions of 10 CFR Part 50, or holders of a COL under the provisions of 10 CFR Part 52, shall implement the requirements of 10 CFR 73.55 before special nuclear material (SNM) in the form of fuel assemblies are allowed on site (in the protected area).*

In a letter dated March 15, 2011, the NRC staff asked the applicant to provide its plan regarding the protection of new fuel as SNM at the VEGP Units 3 and 4 plant site prior to declaration of an operational protected area (PA) and implementation of the requirements of 10 CFR 73.55, as described in the SNM MC&A Program description. In addition, the staff also requested that the applicant consider the applicability of the substantive provisions of interim compensatory orders (ICMO) that were issued to Category III Fuel Cycle Facilities to ensure adequate protection when SNM is on site prior to the activation of the PA. In response to the staff's questions, in a letter dated March 16, 2011, the applicant provided a physical protection plan in accordance with 10 CFR 73.67(f) and (g). This plan was included as an annex to the PSP.

This plan includes transportation security provisions. The applicant also stated that once the PA is declared operational in accordance with 10 CFR 73.55(a)(4), the annex would no longer be required and could be removed in accordance with 10 CFR 50.54(p). Then, no separate transportation security provisions would be necessary for future new fuel shipments. The staff raised a question regarding the licensee's ability to receive new fuel and return new fuel rods/assemblies to the fuel manufacturer. In a letter dated May 6, 2011, the applicant proposed to revise its FSAR Section 13.5.2.2.8 to include the New Fuel Shipping Plan that addresses the applicable 10 CFR 73.67 requirements in the event that unirradiated new fuel assemblies or components are returned to the supplying fuel manufacturer(s) facility. The New Fuel Shipping Plan summarizes the procedures and the written agreement that the applicant will have in place prior to shipment of new fuel back to the fuel manufacturer and this plan will be included in Part 11, Enclosures of its application. The staff finds this New Fuel Shipping Plan acceptable because it meets the applicable requirements of 10 CFR 73.67(g). The staff verified that the VEGP FSAR Section 13.5 and Part 11 (Enclosure 11E) are appropriately updated.

In the RAI response dated March 16, 2011, the applicant addressed the Order imposing fingerprinting and criminal history records check requirements for unescorted access to radioactive material or other property dated April 30, 2007. In accordance with Section 5.4 of the PSP annex, the applicant committed to utilizing the access authorization program as outlined in Section 14.1 of the PSP. The access authorization program in Section 14.1 is in accordance with 10 CFR 73.56, "Personnel Access Authorization Requirements for Nuclear Power Plants," based on implementing guidance as provided by RG 5.66, "Access Authorization Program for Nuclear Power Plants," Revision 1 and Section 652 of the Energy Policy Act of 2005 (EP Act).

The applicant conducted a critical target area analysis (CTA), and determined that a CTA would not exist. Because there is no CTA at the facility, there is no need to address security issues related to CTAs. In addition, the applicant has adequately addressed security issues related to; security response procedures, coordination with local law enforcement for response support, storage of hazardous materials on-site, review of emergency shutdown/cool down procedures, supplementing of the Emergency Actions Levels, site accountability and evacuation strategies, emergency communications, evaluation of computer and communications networks for vulnerabilities, capabilities to provide fire suppression, evaluation of the need for offsite medical support, emergency support, and access to Federal support, and limiting public access to sensitive plant information. However, the staff has determined that the commitment included in the RAI responses is not sufficient and instead the staff is proposing to add a license condition to ensure adequate protection prior to implementation of the requirements of 10 CFR 73.55. This license condition (1-5) will preclude changes to the security plan provisions related to these issues without prior NRC approval until such matters fall under the new reactor security requirements of 10 CFR 73.55.

The staff's review of the applicant's PSP for the protection of SNM of low strategic significance (LSS) [Note: WLS refers to this plan as the SNMPPP] *includes information that has been marked as "Safeguards Information" by the*

applicant, pursuant to ~~10 CFR 2.390~~[10 CFR 73.21 and 73.22]*. The NRC staff reviewed the applicant's PSP for fixed site physical protection of SNM- LSS and chemicals of concern. The methods and procedures outlined in the PSP satisfy the performance objectives, systems capabilities, and reporting requirements specified in 10 CFR 73.67. The PSP for the facility is acceptable and provides reasonable assurance that the requirements for the physical protection of SNM-LSS and chemicals of concern will be met. The staff also verified that the PSP is appropriately updated.*

Non-Fuel SNM

In a letter dated, June 22, 2011, the applicant provided information regarding the name, amount, and specifications (including the chemical and physical form and, where applicable, isotopic content) of the non-fuel SNM (Fission Chambers) the applicant proposes to use (10 CFR 70.22(a)(4)). The letter also provided information to confirm that the applicable design and programmatic elements provided in the licensing basis will satisfy the requirements in 10 CFR 70.22(a)(6) through (8) prior to receipt of non-fuel SNM.

10 CFR Part 70 Requirements - Other than MC&A (10 CFR 70.22(b) and 10 CFR Part 74) and Security (10 CFR 73.67) - for Fuel and Non-Fuel Material

As noted above, in addition to MC&A and security, the staff also examined the applicant's compliance with 10 CFR Part 70 requirements regarding general information, organization and administration, radiation protection, nuclear criticality safety, fire safety, emergency preparedness, and environmental protection to support receipt, storage, and possession of SNM.

The staff's analysis follows with respect to those other requirements not already resolved via the applicant's incorporation of the AP1000 DCD. For the reasons described in Section 1.4.4 of this FSER the staff agrees that the applicant is technically qualified to engage in the proposed activities associated with this license, based on the applicant's ongoing experience in the safe operation of nuclear power plants, as presented in Section 1.4.1 of the VEGP COL FSAR. Likewise, the applicant's financial qualifications and ownership structure meet the requirements of 10 CFR 70.22 for the same reasons described above in Section 1.5.1.

Note: WLS COL FSAR Section 1.4.1 has a similar discussion regarding DEC's operation of Catawba Units 1 and 2, McGuire Units 1 and 2, and Oconee Units 1, 2, and 3. The staff also concludes DEC is technically qualified to engage in the proposed activities associated with this license based on DEC's on-going experience with the safe operation of Catawba Units 1 and 2, McGuire Units 1 and 2, and Oconee Units 1, 2, and 3. In addition, Section 1.5.1 of this report finds that the financial qualifications and ownership structure for the WLS COL application acceptable.

The following portion of this technical evaluation section is reproduced from VEGP SER Section 1.5.5:

Similarly, the applicant has explained the anticipated amounts, types, and uses of 10 CFR Part 70 materials at the site are consistent with the provisions of 10 CFR 70.22. The VEGP COL FSAR and Part 1 of the application provide

adequate description of the VEGP Units 3 and 4 facility and the proposed activities related to 10 CFR Parts 30, 40 and 70 material. In addition the VEGP COL FSAR provides information regarding regional hydrology, geology, meteorology, the nearby population, and potential effects of natural phenomena that could occur at the facility. The applicant has described the responsibilities and associated resources (see Part 1, "General and Administration Information," and Enclosure 11A, "Nuclear Development Quality Assurance Manual" of the application) for the receipt, possession, inspection, and storage of the 10 CFR Part 70 material (fuel and non-fuel). Therefore, it meets the requirements of 10 CFR 70.22(a)(1). Furthermore, as indicated in VEGP COL FSAR Table 13.4-201, applicable portions of the Radiation Protection Program will be implemented prior to initial receipt of byproduct, source, or SNMs. In accordance with VEGP COL FSAR Table 13.4-201, Item 10, Implementation Milestone #1, and the NRC-approved template, Nuclear Energy Institute (NEI) 07-03A, "Generic FSAR Template Guidance for Radiation Protection Program Description," which is incorporated by reference into VEGP COL FSAR Appendix 12AA (see SER Section 12.5), the appropriate radiation protection program elements associated with organization, facilities, instrumentation and equipment, procedures (e.g., procurement, receipt, inventory, labeling, leak testing, surveillance, control, transfer, disposal, storage, issuance, and use of radioactive sources), and training will be in place prior to initial receipt of byproduct, source, or special nuclear materials, thereby satisfying the requirements of 10 CFR 70.22(a)(4), (6), (7), and (8). VEGP COL FSAR Section 12.2 includes the requirements for written procedures that address leak-testing of radioactive sources. The leak-test will be consistent with 10 CFR 20.1501, "General," survey and monitoring requirements for evaluating the quantities of radioactive material and the potential radiological hazard of the radioactive source.

The fission chambers will be disposed of consistent with the operating procedures that specify the processes to be followed to ship waste that complies with the waste acceptance criteria (WAC) of the disposal site, the waste classification and characteristics requirements of 10 CFR 61.55, "Waste classification," and 10 CFR 61.56, "Waste characteristics," and the requirements of third party waste processors as applicable. This process is identified in VEGP COL FSAR Section 11.4.6.1.

With respect to fire safety, prior to installation, the new fission chambers (along with the new fuel) will be stored in the Auxiliary Building fuel handling area, which is an area protected by the fire protection program and fire protection system, as discussed in the AP1000 DCD Section 9A.3.1.3.1.2. Temporary storage of these non-combustible sealed sources is not specifically addressed in the AP1000 fire protection analysis in DCD Appendix 9A; however, the approach to extinguishing fires and containing material releases associated with the fission chambers would be similar to, and bounded by, the approach considered for the fuel handling area in general. The fuel handling area has been evaluated and determined acceptable for the storage of SNM in a full core load of new fuel. The hazards imposed by the relatively small quantity of SNM associated with the fission chambers (less than 100 grams), is not expected to be a challenge to the existing fire protection analysis for the new fuel storage (see Section 9.5.1 of this SER). The VEGP COL FSAR Section 12.2 includes the requirements for written

procedures that address leak testing of radioactive sources (byproduct, source, and devices that contain SNM, as appropriate). Further, the fission chambers that contain the non-fuel SNM are sealed sources that are tested periodically to confirm their leak-tightness. Therefore, it is expected that the capabilities of the fire protection program and the fire protection equipment servicing this area are sufficient to meet the requirements of 10 CFR 70.22(a)(7) and 10 CFR 70.22(a)(8).

Emergency Plan (SNM, Fuel and Non-Fuel)

The applicant will be storing the new fuel in the new fuel rack (stored dry) or in the spent fuel racks prior to loading into the reactor. The safety analysis included in AP1000 DCD Sections 9.1.1.3 and 9.1.2.3 provides safety analysis that indicates that: (1) the design of new fuel rack is such that K_{eff} remains less than or equal to 0.95 with full density unborated water and less than equal to 0.98 with optimum moderation and full reflection conditions; and (2) the design of spent fuel rack is such that K_{eff} remains less than or equal to 0.95 under design basis conditions. This criticality evaluation meets the requirements of 10 CFR 50.68(b). Therefore, a criticality accident alarm system to meet the requirements of 10 CFR 70.24, "Criticality accident requirements," is not required. As a result, an emergency plan (to receive and possess) pursuant to 10 CFR 70.22(i) is also not required. In addition, an emergency plan for the fission chambers (to receive and possess) pursuant to 10 CFR 70.22(i) is not required due to the small quantity of SNM (less than 100 grams) associated with the fission chambers.

1.5.5.1 *Physical Protection of Special Nuclear Material*

1.5.5.1.1 Introduction

This section addresses the physical protection of special nuclear material while possessed, used, and transported by the applicant, including during the period prior to implementation of the nuclear power reactor physical security plan (PSP). This review was performed by the Office of Nuclear Security and Incident Response (NSIR), Division of Security Policy (DSP), Fuel Cycle and Transportation Security Branch (FCTSB).

1.5.5.1.2 Summary of Application

The post September 11, 2001, security order for SNM of low strategic significance was sent to the applicant to be addressed in the form of a request for additional information. The letter conveying the order was sent on June 30, 2014 (ADAMS Accession No. ML14154A249) and the safeguards-information-containing order was sent under separate cover (Safeguards LAN Electronic Safe (SLES) Accession No. NS113121). In a letter dated October 16, 2014, the applicant provided a crosswalk that pointed out the text of the application that described the intent of meeting each element of the applicable portions of 10 CFR 73.67 (ADAMS Accession No. ML14290A523). In addition, the applicant submitted another letter dated October 16, 2014 that contained safeguards information and included a revised Special Nuclear Material Physical Protection Program Plan (SNMPPP) and a reviewer's aid matrix. The reviewer's aid matrix covered both the applicable 10 CFR 73.67 requirements and the applicable post September 11, 2001, security order.

1.5.5.1.3 Regulatory Basis

The regulatory requirements and guidance applicable to fixed site and in-transit physical protection are as follows:

- 10 CFR 73.67, "Licensee fixed site and in-transit requirements for the physical protection of special nuclear material of moderate and low strategic significance"
- Post September 11, 2001, Security Order for SNM of Low Strategic Significance
- RG 5.59, "Standard Format and Content for a Licensee Physical Security Plan for the Protection of Special Nuclear Material of Moderate or Low Strategic Significance," Revision 1 (1983)"
- RG 5.66, "Access Authorization Program for Nuclear Power Plants"
- RIS 2005-22, "Requirements for the Physical Protection During Transportation of Special Nuclear Material of Moderate and Low Strategic Significance: 10 CFR Part 73 vs. RG 5.59 (1983)"

1.5.5.1.4 Technical Evaluation

A technical evaluation of the DEC, Lee Units I and 2, COL FSAR, against applicable 10 CFR 73.67 fixed site and in-transit general performance objectives, general requirements and physical protection requirements for SNM of low strategic significance, was performed.

In addition the post September 11, 2001, security order for SNM of low strategic significance was sent to the applicant to be addressed in the form of a request for additional information. The letter conveying the order was sent on June 30, 2014 (ADAMS Accession No. ML14154A249) and the safeguards-information-containing order was sent under separate cover (SLES Accession No. NS113121). A technical evaluation of how the order was addressed was also performed. In a letter dated October 16, 2014, the applicant provided a crosswalk that pointed out the text of the application that described the intent of meeting each element of the applicable portions of 10 CFR 73.67 (ADAMS Accession No. ML14290A523). In addition, in a letter dated October 16, 2014, the applicant provided a revised SNMPPP and a reviewer's aid matrix (SLES Accession No. NS112457). The reviewer's aid matrix covered both the applicable 10 CFR 73.67 requirements and the applicable post September 11, 2001, security order.

1.5.5.1.4.1 *Fixed Site General Performance Objectives*

The applicable physical protection requirements specified in 10 CFR 73.67 titled, "Licensee fixed site and in-transit requirements for the physical protection of special nuclear material of moderate and low strategic significance," provide general performance objectives.

The physical protection requirements of 10 CFR 73.67(a)(1), states, "General performance objectives.

> (1) Each licensee who possess, uses or transports special nuclear material of moderate or low strategic significance shall establish and maintain a physical protection system that will achieve the following objectives:

(i) Minimize the possibilities for unauthorized removal of special nuclear material consistent with the potential consequences of such actions; and

(ii) Facilitate the location and recovery of missing special nuclear material.

(2) To achieve these objectives, the physical protection system shall provide:

(i) Early detection and assessment of unauthorized access or activities by an external adversary within the controlled access area containing special nuclear material;

(ii) Early detection of removal of special nuclear material by an external adversary from a controlled access area;

(iii) Assure proper placement and transfer of custody of special nuclear material; and

(iv) Respond to indications of an unauthorized removal of special nuclear material and then notify the appropriate response forces of its removal in order to facilitate its recovery.

Therefore, the fixed site physical protection requirements of 10 CFR 73.67(a)(1) are applicable because of the manner in which SNM of low strategic significance was described in the WLS Units 1 and 2 COL application.

Applicable Requirement: 10 CFR 73.67(a)(1), "General performance objectives. (1) Each licensee who possesses, uses or transports special nuclear material of moderate or low strategic significance shall establish and maintain a physical protection system that will achieve the following objectives:…"

The applicant stated in "Table 13.4-201," (ADAMS Accession No. ML11229A602) under "Item 15," titled "Implementation Milestone," their commitment to meet the requirements of 10 CFR 73.67, "…prior to initial receipt of SNM." Establishment of the physical protection system is outlined in the SNMPPP, Revision 1, dated October 2014 (SLES Accession No. NS112457). Specifically, in Subsection 4.4.1, "Establishment of the Physical Protection System," there are six establishment elements described that pertain to: lighting, detection, alarm station status, communications, access control and physical barriers of the controlled access area. In addition, within Subsection 4.4.2, "Maintenance of the Physical Protection System," of the SNMPPP there is an explanation of the maintenance that will be applied to the physical protection system. The application as written stated that DEC will implement the applicable requirements of the physical protection program required by 10 CFR 73.67 before SNM is received on site.

DEC's application described that 10 CFR 73.67 will be fully implemented before SNM is on site. Also, the application outlined establishment and maintenance elements for the physical protection system. Therefore, the staff finds the requirement of 10 CFR 73.67(a)(1) to have a physical protection system established and maintained, would be met.

Applicable Requirement: 10 CFR 73.67(a)(1)(i), "General performance objectives. Each licensee who possesses, uses or transports special nuclear material of moderate or low strategic significance shall establish and maintain a physical protection system that will achieve the following objectives: (i) Minimize the possibilities for unauthorized removal

of special nuclear material consistent with the potential consequences of such actions. . .”

The applicant stated in “Table 13.4-201,” (ADAMS Accession No. ML11229A602) under “Item 15,” titled “Implementation Milestone,” their commitment to meet the requirements of 10 CFR 73.67, “…prior to initial receipt of SNM.” In addition, the SNMPPP describes in Subsection 5.3.1, “Monitoring SNM (Non-Fuel SNM-HEU Neutron Sources),” how this general performance objective will be met for the highly enriched uranium (HEU) sources by detailing adversary scenarios and how the physical protection system will work to meet the requirement. In addition, the SNMPPP in Subsection 5.3.2, “Monitoring SNM (New Fuel Assemblies),” describes adversary scenarios applied to SNM reactor fuel and how the physical protection system is designed to meet this requirement.

DEC’s application describes that 10 CFR 73.67 will be fully implemented before SNM is received. In addition, their SNMPPP describes how the possibilities for unauthorized removal are minimized consistent with the consequences of such actions. Therefore, the staff finds the requirement of 10 CFR 73.67(a)(1)(i) to have a physical protection system established and maintained that has the objective to minimize the possibilities for unauthorized removal of special nuclear material consistent with the potential consequences of such actions, would be met.

Applicable Requirement: 10 CFR 73.67(a)(1)(ii), “General performance objectives. Each licensee who possesses uses or transports special nuclear material of moderate or low strategic significance shall establish and maintain a physical protection system that will achieve the following objectives: “…(ii) Facilitate the location and recovery of missing special nuclear material.”

The applicant stated in “Table 13.4-201,” (ADAMS Accession No. ML11229A602) under “Item 15,” titled “Implementation Milestone,” their commitment to meet the requirements of 10 CFR 73.67, “…prior to initial receipt of SNM.” In addition, their SNMPPP in Section 5.10, “Contingency Response,” describes the detection assessment and response strategies of the physical protection system that would facilitate the location and recovery of missing special nuclear material.

DEC’s application describes that 10 CFR 73.67 will be fully implemented before SNM is received. In addition, their SNMPPP describes the detection, assessment and response attributes of the physical protection system that would facilitate the location and recovery of missing special nuclear material. Therefore, the staff finds the requirement, of 10 CFR 73.67(a)(1)(ii) to have a physical protection system established and maintained that has the objective to facilitate the location and recovery of missing special nuclear material, would be met.

Applicable Requirement: 10 CFR 73.67(a), “General performance objectives. (2) To achieve these objectives, the physical protection system shall provide: (i) Early detection and assessment of unauthorized access or activities by an external adversary within the controlled access area containing special nuclear material. . .”

The applicant stated in “Table 13.4-201,” (ADAMS Accession No. ML11229A602) under “Item 15,” titled “Implementation Milestone,” their commitment to meet the requirements of 10 CFR 73.67, “…prior to initial receipt of SNM.” In addition, their SNMPPP in Subsections 5.3.1 and 5.3.2 describes how the physical protection system provides for early detection and

assessment of unauthorized access or activities by an external adversary within the controlled access area containing special nuclear material.

DEC's application describes that 10 CFR 73.67 will be fully implemented before SNM is received. In addition, their SNMPPP adequately describes the early detection and assessment physical protection strategies to address unauthorized access or activities by an external adversary within the controlled access area containing special nuclear material. Therefore, the staff finds the requirement, of 10 CFR 73.67(a)(2)(i) to have a physical protection system that provides early detection and assessment of unauthorized access or activities by an external adversary within the controlled access area containing special nuclear material, would be met.

Applicable Requirement: 10 CFR 73.67(a)(2)(ii), "General performance objectives. To achieve these objectives, the physical protection system shall provide: (ii) Early detection of removal of special nuclear material by an external adversary from a controlled access area. . ."

The applicant stated in "Table 13.4-201," (ADAMS Accession No. ML11229A602) under "Item 15," titled "Implementation Milestone," their commitment to meet the requirements of 10 CFR 73.67, "…prior to initial receipt of SNM." In addition, their SNMPPP in Subsections 5.3.1 and 5.3.2 describes how the physical protection system provides for early detection of removal of special nuclear material by an external adversary from a controlled access area.

DEC's application describes that 10 CFR73.67 will be fully implemented before SNM is received. In addition, their SNMPPP describes the early detection and assessment physical protection strategies to address removal of special nuclear material by an external adversary from a controlled access area. Therefore, the staff finds the requirement, of 10 CFR 73.67(a)(2)(ii) to have a physical protection system that provides early detection of removal of special nuclear material by an external adversary from a controlled access area, would be met.

Applicable Requirement: 10 CFR 73.67(a)(2)(iii), "General performance objectives. To achieve these objectives, the physical protection system shall: …(iii) Assure proper placement and transfer of custody of special nuclear material; and…"

The applicant stated in "Table 13.4-201," (ADAMS Accession No. ML11229A602) under "Item 22," titled "Implementation Milestone," their commitment to meet the requirements of 10 CFR 74, (i.e., Material Control and Accounting of Special Nuclear Material) "Prior to receipt of special nuclear material" as a "license condition." Also, the applicant stated in "FSAR Part 11D," "Special Nuclear Material (SNM) Material Control and Accounting Program Description," that the applicant will establish, a "…SNM control and accounting system,"…" including internal control, physical inventory and shipment of SNM."

In addition, the applicant stated in their SNMPPP in Section 5.1, "Receipt of SNM," within Subsection 5.1.1 (pertaining to non-fuel SNM), Subsection 5.1.2 (pertaining to fuel SNM), and in Section 5.8, "Internal Transfers," material control and accounting (MC&A) measures specific to the non-fuel and fuel SNM, respectively.

DEC's application describes that the appropriate provisions of 10 CFR 74 will be fully implemented before SNM is received. In addition, the applicant has described in the SNMPPP how specific MC&A measures apply to meet this general performance objective, therefore, the staff finds the requirement, of 10 CFR 73.67(a)2(iii), to assure proper placement and transfer of custody of special nuclear material, would be met.

Applicable Requirement: 10 CFR 73.67(a)(2)(iv), "General performance objectives. To achieve these objectives, the physical protection system shall: … (iv) Respond to indications of an unauthorized removal of special nuclear material and then notify the appropriate response forces of its removal in order to facilitate its recovery."

The applicant stated in "Table 13.4-201," (ADAMS Accession No. ML11229A602) under "Item 15," titled "Implementation Milestone," their commitment to meet the requirements of 10 CFR 73.67, "…prior to initial receipt of SNM." In addition, their SNMPP in Section 5.10 describes the detection, assessment and response measures that would provide indications of missing or stolen SNM and subsequent recovery thereof. The appropriate response from offsite (i.e., the specifically coordinated with local law enforcement agency (LLEA), etc.) was pointed out in the SNMPPP by referencing Section 8 of the power reactor physical security plan (PSP) (Revision 3, dated April 10, 2013, (SLES Accession No. NS112930)), and Sections 5.6, 5.7 and 5.8 of the power reactor contingency plan (CP) (Revision 3, dated April 10, 2013, (SLES Accession No. NS112930)).

DEC's application describes that 10 CFR 73.67 will be fully implemented before SNM is received. In addition, their SNMPPP adequately describes the early detection, assessment and response physical protection strategies that would facilitate recovery of missing or stolen SNM; therefore, the staff finds the requirement, of 10 CFR 73.67(a)(2)(iv) to have a physical protection system that shall respond to indications of an unauthorized removal of special nuclear material and then notify the appropriate response forces of its removal in order to facilitate its recovery, would be met.

1.5.5.1.4.2 *Fixed Site General Requirements*

The applicable requirements specified in 10 CFR 73.67, "Licensee fixed site and in-transit requirements for the physical protection of special nuclear material of moderate and low strategic significance," include the following general requirements for fixed sites.

> "(c) Each licensee who possesses, uses, transports, or delivers to a carrier for transport special nuclear material of moderate strategic significance, or 10 kg or more of special nuclear material of low strategic significance shall:
>
> (1) Submit a security plan or an amended security plan describing how the licensee will comply with all the requirements of paragraphs (d), (e), (f), and (g) of this section, as appropriate, including schedules of implementation. The licensee shall retain a copy of the effective security plan as a record for 3 years after the close of period for which the licensee possesses the special nuclear material under each license for which the original plan was submitted. Copies of superseded material must be retained for 3 years after each change.
>
> (2) Within 30 days after the plan submitted pursuant to paragraph (c)(1) of this section is approved, or when specified by the NRC in writing, implement the approved security plan."

Applicable Requirement: 10 CFR 73.67(c)(1), "Submit a security plan…including schedules for implementation…shall retain a copy …for 3 years..." … "Copies of the superseded material must be retained for 3 years after each change."

The applicant stated in Section 5.7, "Audits and Records," of their SNMPPP that the security plan (i.e., the SNMPPP) would be retained for 3 years and that copies of superseded material will be retained for 3 years after each change.

The application stated that DEC will not receive SNM of low strategic significance (both fuel and non-fuel) on site until implementation of the physical protection system required by 10 CFR 73.67 is accomplished.

In addition, DEC's SNMPPP adequately describes the required retention parameters for the SNMPPP and changes to it.

Therefore, the staff finds the requirement, of 10 CFR 73.67(c)(1) to submit a security plan, retain the security plan for 3 years after the specific type of SNM has been removed from the site, and to retain superseded security plan change(s) for 3 years after each change, would be met.

Applicable Requirement: 10 CFR 73.67(c)(2), "Within 30 days after the plan submitted pursuant to paragraph (c)(1) of this section is approved, or when specified by the NRC in writing, implement the approved security plan."

The applicant stated in their revised SNMPPP, in Section 1, "Scope," thereof, that: "The NRC will be notified 180 days prior to the establishment of the CAA for SNM receipt." However, this leaves the NRC staff without provisions specific for implementation of the complete SNMPPP and the required provisions of SNM of low strategic significance for transport, therefore a license condition will be configured to meet the requirement. This requirement would be met through a license condition that states, (or conveys the same meaning with different wording):

1. DEC will notify the NRC 120 days prior to shipment of special nuclear material of low strategic significance to, or receipt of special nuclear material of low strategic significance at, the Lee Nuclear Plant Unit 1 or Unit 2 owner controlled area, and

2. DEC will implement the Special Nuclear Material Physical Protection Plan that describes the physical protection strategies for special nuclear material of low strategic significance, 120 days prior to the shipment of special nuclear material of low strategic significance to, or receipt of special nuclear material of low strategic significance at, the Lee Nuclear Plant Unit 1 or Unit 2 owner controlled area."

1.5.5.1.4.3 *Fixed Site Physical Protection Requirements*

The applicable requirements specified in 10 CFR 73.67 titled, "Licensee fixed site and in-transit requirements for the physical protection of special nuclear material of moderate and low strategic significance," provide fixed site physical protection requirements for SNM of low strategic significance.

The physical protection requirements of 10 CFR 73.67(f), state, "Fixed site requirements for special nuclear material of low strategic significance. Each licensee who possesses, stores, or uses special nuclear material of low strategic significance at a fixed site or contiguous sites, except those who are licensed to operate a nuclear power reactor pursuant to Part 50, shall:

(1) Store or use the material only within a controlled access area,

(2) Monitor with an intrusion alarm or other device or procedures the controlled access areas to detect unauthorized penetrations or activities,

(3) Assure that a watchman or offsite response force will respond to all unauthorized penetrations or activities, and

(4) Establish and maintain response procedures for dealing with threats of thefts or thefts of this material. The licensee shall retain a copy of the current response procedures as a record for 3 years after the close of period for which the licensee possesses the special nuclear material under each license for which the procedures were established. Copies of superseded material must be retained for 3 years after each change."

The fixed site physical protection requirements of 10 CFR 73.67(f) are applicable because of the manner in which SNM of low strategic significance was described in the WLS Units 1 and 2 COL application.

Applicable Requirement: 10 CFR 73.67(f)(1), "Fixed site requirements for special nuclear material of low strategic significance. Each licensee who possesses, stores, or uses special nuclear material of low strategic significance at a fixed site or contiguous sites, except those who are licensed to operate a nuclear power reactor pursuant to Part 50, shall: (1) Store or use the material only within a controlled access area…"

The applicant stated in "Table 13.4-201," (ADAMS Accession No. ML11229A602) under "Item 15," titled "Implementation Milestone," their commitment to meet the requirements of 10 CFR 73.67, "…prior to initial receipt of SNM." In addition, their SNMPPP in Sections: 5.2 "Storage," 5.8 and in Figures 1 through13, describe the physical characteristics of the controlled access area.

DEC's application describes that 10 CFR 73.67 will be fully implemented before SNM is received. In addition, their SNMPPP adequately describes the characteristics of their planned-for controlled access area; therefore, the staff finds the requirement, of 10 CFR 73.67(f)(1) to store or use the material only within a controlled access area, would be met.

Applicable Requirement: 10 CFR 73.67(f)(2), "Fixed site requirements for special nuclear material of low strategic significance. Each licensee who possesses, stores, or uses special nuclear material of low strategic significance at a fixed site or contiguous sites, except those who are licensed to operate a nuclear power reactor pursuant to Part 50, shall: (2) Monitor with an intrusion alarm or other device or procedures the controlled access areas to detect unauthorized penetrations or activities. . ."

The applicant stated in "Table 13.4-201," (ADAMS Accession No. ML11229A602) under "Item 15," titled "Implementation Milestone," their commitment to meet the requirements of 10 CFR 73.67, "…prior to initial receipt of SNM." In addition, their SNMPPP in Subsections 5.3.1 and 5.3.2 describes the detection processes that would result in recognition of unauthorized penetrations or activities in the locations of SNM of low strategic significance and the controlled access area.

DEC's application describes that 10 CFR 73.67 will be fully implemented before SNM is received. In addition, their SNMPPP describes the detection processes that would result in recognition of unauthorized penetrations or activities in the locations of SNM of low strategic significance and the controlled access area. Therefore, the staff finds the requirement, of 10 CFR 73.67(f)(2) to monitor with an intrusion alarm or other device or procedures the controlled access areas to detect unauthorized penetrations or activities, would be met.

Applicable Requirement: 10 CFR 73.67(f)(3), "Fixed site requirements for special nuclear material of low strategic significance. Each licensee who possesses, stores, or uses special nuclear material of low strategic significance at a fixed site or contiguous sites, except those who are licensed to operate a nuclear power reactor pursuant to part 50, shall: (3) Assure that a watchman or offsite response force will respond to all unauthorized penetrations or activities. . ."

The applicant stated in "Table 13.4-201," under "Item 15," titled "Implementation Milestone," their commitment to meet the requirements of 10 CFR 73.67, "…prior to initial receipt of SNM." In addition, their SNMPPP in Subsections: 5.3.1, 5.3.2, and in Section 5.10, describes the detection, assessment and response measures for the physical protection of the material. Furthermore, the appropriate response from offsite (i.e., the specifically coordinated with local law enforcement agency (LLEA), etc.) was pointed out by referencing Section 8 of the reactor physical security plan (PSP) (Revision 3, dated April 10, 2013, (SLES Accession No. NS112930)) and Sections 5.6, 5.7 and 5.8 of their reactor contingency plan (CP) (Revision 3, dated April 10, 2013, (SLES Accession No. NS112930)).

DEC's application describes that 10 CFR 73.67 will be fully implemented before SNM is received. In addition, their SNMPPP and other information referenced in the SNMPPP describes the detection, assessment and response measures for the physical protection of the material; therefore, the staff finds the requirement, of 10 CFR 73.67(f)(3) to assure that a watchman or offsite response force will respond to all unauthorized penetrations or activities, would be met.

Applicable Requirement: 10 CFR 73.67(f)(4), "Fixed site requirements for special nuclear material of low strategic significance. Each licensee who possesses, stores, or uses special nuclear material of low strategic significance at a fixed site or contiguous sites, except those who are licensed to operate a nuclear power reactor pursuant to Part 50, shall: (4) Establish and maintain response procedures for dealing with threats of thefts or thefts of this material. The licensee shall retain a copy of the current response procedures as a record for 3 years after the close of period for which the licensee possesses the special nuclear material under each license for which the procedures were established. Copies of superseded material must be retained for 3 years after each change."

The applicant stated in "Table 13.4-201," (ADAMS Accession No. ML11229A602) under "Item 15," titled "Implementation Milestone," their commitment to meet the requirements of 10 CFR 73.67, "…prior to initial receipt of SNM." In addition, their SNMPPP in Section 4.1 "Procedures," Subsection 5.3.1, Subsection 5.3.2, Section 5.7, and in Section 5.10, describes the framework of and details to the development of response procedures. In addition, in Section 5.7 of the SNMPPP the retention of 3 years for response procedures and changes thereof, are noted.

DEC's application describes that 10 CFR 73.67 will be fully implemented before SNM is received. In addition, their SNMPPP describes the framework of the response procedures, details on the development of response procedures and retention actions of 3 years of the response procedures; therefore, the staff finds the requirement, of 10 CFR 73.67(f)(4), to establish and maintain response procedures, would be met.

1.5.5.1.4.4 *In-Transit General Performance Objectives*

The applicable requirements specified in 10 CFR 73.67, "Licensee fixed site and in-transit requirements for the physical protection of special nuclear material of moderate and low strategic significance," include general performance objectives.

The physical protection requirements of 10 CFR 73.67(a), state the following, "General performance objectives":

(1) Each licensee who possesses, uses, or transports special nuclear material of moderate or low strategic significance shall establish and maintain a physical protection system that will achieve the following objectives:

(i) Minimize the possibilities for unauthorized removal of special nuclear material consistent with the potential consequences of such actions; and

(ii) Facilitate the location and recovery of missing special nuclear material.

(2) To achieve these objectives, the physical protection system shall provide:

(i) Early detection and assessment of unauthorized access or activities by an external adversary within the controlled access area containing special nuclear material;

(ii) Early detection of removal of special nuclear material by an external adversary from a controlled access area;

(iii) Assure proper placement and transfer of custody of special nuclear material; and

(iv) Respond to indications of an unauthorized removal of special nuclear material and then notify the appropriate response forces of its removal in order to facilitate its recovery.

The in-transit physical protection requirements of 10 CFR 73.67(a) are applicable because of the manner in which SNM of low strategic significance was described in the WLS Units 1 and 2 COL application.

Applicable Requirement: 10 CFR 73.67(a), "General performance objectives. (1) Each licensee who possesses, uses or transports special nuclear material of moderate or low strategic significance shall establish and maintain a physical protection system that will achieve the following objectives:…"

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper; other than DEC, will be used for transport of SNM of low

strategic significance both to and from the site. In addition, it is stated in Section 6, "Shipment," of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that each general performance objective of 10 CFR 73.67 will be met. Because DEC will be using a SNM-qualified licensee to perform the shipment of SNM of low strategic significance and will confirm that such a licensee has the physical protection measures in place to meet each general performance objective, subsequently that SNM-qualified licensee will have the ability to meet the requirement to establish and maintain a physical protection system.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has physical protection measures in place to meet each general performance objective; therefore, the staff finds the requirement, of 10 CFR 73.67(a)(1) to establish and maintain a physical protection system, would be met.

Applicable Requirement: 10 CFR 73.67(a)(1)(i), "General performance objectives. Each licensee who possesses, uses or transports special nuclear material of moderate or low strategic significance shall establish and maintain a physical protection system that will achieve the following objectives: (i) Minimize the possibilities for unauthorized removal of special nuclear material consistent with the potential consequences of such actions. . ."

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that each general performance objective of 10 CFR 73.67 will be met. Because DEC will be using a SNM-qualified licensee to perform the shipment of SNM of low strategic significance and will confirm that such a licensee has the physical protection measures in place to meet each general performance objective, subsequently that SNM-qualified licensee will have the ability to meet the requirement to establish and maintain a physical protection system that has the capability to minimize the possibilities for unauthorized removal of special nuclear material consistent with the potential consequences of such actions.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has physical protection measures in place to meet each general performance objective. Therefore, the staff finds the requirement, of 10 CFR 73.67(a)(1)(i) to minimize the possibilities for unauthorized removal of special nuclear material consistent with the potential consequences of such actions, would be met.

Applicable Requirement: 10 CFR 73.67(a)(1)(ii), "General performance objectives. Each licensee who possesses uses or transports special nuclear material of moderate or low strategic significance shall establish and maintain a physical protection system that will achieve the following objectives: "…(ii) Facilitate the location and recovery of missing special nuclear material."

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that each general performance objective of 10 CFR 73.67 will be met. Because DEC will be using a SNM-qualified licensee to perform the shipment of SNM of low strategic significance and will confirm that such a licensee has the physical protection measures in place to meet each general performance objective, subsequently that SNM-qualified licensee will have the ability to meet the requirement of establishing and maintaining a physical protection system that has the capability to facilitate the location and recovery of missing special nuclear material.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has physical protection measures in place to meet each general performance objective. Therefore, the staff finds the requirement, of 10 CFR 73.67(a)(1)(ii) to "(i) Minimize …; and," (ii) Facilitate the location and recovery of missing special nuclear material," would be met.

Applicable Requirement: 10 CFR 73.67(a), "General performance objectives. (2) To achieve these objectives, the physical protection system shall provide: (i) Early detection and assessment of unauthorized access or activities by an external adversary within the controlled access area containing special nuclear material. . ."

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that each general performance objective of 10 CFR 73.67 will be met. Because DEC will be using a SNM-qualified licensee to perform the shipment of SNM of low strategic significance and will confirm that such a licensee has the physical protection measures in place to meet each general performance objective-subsequently that SNM-qualified licensee will have the ability to meet the requirement of establishing and maintaining a physical protection system that has the capability to provide for early detection and assessment of unauthorized access or activities by an external adversary within the controlled access area containing special nuclear material.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has physical protection measures in place to meet each general performance objective. Therefore, the staff finds the requirement, of 10 CFR 73.67(2)(i) to provide "Early detection and assessment of unauthorized access or activities by an external adversary within the controlled access area containing special nuclear material...," would be met.

Applicable Requirement: 10 CFR 73.67(a)(2)(ii), "General performance objectives. To achieve these objectives, the physical protection system shall provide: (ii) Early detection of removal of special nuclear material by an external adversary from a controlled access area. . ."

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that each general performance objective of 10 CFR 73.67 will be met. Because DEC will be using a SNM-qualified licensee to perform the shipment of SNM of low strategic significance and will confirm that such a licensee has the physical protection measures in place to meet each general performance objective-subsequently that SNM-qualified licensee will have the ability to meet the requirement of establishing and maintaining a physical protection system that has the capability to provide for early detection of removal of special nuclear material by an external adversary from a controlled access area.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has physical protection measures in place to meet each general performance objective. Therefore, the staff finds the requirement, of 10 CFR 73.67(2)(ii) to provide "Early detection of removal of special nuclear material by an external adversary from a controlled access area...," would be met.

Applicable Requirement: 10 CFR 73.67(a)(2)(iii), "General performance objectives. To achieve these objectives, the physical protection system shall: (iii) Assure proper placement and transfer of custody of special nuclear material; and…"

The applicant included a description of how it intended to meet the in- transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that each general performance objective of 10 CFR 73.67 will be met. Also, DEC, in their SNMPPP, describes in Section 5.1, "Receipt of SNM," within Subsections 5.1.1 (for non-fuel SNM) and 5.1.2 (for fuel SNM), the process for receiving and placing SNM. Furthermore, SNM to be transported from the site or received at the site will have an MC&A program applied to it as described in Part 11D of the application. Because DEC will be using a SNM-qualified licensee to perform the shipment of SNM of low strategic significance, will confirm that such a licensee has the physical protection measures in place to meet each general performance objective, has procedures for receipt/placement of SNM and has an MC&A program that will apply to SNM; subsequently that SNM-qualified licensed shipper and DEC will have the ability to meet the requirement of establishing and maintaining a physical protection system that has the capability to assure proper placement and transfer of custody of special nuclear material.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed- shipper has physical protection measures in place to meet each general performance objective. In addition, DEC has a described process for receiving and placing SNM and will have a MC&A program applied to SNM to be shipped or received. Therefore, the staff finds the requirement, of 10 CFR 73.67(2)(iii) to assure proper placement and transfer of custody of special nuclear material, would be met.

Applicable Requirement: 10 CFR 73.67(a)(2)(iv), "General performance objectives. To achieve these objectives, the physical protection system shall: (iv) Respond to indications of an unauthorized removal of special nuclear material and then notify the appropriate response forces of its removal in order to facilitate its recovery."

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that each general performance objective of 10 CFR 73.67 will be met. Because DEC will be using a SNM-qualified licensee to perform the shipment of SNM of low strategic significance and will confirm that such a licensee has the physical protection measures in place to meet each general performance objective, subsequently that SNM-qualified licensee will have the ability to meet the requirement of responding to indications of an unauthorized removal of special nuclear material and then notify the appropriate response forces of its removal in order to facilitate its recovery.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has physical protection measures in place to meet each general performance objective. Therefore, the staff finds the requirement, of 10 CFR 73.67(a)(2)(iv) to respond to indications of an unauthorized removal of special nuclear material and then notify the appropriate response forces of its removal in order to facilitate its recovery, would be met.

1.5.5.1.4.5 *In-Transit General Requirements*

The applicable requirements specified in 10 CFR 73.67, "Licensee fixed site and in-transit requirements for the physical protection of special nuclear material of moderate and low strategic significance," include the following general requirements.

(c) Each licensee who possesses, uses, transports, or delivers to a carrier for transport special nuclear material of moderate strategic significance, or 10 kg or more of special nuclear material of low strategic significance shall:

(1) Submit a security plan or an amended security plan describing how the licensee will comply with all the requirements of paragraphs (d), (e), (f), and (g) of this section, as appropriate, including schedules of implementation. The licensee shall retain a copy of the effective security plan as a record for 3 years after the close of period for which the licensee possesses the special nuclear material under each license for which the original plan was submitted. Copies of superseded material must be retained for 3 years after each change.

(2) Within 30 days after the plan submitted pursuant to paragraph (c)(1) of this section is approved, or when specified by the NRC in writing, implement the approved security plan."

Applicable Requirement: 10 CFR 73.67(c)(1), "Submit a security plan including schedules for implementation. . . shall retain a copy. . . for 3 years. . ." "Copies of the superseded material must be retained for 3 years after each change."

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that 10 CFR 73.67(c)(1) would be met.

DEC's application describes that 10CFR73.67 will be fully implemented before SNM is received. In addition, their SNMPPP describes the required retention parameters for the SNMPPP and changes to it; therefore, the requirement of 10 CFR 73.67(c)(1) to retain the security plan for 3 years after the specific type of SNM has been removed from the site, and superseded security plan change(s) shall be retained for 3 years after each change, would be met.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has provisions in place to meet 10 CFR 73.67(c)(1); therefore, the staff finds the requirement, of 10 CFR 73.67(c)(1), to "Submit a security plan or as amended security plan describing how the licensee will comply with all the requirements of paragraphs (d), (e), (f), and (g) of this section, as appropriate, including schedules of implementation. The licensee shall retain a copy of the effective security plan as a record for 3 years after the close of period for which the licensee possesses the special nuclear material under each license for which the original plan was submitted. Copies of superseded material must be retained for 3 years after each change…," would be met.

Applicable Requirement: 10 CFR 73.67(c)(2), "Within 30 days after the plan submitted pursuant to paragraph (c)(1) of this section is approved, or when specified by the NRC in writing, implement the approved security plan."

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of its SNMPPP. The SNMPPP states that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, Section 6 of the SNMPPP states that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that 10 CFR 73.67(c)(2), would be met.

1.5.5.1.4.6 *In-Transit Physical Protection Requirements*

The applicable requirements specified in 10 CFR 73.67, "Licensee fixed site and in-transit requirements for the physical protection of special nuclear material of moderate and low strategic significance," describes in-transit physical protection requirements.

The physical protection requirements of 10 CFR 73.67(g) state, "In-transit requirements for special nuclear material of low strategic significance.

(1) Each licensee who transports or who delivers to a carrier for transport special nuclear material of low strategic significance shall:

(i) Provide advance notification to the receiver of any planned shipments specifying the mode of transport, estimated time of arrival, location of the nuclear material transfer point, name of carrier and transport identification,

(ii) Receive confirmation from the receiver prior to commencement of the planned shipment that the receiver will be ready to accept the shipment at the planned time and location and acknowledges the specified mode of transport,
(iii) Transport the material in a tamper indicating sealed container,
(iv) Check the integrity of the containers and seals prior to shipment, and
(v) Arrange for the in-transit physical protection of the material in accordance with the requirements of Section 73.67(g)(3) of this part, unless the receiver is a licensee and has agreed in writing to arrange for the in-transit physical protection.

(2) Each licensee who receives quantities and types of special nuclear material of low strategic significance shall:

(i) Check the integrity of the containers and seals upon receipt of the shipment,
(ii) Notify the shipper of receipt of the material as required in Section 74.15 of this chapter, and
(iii) Arrange for the in-transit physical protection of the material in accordance with the requirements of Section 73.67(g)(3) of this part, unless the shipper is a licensee and has agreed in writing to arrange for the in-transit physical protection.

(3) Each licensee, either shipper or receiver, who arranges for the physical protection of special nuclear material of low strategic significance while in transit or who takes delivery of such material free on board (f.o.b.) the point at which it is delivered to a carrier for transport shall:

(i) Establish and maintain response procedures for dealing with threats or thefts of this material. The licensee shall retain a copy of the current response procedures as a record for 3 years after the close of period for which the licensee possesses the special nuclear material under each license for which the procedures were established. Copies of superseded material must be retained for 3 years after each change.

(ii) Make arrangements to be notified immediately of the arrival of the shipment at its destination, or of any such shipment that is lost or unaccounted for after the estimated time of arrival at its destination, and

(iii) Conduct immediately a trace investigation of any shipment that is lost or unaccounted for after the estimated arrival time and notify the NRC Operations Center within one hour after the discovery of the loss of the shipment and within one hour after recovery of or accounting for such lost shipment in accordance with the provisions of Section 73.71 of this part."

The in-transit physical protection requirements of 10 CFR 73.67(g) are applicable because of the manner in which SNM of low strategic significance was described in the WLS Units I and 2 COL application.

Applicable Requirement: 10 CFR 73.67(g), "In-transit requirements for special nuclear material of low strategic significance. (1) Each licensee who transports or who delivers

to a carrier for transport special nuclear material of low strategic significance shall: (i) Provide advance notification to the receiver of any planned shipments specifying the mode of transport, estimated time of arrival, location of the nuclear material transfer point, name of carrier and transport identification. . .”

The applicant included a description of how it was intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has “…plans and procedures…” that are developed and implemented in such a manner that 10 CFR 73.67(g)1)(i) will be met. DEC will be using a SNM-qualified licensee to perform the shipment of SNM of low strategic significance and will confirm that such a licensee has the physical protection measures in place to meet 10 CFR 73.67(g)1)(i). Therefore, that SNM-qualified licensee will have the ability to meet the requirement of providing advance notification to the receiver of any planned shipments specifying the mode of transport, estimated time of arrival, location of the nuclear material transfer point, name of carrier and transport identification.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has physical protection measures in place to meet 10 CFR 73.67(g)(1)(i). Therefore, the staff finds the requirement, of 10 CFR 73.67(g)(1)(i) to provide advance notification to the receiver of any planned shipments specifying the mode of transport, estimated time of arrival, location of the nuclear material transfer point, name of carrier and transport identification, would be met.

Applicable Requirement: 10 CFR 73.67(g)(1)(ii), “In-transit requirements for special nuclear material of low strategic significance. (1) Each licensee who transports or who delivers to a carrier for transport special nuclear material of low strategic significance shall: (ii) Receive confirmation from the receiver prior to commencement of the planned shipment that the receiver will be ready to accept the shipment at the planned time and location and acknowledges the specified mode of transport. . .”

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used to transport SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has “…plans and procedures…” that are developed and implemented in such a manner that 10 CFR 73.67(g)(1)(ii) will be met. Because DEC will be using a SNM-qualified licensee to perform the shipment of SNM of low strategic significance and will confirm that such a licensee has the physical protection measures in place to meet 10 CFR 73.67(g)(1)(ii), subsequently that SNM-qualified licensee will have the ability to meet the requirement of receiving confirmation from the receiver prior to commencement of the planned shipment that the receiver will be ready to accept the shipment at the planned time and location and acknowledges the specified mode of transport.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has physical protection measures in place to meet 10 CFR 73.67(g)(1)(ii). Therefore, the staff finds the requirement, of 10 CFR 73.67(g)(1)(ii) to receive confirmation from the receiver prior to commencement of the planned shipment that the receiver will be ready to

accept the shipment at the planned time and location and acknowledges the specified mode of transport, would be met.

Applicable Requirement: 10 CFR 73.67(g)(1)(iii), "In-transit requirements for special nuclear material of low strategic significance. (1) Each licensee who transports or who delivers to a carrier for transport special nuclear material of low strategic significance shall: (iii) Transport the material in a tamper indicating sealed container. . ."

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that 10 CFR 73.67(g)(1)(iii) will be met.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has physical protection measures in place to meet 10 CFR 73.67(g)(1)(iii). Therefore, the staff finds the requirement, of 10 CFR 73.67(g)(1)(iii) to transport the material in a tamper indicating sealed container, would be met.

Applicable Requirement: 10 CFR 73.67(g)(2)(i), "In-transit requirements for special nuclear material of low strategic significance. (2) Each licensee who receives quantities and types of special nuclear material of low strategic significance shall: (i) Check the integrity of the containers and seals upon receipt of the shipment,…"

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. Specifically, in Section 5.1, within Subsections 5.1.1.4 (for non-fuel SNM) and 5.1.2.4 (for fuel SNM), it is described that the integrity of both shipping containers and tamper-seals will be checked.

The DEC application described that shipment containers and tamper-seals applied to those containers would be checked upon receipt; therefore, the staff finds the requirement, of 10 CFR 73.67(g)(2)(i) to check the integrity of the containers and seals upon receipt of the shipment, would be met.

Applicable Requirement: 10 CFR 73.67(g)(2)(ii), "In-transit requirements for special nuclear material of low strategic significance. (2) Each licensee who receives quantities and types of special nuclear material of low strategic significance shall: (ii) Notify the shipper of receipt of the material as required in Section 74.15 of this chapter. . ."

In the DEC SNMPPP in Section 5.1, within Subsections 5.1.1.1 (for non-fuel SNM) and 5.1.2.1 (for fuel SNM), it is described that the shipper would be notified in accordance with 10 CFR 74.15. In addition, the development of procedures for "Receiving and shipping SNM" was described in the SNMPP within Section 4.1.

The DEC application described that the shipper would be notified in accordance with 10 CFR 74.15 for both non-fuel and fuel SNM; therefore, the staff finds the requirement, of 10 CFR 73.67(g)(2)(ii) to notify the shipper of receipt of SNM, as required per 10 CFR 74.15, would be met.

Applicable Requirement: 10 CFR 73.67(g)(2)(iii), "Arrange for the in-transit physical protection of the material in accordance with the requirements of Section 73.67(g)(3) of this part, unless the shipper is a licensee and has agreed in writing to arrange for the in-transit physical protection."

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that 10 CFR 73.67(g)(2)(iii) will be met.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has provisions in place to meet10 CFR 73.67(g)(2)(iii). Therefore, the staff finds the requirement, of 10 CFR 73.67(g)(2)(iii) to arrange for the in-transit physical protection of the material in accordance with the requirements of Section 73.67(g)(3) of this part, unless the shipper is a licensee and has agreed in writing to arrange for the in-transit physical protection, would be met.

Applicable Requirement: 10 CFR 73.67(g)(3), "Each licensee, either shipper or receiver, who arranges for the physical protection of special nuclear material of low strategic significance while in transit or who takes delivery of such material free on board (f.o.b.) the point at which it is delivered to a carrier for transport shall: (i) Establish and maintain response procedures for dealing with threats or thefts of this material. The licensee shall retain a copy of the current response procedures as a record for 3 years after the close of period for which the licensee possesses the special nuclear material under each license for which the procedures were established. Copies of superseded material must be retained for 3 years after each change."

The applicant included a description of how the how it was intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that 10 CFR 73.67(g)(3)(i) will be met.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has provisions in place to meet 10 CFR 73.67(g)(3)(i). Therefore, the staff finds the requirement, of 10 CFR 73.67(g)(3)(i) to, "Establish and maintain response procedures …," would be met.

Applicable Requirement: 10 CFR 73.67(g)(3), "Each licensee, either shipper or receiver, who arranges for the physical protection of special nuclear material of low strategic significance while in transit or who takes delivery of such material free on board (f.o.b.) the point at which it is delivered to a carrier for transport shall: (ii) Make arrangements to be notified immediately of the arrival of the shipment at its destination point, or of any

shipment that is lost or unaccounted for after the estimated time of arrival at its destination."

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that 10 CFR 73.67(g)(3)(ii) will be met. The SNMPP stated that DEC will use an SNM licensed shipper and that DEC will verify that the shipper will be able to meet the requirement.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has provisions in place to meet10 CFR 73.67(g)(3)(ii). Therefore, the staff finds the requirement, of 10 CFR 73.67(g)(3)(ii) to, "make arrangements to be notified immediately of the arrival of the shipment at its destination point, or of any shipment that is lost or unaccounted for after the estimated time of arrival at its destination," would be met.

Applicable Requirement: 10 CFR 73.67(g)(3), "Each licensee, either shipper or receiver, who arranges for the physical protection of special nuclear material of low strategic significance while in transit or who takes delivery of such material free on board (f.o.b.) the point at which it is delivered to a carrier for transport shall: (iii) Conduct immediately a trace investigation of any shipment that is lost or unaccounted for after the estimated arrival time and notify the NRC Operations Center within one hour after the discovery of the loss of the shipment and within one hour after recovery of or accounting for such lost shipment in accordance with the provisions of Section 73.71 of this part."

The applicant included a description of how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that 10 CFR 73.67(g)(3)(iii) will be met. DEC has committed to meeting the requirement in their SNMPPP in Section 5.1, within Subsections 5.1.1.1 (for non-fuel SNM) and 5.1.2.1 (for fuel SNM). Furthermore, DEC noted that a procedure would be developed for notification process in Section 4.1 of the SNMPPP.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has provisions in place to meet 10 CFR 73.67(g)(3)(iii). In addition, DEC has committed to meeting the 10 CFR 73.67(g)(3)(iii) trace investigation/notification requirement. Therefore, the staff finds the requirement, of 10 CFR 73.67(g)(3)(iii) to, "conduct immediately a trace investigation of any shipment that is lost or unaccounted for after the estimated arrival time and notify the NRC Operations Center within one hour after the discovery of the loss of the shipment and within one hour after recovery of or accounting for such lost shipment in accordance with the provisions of Section 73.71 of this part," would be met.

Applicable Requirement: 10 CFR 73.67(g)(4), "Each licensee who exports special nuclear material of low strategic significance shall comply with the appropriate requirements

specified in paragraphs (c) and (g) (1) and (3) of this section. The licensee shall retain each record required by these sections for 3 years after the close of period for which the licensee possesses the special nuclear material under each license that authorizes the licensee to export this material. Copies of superseded material must be retained for 3 years after each change."

How the requirements of 10 CFR 73.67(c) would be met by the applicant are described in Section 1.5.5.1.4.5, "In-Transit General Requirements," of this safety evaluation report. Also, the applicant included a description of how it intended to meet the in- transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that 10 CFR 73.67(g)(4) will be met.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed- shipper has provisions in place to meet 10 CFR 73.67(c) requirements, as specified in the SNMPPP Section 6.1. How the requirements of 10 CFR 73.67(g)(1) and (3) would be met are detailed in this safety evaluation report in Section 1.5.5.1.4.6, "In-Transit Physical Protection Requirements." Therefore, the staff finds the requirement, of 10 CFR 73.67(g)(4), "Each licensee who exports special nuclear material of low strategic significance shall comply with the appropriate requirements specified in paragraphs (c) and (g) (1) and (3) of this section. The licensee shall retain each record required by these sections for 3 years after the close of period for which the licensee possesses the special nuclear material under each license that authorizes the licensee to export this material. Copies of superseded material must be retained for 3 years after each change…," would be met.

Applicable Requirement: 10 CFR 73.67(g)(5)(i), "Each licensee who imports special nuclear material of low strategic significance shall: (i) Comply with the requirements specified in paragraphs (c) and (g) (2) and (3) of this section and retain each record required by these paragraphs for 3 years after the close of period for which the licensee possesses the special nuclear material under each license that authorizes the licensee to import this material. Copies of superseded material must be retained for 3 years after each change."

The applicant included a description of how it intended to meet the in- transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. It is stated in the SNMPPP that a SNM-qualified licensed shipper, other than DEC, will be used for transport of SNM of low strategic significance both to and from the site. In addition, it is stated in Section 6 of the SNMPPP that DEC will confirm that the licensee used for transport of SNM has "…plans and procedures…" that are developed and implemented in such a manner that 10 CFR 73.67(g)(4) will be met.

The DEC application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEC will confirm that the licensed shipper has provisions in place to meet 10 CFR 73.67(c) requirements, as specified in the SNMPPP Section 6.1. How the requirements of 10 CFR 73.67(c) would be met by the applicant are described in Section 1.5.5.1.4.5, "In-Transit General Requirements," of this safety evaluation report. In addition, how the requirements of 10 CFR 73.67(g)(2) and (3) would be

met are detailed in this safety evaluation report in Section 1.5.5.1.4.6, "In-Transit Physical Protection Requirements." Therefore, the staff finds the requirement, of 10 CFR 73.67(g)(5), "Each licensee who exports special nuclear material of low strategic significance shall comply with the appropriate requirements specified in paragraphs (c) and (g) (2) and (3) of this section. The licensee shall retain each record required by these sections for 3 years after the close of period for which the licensee possesses the special nuclear material under each license that authorizes the licensee to export this material. Copies of superseded material must be retained for 3 years after each change," would be met.

Applicable Requirement: 10 CFR 73.67(g)(5)(ii), "Each licensee who imports special nuclear material of low strategic significance shall: (ii) Notify the person who delivered the material to a carrier for transport of the arrival of such material."

The applicant included a description of how it intended to meet the in- transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. Specifically, in the DEC SNMPPP in Section 5.1, within Subsections 5.1.1.1 (for non-fuel SNM) and 5.1.2.1 (for fuel SNM), it is described that the shipper would be notified upon receipt of SNM. In addition, the development of procedures for "Receiving and shipping SNM" was described in Section 4.1 of the SNMPPP.

The staff finds that because DEC has described: 1) notification actions to be made upon the receipt of SNM in their SNMPPP, and 2) the development of procedures that would pertain to "Receiving and shipping SNM" the requirement, of 10 CFR 73.67(g)(5)(ii) to "notify the person who delivered the material to a carrier for transport of the arrival of such material," would be met.

1.5.5.1.4.7 *WLS COL FSAR Section 13.5.2.2.8*

The applicant included in WLS COL FSAR Section 13.5.2.2.8, in general terms, the correct manner in which the requirements of 10 CFR 73.67 must be applied to the non-fuel HEU sources that are SNM of low strategic significance, that the applicant proposes to possess, transport and use at the Lee site. Therefore, the staff finds the application of the correct physical protection measures, as stated in 10 CFR 73.67, to all types of SNM of low strategic significance, would be met.

1.5.5.1.4.8 *Post-September 11, 2001, Security Orders for SNM of Low Strategic Significance*

Applicable Requirement: "General Performance Objectives and Requirements" Analysis required per the order.

The applicant considered the order and assessed that only parts C and D of the order must be addressed. The discussion of the analysis that justified only part C and D of the order needed to be addressed was in the SNMPPP within Section 1. Therefore, the analysis requirement presented in the beginning of the order, would be met.

Part C of the Order "Response"

Applicable Requirement: Part C.1. of the order "Develop security response procedures…"

The applicant described the procedures that would be developed in Section 4.1 of the SNMPPP. Those procedures listed to be developed; included response procedures.

Because the applicant committed to develop response implementing procedures, the order requirement of C.1., would be met.

Applicable Requirement: Part C.2. of the order (Part C.2. contains safeguards information and is not described here).

The applicant addressed Part C.2. in Section 5.10 of the SNMPPP.

Because the applicant described the response attributes that aligned with Part C.2. of the order, the order requirement of C.2., would be met.

Part D of the Order "General"

Applicable Requirement: Part D.1. of the order "…hexafluoride…"

This part of the order was associated with uranium hexafluoride. The applicant addressed this order requirement in Section 1 of the SNMPPP.

Because the applicant described the conditions associated with uranium hexafluoride with the Lee site, Part D.1., of the order, would be met.

Applicable Requirement: Part D.2. of the order "…hazardous material…" This part of the order was associated with hazardous material.

The applicant addressed this order requirement in Section 5.9 "Chemicals and Hazardous Materials." In addition, a procedure to implement the strategy outlined in Section 5.9 of the SNMPPP was committed to be developed in Section 4.1 of the SNMPPP.

Because the applicant described a strategy to address Part D.2. of the order, and committed to the development of a procedure to implement that strategy, Part D.2. of the order would be met.

Applicable Requirement: Part D.3. of the order "Supplement the Emergency Action Levels…"

The applicant addressed Part D.3 of the order in section 5.11 "Emergency Response" of the SNMPPP.

Because the applicant described how the requirement of Part D.3. of the order would be addressed, Part D.3. of the order, would be met.

Applicable Requirement: Part D.4. of the order "Evaluate computer and communications…"

The applicant addressed Part D.4. of the order in Section 5.11 "Emergency Response" of the SNMPPP.

Because the applicant described how the requirement of Part D.4. of the order would be addressed, Part D.4. of the order, would be met.

Applicable Requirement: Part D.5. of the order "Evaluate capabilities…fire suppression…"

The applicant addressed Part D.5. of the order in Section 5.12 "Fire Response" of the SNMPPP.

Because the applicant described how the requirement of Part D.5, of the order would be addressed, Part D.5 of the order would be met.

Applicable Requirement: Part D.6. of the order "Evaluate…medical…"

The applicant addressed Part D.6. of the order in Section 5.13 "Medical Response" of the SNMPPP.

Because the applicant described how the requirement of Part D.6, of the order would be addressed, Part D.6 of the order would be met.

Applicable Requirement: Part D.7. of the order "Limit…access…"

The applicant discussed in Section 5.7 how the order requirement D.7 would be addressed.

Because the applicant described how the requirement of Part D.7, of the order would be addressed, Part D.7 of the order would be met.

Part 3 of the Order "Access Control and Badging"

The applicant stated in Section 5.4 "Access Control and Badging" of the SNMPPP that those persons afforded access to the controlled access area would be under the access authorization program as presented in Section 14.1 of their power reactor PSP. In Section 14.1 of the PSP, Rev. 3, dated April 10, 2013, (SLES No. NS112930), the RG 5.66 "Access Authorization Program for Nuclear Power Plants" was the applicable access authorization program. The access authorization program as described in RG 5.66 includes fingerprinting and an overall more-stringent access authorization program than that described in Part 3 of the order.

In addition, individuals not under the subject access authorization program would be escorted into, out of, and within the controlled access area in accordance with Section 14.4.6 of the PSP which describes escort methodologies developed for the Lee power reactors.

The applicant described that RG 5.66 would be applied to meet Part 3 of the order and it is recognized that in doing so a more stringent access authorization process would be utilized than that described in Part 3 of the order. Therefore, Part 3 of the order, which includes fingerprinting and other access authorization provisions, would be met.

Conclusion

The NRC staff reviewed DEC, WLS Units I and 2, Docket Nos. 52-018 and 52-019, application (ADAMS Accession No. ML073510494), and finds that the applicable requirements specified in 10 CFR 73.67, "Licensee fixed site and in-transit requirements for the physical protection of SNM of moderate and low strategic significance" and the post September 11, 2001, security order for SNM of low strategic significance, would be met.

1.5.5.2 *Conclusion and Post Combined License Activities*

The NRC staff reviewed DEC, WLS Units I and 2, Docket Nos. 52-018 and 52-019, application (ADAMS Accession No. ML073510494), and finds that the applicable requirements specified in 10 CFR 73.67, "Licensee fixed site and in-transit requirements for the physical protection of SNM of moderate and low strategic significance" and the post September 11, 2001, security order for SNM of low strategic significance, would be met.

With respect to the applicable fixed site and in-transit physical protection requirements for SNM of low strategic significance specified in 10 CFR 73.67 and the post September 11, 2001, security order for the fixed site possession and use of SNM of low strategic significance, the NRC staff reviewed application and concludes that the relevant information in the application is acceptable because it meets the pertinent recommendations stated in RG 5.59.

The license condition language in this section has been modified, per a letter from the applicant dated March 22, 2016 (ADAMS Accession No. ML16084A099), confirming the acceptability of the following license conditions proposed by the staff. These changes do not affect the staff's above analysis of the conditions, and therefore, for the reasons discussed in the technical evaluation section above, the staff finds the following license conditions acceptable:

- License Condition (1-3) – Subject to the conditions and requirements incorporated herein, the Commission hereby licenses DEC:

  (1) (a) pursuant to the Act and 10 CFR Part 70, to receive and possess at any time, special nuclear material as reactor fuel, in accordance with the limitations for storage and in amounts necessary for reactor operation, described in the FSAR, as supplemented and amended;

  (b) pursuant to the Act and 10 CFR Part 70, to use special nuclear material as reactor fuel, after a Commission finding under 10 CFR 52.103(g) has been made, in accordance with the limitations for storage and amounts necessary for reactor operation, described in the FSAR, as supplemented and amended;

  (2) (a) pursuant to the Act and 10 CFR Parts 30 and 70, to receive, possess, and use, at any time before a Commission finding under 10 CFR 52.103(g), such byproduct and special nuclear material (but not uranium hexafluoride) as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts not exceeding those specified in 10 CFR 30.35(d) and 10 CFR 70.25(d) for establishing decommissioning financial assurance, and not exceeding those specified in 10 CFR 30.72 and 10 CFR 70.22(i)(1);

  (b) pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use, after a Commission finding under 10 CFR 52.103(g), any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as necessary;

  (3) (a) pursuant to the Act and 10 CFR Parts 30 and 70, to receive, possess, and use, before a Commission finding under 10 CFR 52.103(g), any byproduct or special nuclear material (but not uranium hexafluoride) that is (1) in unsealed form; (2) on foils or plated surfaces, or (3) sealed in glass, for sample analysis or instrument calibration or other activity associated with radioactive apparatus or components, in amounts not exceeding those specified

in 10 CFR 30.35(d) and 10 CFR 70.25(d) for establishing decommissioning financial assurance, and not exceeding those specified in 10 CFR 30.72 and 10 CFR 70.22(i)(1);

(b) pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use, after a Commission finding under 10 CFR 52.103(g), in amounts as necessary, any byproduct, source, or special nuclear material (but not uranium hexafluoride) without restriction as to chemical or physical form, for sample analysis or instrument calibration or other activity associated with radioactive apparatus or components but not uranium hexafluoride; and

(4) pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

- License Condition (1-4) - Prior to initial receipt of special nuclear materials onsite, the licensee shall implement the Special Nuclear Material Control and Accounting Program. No later than 12 months after issuance of the COL the licensee shall submit to the Director of the Office of New Reactors a schedule that supports planning for and conduct of NRC inspections of the Special Nuclear Material Control and Accounting Program. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until the Special Nuclear Material Control and Accounting Program has been fully implemented.

- License Condition (1-5) – No later than 12 months after issuance of the COL, the licensee shall submit to the Director of the Office of New Reactors a schedule that supports planning for and conduct of NRC inspection of the non-licensed plant staff training program. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until the non-licensed plant staff training program has been fully implemented.

- License Condition (1-6) – Prior to initial receipt of special nuclear material on site, the licensee shall implement the Special Nuclear Material Physical Protection Program. No later than 12 months after issuance of the COL, the licensee shall submit to the Director of the Office of New Reactors a schedule that supports planning for and conduct of NRC inspection of the Special Nuclear Material Physical Protection Program. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until the Special Nuclear Material Physical Protection Program has been fully implemented.

1.5.6 Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material

On March 19, 2013, a new 10 CFR Part 37 rule was published in the FR in which the NRC amended its regulations to establish security requirements for the use and transport of Category 1 and Category 2 quantities of radioactive material. The NRC considers these quantities to be risk significant and, therefore, to warrant additional protection. Category 1 and Category 2 thresholds are based on the quantities established by the International Atomic Energy Agency (IAEA) in its Code of Conduct on the Safety and Security of Radioactive Sources, which the NRC endorses. The objective of the 10 CFR Part 37, “Physical Protection

of Category 1 and Category 2 Quantities of Radioactive Material," regulation is to provide reasonable assurance of preventing the theft or diversion of Category 1 and Category 2 quantities of radioactive material. The regulations also include security requirements for the transportation of irradiated reactor fuel that weighs 100 grams or less in net weight of irradiated fuel.