1.0 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 11 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); and
- 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 letter dated July 28, 2008, as supplemented by several letters, Florida Power Corporation, doing business as Progress Energy Florida, Inc. (PEF), submitted its application to the U.S. Nuclear Regulatory Commission (NRC or the Commission) for a 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 would be identified as Levy Nuclear Plant (LNP), Units 1 and 2, and would be located approximately 9.6 miles northeast of the Crystal River Energy Complex in Levy County, Florida.

The COL applicant is Duke Energy Florida, LLC (DEF). Subsequent to a corporate merger between Progress Energy, Inc., formerly the ultimate corporate parent of PEF, and Duke Energy, and subsequent to a corporate reorganization, Duke Energy Florida, Inc., submitted an updated Revision 7 of the COL application on August 28, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML14258A955).[1] In the Revision 8 update to the COL application dated December 7, 2015, Part 1, the applicant stated that it filed amended articles of conversion and organization to change its corporate name to Duke Energy Florida, LLC, effective August 1, 2015 (ADAMS Accession Number ML15349A100). Unless otherwise noted, this FSER (also referred to as the safety evaluation report (SER) in later sections of this document) is based on Revision 9 of the LNP COL application.

[1] The applicant, Duke Energy Florida, LLC, was formerly identified as Duke Energy Florida, Inc. and Progress Energy Florida, Inc. In a letter dated April 15, 2013, Progress Energy Florida, Inc., notified the NRC that its name was changing to Duke Energy Florida, Inc., effective April 29, 2013. The name change and a 2012 corporate merger between Duke Energy and Progress Energy are described in Section 1.5.1 of the SER. Because a portion of the review described in this chapter was completed prior to the name change, the NRC staff did not change references to "Progress Energy Florida" or "PEF" to "Duke Energy Florida" or "DEF" in this chapter.

As indicated in the applicant's April 6, 2016, Revision 9 submission, the applicant incorporates by reference 10 CFR Part 52, Appendix D, "Design Certification Rule for the AP1000 Design," and the Westinghouse Electric Corporation's (Westinghouse's) Design Control Document (DCD) Revision 19.

The AP1000 nuclear reactor design is a PWR with a power rating of 3400 megawatts thermal (MWt) and 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 LNP 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 LNP 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 DEF 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 LNP Plant-Specific Technical Specifications (PTS) and Bases. Specifically, Section A addresses completion of bracketed information. Section B provides a complete copy of the LNP PTS and Bases.

- **Part 5 Emergency Plan**

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

- **Part 6 Limited Work Authorization (Revision 1)**

Part 6 of the COL application, Revision 0, included a site redress plan and environmental report related to a Limited Work Authorization (LWA) request to perform certain safety-related

construction activities. Subsequently, the applicant withdrew its LWA request. As such, Part 6 of the COL application is not used.

- **Part 7 Departure and Exemption Requests**

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 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 Safeguards/Security Plans**

These plans are categorized as security safeguards information and are withheld from public disclosure pursuant to 10 CFR 73.21, "Protection of Safeguards Information: Performance requirements," and 10 CFR 73.22, "Protection of Safeguards Information: Specific requirements."

- LNP Safeguards/Security Plan, which consists of the Physical Security Plan, the Training and Qualification Plan, and the Safeguards Contingency Plan. These security plans are submitted to the NRC as a separate licensing documents in order to fulfill the requirements of 10 CFR 52.79(a)(35) and 10 CFR 52.79(a)(36).

- Special Nuclear Material (SNM) Physical Protection Program Description

- **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:

- Portions of the COL application Part 5 – Emergency Plan

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

- Mitigative Strategies Description and Plans, as required by 10 CFR 52.80(d)

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

Part 10 includes LNP proposed license conditions and inspections, tests, analyses, and acceptance criteria (ITAAC) information in accordance with 10 CFR 52.80. A table identifying the proposed license conditions appears in Appendix A of this FSER.

The contents of the environmental protection plan (and associated license conditions) are not evaluated in this SER. Part 10 of the application incorporated by reference the AP1000 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 includes information submitted by the applicant in support of the LNP COL application. Specifically, these sections include

- New Nuclear Plant Development 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 DEF.

- Cyber Security Plan: The SUNSI version of the cyber security plan is provided in Part 9 of the application.

- Mitigative Strategies Descriptions and Plans: The SUNSI version of the Mitigative Strategies Descriptions and Plans is provided in Part 9 of the application

- Special Nuclear Material (SNM) Material Control and Accounting Program Description

- New Fuel Shipping Plan

- Supplemental Information in Support of 10 CFR Part 70 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, environmental report, and mitigative strategies plan required by 10 CFR 50.54(hh)(2).

- 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 (DC)).

- 10 CFR 52.85, “Administrative review of applications; hearings,” provides requirements for administrative reviews and hearings.

- 10 CFR 52.87, “Referral to the Advisory Committee on Reactor Safeguards (ACRS),” provides for referral to the ACRS.

The NRC 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"

- "Standard Review Plan on Foreign Ownership, Control, or Domination"

In addition, the staff considered the format and content guidance in RG 1.206[2] for the COL application.

1.2.2 Finality of Referenced NRC Approvals

In accordance with 10 CFR 52.83, if the application for a COL references a DC rule, the scope and nature of matters resolved in the DC for the application and any COL issued are governed by 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), programmatic elements that are the responsibility of the COL, and departures from the certified design).

The certified AP1000 design currently incorporated by reference in the LNP COL application is in 10 CFR Part 52, Appendix D, and is based on the AP1000 DCD as amended through Revision 19. The results of the NRC staff's technical evaluation of the AP1000 DCA application are documented in NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design," and its supplements. Referencing the Revision 19 certified design in 10 CFR Part 52, Appendix D resolves Confirmatory Item LNP 1.2-1 from the advanced safety evaluation (ASE).

The contents of the AP1000 COL application are specified by 10 CFR 52.79(a), which requires the submission of information within the FSAR that describes the facility, presents the design bases and the limits on its operation, and presents a safety analysis of the structures, systems, and components (SSCs) of the facility as a whole. For a COL application that references a DC, 10 CFR 52.79(d) requires the DCD to be included or incorporated by reference into the FSAR. A COL application that references a certified design must also include the information and analysis required to be submitted within the scope of the COL application, but which is outside the scope of the DCD. This set of information addresses plant- and site-specific information and includes all COL action or information items; design information replacing CDI; and

[2] Appendix D, Section IV.A.2.a to 10 CFR Part 52 requires the COL application to include a plant-specific DCD that includes the same type of information and uses the same organization and numbering as the generic DCD. The generic DCD used RG 1.70, Revision 3, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)," 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 LNP COL application and the guidance of RG 1.206.

programmatic information that was not reviewed 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 as supplemented by the COL application, or completely in the COL application. Following this confirmation, the staff's review of the COL application is limited to the COL-specific 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," dated 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 cyber security plans for the AP1000 COL applicants are essentially identical with the exception of title names being different. Other areas where this approach was used include 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 NRC 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 LNP Units 1 and 2 COL application has been designated as an SCOL application in the AP1000 design center[3].

DEF, 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 LNP 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:

[3] In a letter dated April 28, 2009, 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 safety evaluation (SE) with open items. As part of the transition, the NRC staff concluded that the BLN evaluation material identified as Standard (STD COL, STD SUP, STD DEP and Interfaces for Standard Design) in the BLN SE was directly applicable to the VEGP review. As a result, standard content material from the SE for the RCOL (VEGP) application and referenced in the LNP SE includes evaluation material from the SE for the BLN COL application.

- STD – standard (STD) information that is identical in each COL referencing the AP1000.
- LNP – plant-specific information that is specific to this application.
- DEP – represents a departure (DEP) from the DCD.
- COL – represents a COL information item identified in the DCD.
- SUP – represents information that supplements (SUP) information in the DCD.
- CDI – represents design information replacing CDI included in the DCD but not addressed within the scope of the DCD review.

The following text is added to the technical evaluation sections in this SER 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 LNP Units 1 and 2 COL application, the staff undertook the following reviews:
>
> - The staff compared the VEGP COL FSAR, Revision 5 to the LNP COL FSAR. In performing this comparison, the staff considered changes made to the LNP 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 LNP 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 LNP 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 LNP application. These evaluations are in the SER sections that reference the standard content.

The staff compared the VEGP COL FSAR, Revision 2 to the LNP COL FSAR at the time of the development of the ASE. The ASE included confirmatory items. Subsequent to the issuance of the ASE, the LNP applicant updated the standard portions of its application to be consistent with the VEGP COL application to close the standard content confirmatory items. Following this update, the staff performed a complete comparison of the standard content appearing in the VEGP COL FSAR, Revision 5 to the LNP COL FSAR, Revision 4. The staff confirmed that responses to standard content confirmatory items were endorsed by LNP applicant and that the changes discussed in the standard confirmatory items were made in the LNP COL FSAR. The staff reviewed DEF and PEF changes to standard content as discussed above.

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 DEF pursuant to 10 CFR 50.33, "Contents of applications; general information," is provided in Section 1.5.1 of this SER.

- **Part 2 Final Safety Analysis Report**

The staff's evaluation of information in the LNP COL FSAR is provided in the corresponding sections of this SER.

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 LNP 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 staff's evaluation of information in an environmental report submitted pursuant to the requirements of 10 CFR 51.50(c) is provided in the Environmental Impact Statement.

- **Part 4 Technical Specifications**

Chapter 16 of this SER includes the staff's evaluation of the LNP Units 1 and 2 PTS and Bases (specifically completion of bracketed text).

- **Part 5 Emergency Plan**

Chapter 13 of this SER includes the staff's evaluation of the LNP Emergency Plan, 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 evaluation.

- **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. 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.[4]	1.5.4
LNP DEP 1.8-1. Departure correcting an inconsistency in regulatory citation in an interface description	1.5.4
LNP DEP 3.2-1. Departure adding downspouts and downspout screens to the condensate return portion of the Passive Core Cooling System.[4]	21.1
LNP DEP 3.7-1. Departure to address use of site-specific horizontal seismic response spectra for the design of drilled shafts that support the seismic Category II portions of the Annex and Turbine Buildings.	3.7
LNP DEP 3.11-1. Departure revising the environmental zone numbers for Spent Fuel Pool Level instruments.	3.11
LNP DEP 6.2-1. Departure revising the ITAAC Acceptance Criteria for the in-containment PXS compartment vents to reflect the current plant configuration.[4]	21.4
LNP DEP 6.3-1. Departure to quantify the term "indefinitely" as used in the DCD for maintenance of safe shutdown conditions using the PRHR HX during non-LOCA accidents.	21.1
LNP 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."[4]	21.2

[4] These departures include revisions to either AP1000 Tier 1 information or generic TS and correspond to exemptions requested by the applicant.

Description of Departure	Location of Evaluation in this Report
LNP 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.[4]	21.3
LNP 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, "Standard Criteria for Safety Systems for Nuclear Power Generating Stations," in accordance with 10 CFR 50.55a(h), "Protection and safety systems."[4]	21.5
STD DEP 8.3-1. Departure for Class 1E voltage regulating transformer current limiting features.	8.3.2

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 Special Nuclear Material (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 Technical Specification (TS) Surveillance Requirement (SR) 3.5.4.7 related to Containment Cooling Changes in regard to Passive Core Cooling System Condensate Return	21.1
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)[5]	1.5.4

[5] Part 7 of the LNP 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.

- **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 SER and is withheld from the public in accordance with 10 CFR 73.21 and 10 CFR 73.22. A non-sensitive summary of the staff's evaluation of those plans is provided in Section 13.6 of this SER.

The staff's evaluation of the Special Nuclear Material (SNM) Physical Protection Plan is documented in Section 1.5.5.1 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 or fires is provided in Appendix 19A of this SER. 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 LNP Units 1 and 2 Cyber Security Plan is provided in Section 13.8 of this SER.

- **Part 10 Proposed Combined License Conditions and 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 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 LNP Units 1 and 2 COL application. Specifically, these enclosures include:

- Nuclear Development Quality Assurance Manual (NDQAM) – The NDQAM is the top-level policy document that establishes the QA policy and assigns major functional responsibilities for nuclear development activities conducted by or for DEF.

- 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) – The SUNSI version of this enclosure is provided in Part 9 of the application.

- Cyber Security Plan – The SUNSI version of the Cyber Security Plan is provided in Part 9 of the application.

- SNM Material Control and Accounting (MC&A) Program

- New Fuel Shipping Plan

- Supplemental Information in Support of 10 CFR Part 70, SNM License Application

Organization of the 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 SER 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 LNP 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 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 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 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 LNP COL FSAR Chapter 1

1.4.1 Introduction

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

- 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.

- Specific information relating to qualifications of the applicant, construction impacts, and regulatory considerations that applies throughout the balance of the application (e.g., conformance with the acceptance criteria in NUREG-0800).

This section of the SER 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 Chapter 1 of the LNP COL FSAR 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 SER section, but in subsequent sections as referenced below.

FSAR Section 1.1, Introduction

Section 1.1 of the LNP COL FSAR, Revision 9, incorporates by reference Section 1.1, "Introduction," of the AP1000 DCD, Revision 19 with the following supplements. In a letter dated April 19, 2011, the applicant endorsed a VEGP letter dated November 11, 2010, that added a discussion of incorporation of the proprietary information and safeguards information referenced in the AP1000 DCD.

- STD SUP 1.1-1

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

- LNP SUP 1.1-2

The applicant clarified that the FSAR was submitted to NRC by DEF 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."

- LNP COL 2.1-1

The applicant provided additional information in LNP COL 2.1-1 to address COL Information Item 2.1-1 (COL Action Item 2.1.1-1). Specifically, LNP Units 1 and 2 are to be located in Levy County, Florida approximately 9.6 miles northeast of the Crystal River Energy Complex. This is a brief introductory summary of the plant location. An expanded discussion of LNP COL 2.1-1 is included in LNP COL FSAR Section 2.1.

- LNP COL 1.1-1

The applicant provided the anticipated schedule for construction and operation of LNP Units 1 and 2 in LNP COL FSAR Table 1.1-203. The applicant committed to provide a site-specific construction plan and startup schedule after issuance of the COL.

- STD SUP 1.1-6

The applicant identified that, while the LNP 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 LNP COL FSAR Section 1.8 and Part 7 of the LNP 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 LNP 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 and 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 LNP COL FSAR. Proprietary and sensitive material was provided in Part 9 of the COL application.

- LNP SUP 1.1-5

The applicant provided additional information to identify acronyms and abbreviations used in the LNP COL FSAR that are in addition to the acronyms identified in the AP1000 DCD.

FSAR Section 1.2, General Plant Description

Section 1.2 of the LNP COL FSAR, Revision 9, incorporates by reference Section 1.2, "General Plant Description," of the AP1000 DCD, Revision 19 with the following departures and supplements:

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

The applicant provided additional information on the site plan for LNP Units 1 and 2 summarizing the principal structures and facilities, parking areas, and roads. The location and

orientation of the power block complex are also described. These COL information items are expanded in other sections of the LNP COL FSAR.[6]

FSAR Section 1.3, Comparisons with Similar Facility Designs

Section 1.3 of the LNP COL FSAR, Revision 9, incorporates by reference Section 1.3, "Comparisons with Similar Facility Designs," of the AP1000 DCD, Revision 19 with no departures or supplements.

FSAR Section 1.4, Identification of Agents and Contractors

Section 1.4 of the LNP COL FSAR, Revision 9, incorporates by reference Section 1.4, "Identification of Agents and Contractors," of the AP1000 DCD, Revision 19 with the following departures and/or supplements:

- LNP SUP 1.4-1

The applicant provided additional information to identify DEF as the COL applicant for LNP Units 1 and 2. Additionally, the applicant identified DEF as the owner and operator of LNP Units 1 and 2. DEF is a subsidiary of Progress Energy, Inc., which is a subsidiary of Duke Energy Corporation.

- LNP SUP 1.4-3

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

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

- CH2M Hill, Inc.
- Sargent & Lundy, LLC
- WorleyParsons Resources and Energy
- Westinghouse Electric Company, LLC

FSAR Section 1.5, Requirements for Further Technical Information

Section 1.5 of the LNP COL FSAR, Revision 9, incorporates by reference Section 1.5, "Requirements for Further Technical Information," of the AP1000 DCD, Revision 19 with no departures or supplements. This section of the 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 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.

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

FSAR Section 1.6, Material Referenced

Section 1.6 of the LNP COL FSAR, Revision 9, incorporates by reference Section 1.6, "Material Referenced," of the AP1000 DCD, Revision 19 with the following supplements:

- STD SUP 1.6-1

The applicant identified Table 1.6-201 as providing a list of the technical documents incorporated by reference in the LNP COL FSAR in addition to those technical documents incorporated by reference in the AP1000 DCD.

- LNP SUP 1.6-1

The applicant identified supplemental portions of Table 1.6-201 as site-specific and identified them as LNP SUP 1.6-1.

FSAR Section 1.7, Drawings and Other Detailed Information

Section 1.7 of the LNP COL FSAR, Revision 9, incorporates by reference Section 1.7, "Drawings and Other Detailed Information," of the AP1000 DCD, Revision 19, with the following supplements:

- LNP SUP 1.7-1

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

FSAR Section 1.8, Interfaces for Standard Design

Section 1.8 of the LNP COL FSAR, Revision 9, incorporates by reference Section 1.8, "Interfaces for Standard Design," of the AP1000 DCD, Revision 19 with the following departures and/or supplements:

- LNP DEP 1.8-1

The applicant provided a departure to address an error in the DCD Table 1.8-1 listing of plant interfaces where Item 13.1 incorrectly references Appendix O of 10 CFR Part 50. This departure is evaluated in Section 1.4 of this document.

- LNP SUP 1.8-1

The applicant identified departures in LNP COL FSAR Table 1.8-201, "Summary of FSAR Departures from the DCD." The departures are listed above in Table 1-1.

- LNP SUP 1.8-2

The applicant provided a list of the COL information items in the AP1000 DCD. In LNP COL FSAR Table 1.8-202, DEF provides the sections of the application addressing these issues.

The table further identifies each AP1000 COL item as an "applicant" item, a "holder" item, or both. An applicant item is completely addressed in the application. DEF'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.

- LNP SUP 1.8-3

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

FSAR Section 1.9, Compliance with Regulatory Criteria

Section 1.9 of the LNP COL FSAR, Revision 9, incorporates by reference Section 1.9, "Compliance with Regulatory Criteria," of the AP1000 DCD, Revision 19 with the following supplements:

- STD COL 1.9-1 and LNP COL 1.9-1

The applicant provided additional information related to NRC RGs cited in the LNP COL FSAR. Table 1.9-201 identifies the RG revision and provides LNP COL FSAR cross-references. In addition, Appendix 1AA, "Conformance with Regulatory Guides," was developed by the applicant to supplement the detailed discussion presented in Appendix 1A, "Conformance with Regulatory Guides," of the referenced DCD. Specifically, Appendix 1AA delineates conformance of design aspects as stated in the DCD and conformance with programmatic and/or operational issues as presented in the LNP COL FSAR. In certain RGs, design aspects were beyond the scope of the DCD and are presented in the LNP COL FSAR.

- STD COL 1.9-2 and LNP COL 1.9-2

The applicant provided additional information related to operational experience. LNP COL FSAR Table 1.9-204 provides a list of Bulletins and Generic Letters (GLs), the appropriate LNP 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 related to review of Unresolved Safety Issues and Generic Safety Issues (GSIs). Specifically, 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 and LNP SUP 1.9-1

The applicant provided additional information related to conformance with NUREG-0800. Specifically LNP 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 DCD as presented in the LNP COL FSAR.

- STD SUP 1.9-2

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

- STD SUP 1.9-3

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.”

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

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

- STD SUP 1.10-1

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 addresses the review of an evaluation of potential hazards to the SSCs important to safety of the 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 limiting conditions for operation (LCOs) are not exceeded as a result of construction activities at a multi-unit site.

- LNP SUP 1.10-1

The applicant identified that the power blocks for LNP Units 1 and 2 have a minimum separation of at least 900 feet between plant centerlines. The standard portion of the application discusses the primary consideration in setting this separation distance as 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 Appendix B of Part 10 of the LNP COL application 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 the Commission regulations for the introductory information in LNP COL FSAR Chapter 1 are given in Section 1.0 of NUREG-0800.

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

- 10 CFR 50.43(e), "Additional standards and provisions affecting class 103 licenses and certifications for commercial power," 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, which 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) requiring 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), "Issuance of combined licenses," 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 within 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 the applicant's 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.

In conformance with the regulatory acceptance criteria in RG 1.206 the applicant provided an evaluation for conformance with guidance in RGs in effect 6 months prior to the submittal of the COL application.

1.4.4 Technical Evaluation

The NRC staff reviewed Section 1 of the LNP COL FSAR 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.[7] The NRC 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 NRC staff's evaluation of the information incorporated by reference in the LNP COL application are documented in NUREG-1793 and its supplements.

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 (VEGP Units 3 and 4) were equally applicable to the LNP Units 1 and 2 COL application, the staff undertook the following reviews:

- The staff compared the VEGP COL FSAR, Revision 5 to the LNP COL FSAR. In performing this comparison, the staff considered changes made to the LNP 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.

[7] See Section 1.2.2, "Finality of Referenced NRC Approvals" 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.

The staff has completed its review and found the evaluation performed for the standard content to be directly applicable to the LNP 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 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 SER section have a LNP designation (e.g., LNP Confirmatory Item 1.4-1).

The staff reviewed the information in the LNP COL FSAR:

LNP COL FSAR Sections 1.1, 1.2, and 1.3

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

In LNP COL FSAR Section 1.1, LNP COL 1.1-1 states that a site-specific construction plan and startup schedule will be provided after issuance of the COL. This is identified as **LNP Commitment Number 1.4-1**.

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

> *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.*

In a letter dated June 3, 2014, the applicant notified NRC that the engineering, procurement, and construction (EPC) contract for LNP Units 1 and 2 had been terminated, and proposed language revising related information in FSAR Chapters 1 and 13. The staff verified that applicant incorporated these changes in Revision 7 of the LNP Units 1 and 2 COL application. In RAI Letter No. 123 dated October 17, 2014, the staff issued RAI 01.05-1 to confirm that, even without an EPC contract, the applicant had access to nonpublic information as stated above in the FSAR. The applicant responded in a letter dated January 22, 2015, describing another

agreement in place in which Westinghouse grants DEF the right to the nonpublic information for the life of the project, as stated in the FSAR.

LNP COL FSAR Section 1.4

- LNP SUP 1.4-1

This evaluation is limited to DEF'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 SER.

LNP COL FSAR Section 1.4 states that DEF will own and operate LNP Units 1 and 2. Part 1 of the COL application, Section 1.1.3, states that DEF, the applicant for the LNP 1 and 2 COLs, is primarily engaged in the generation, transmission, distribution, and sale of electricity in portions of central and north Florida. DEF serves approximately 1.7 million customers in a territory encompassing over 20,000 square miles, including the cities of Saint Petersburg, Clearwater, and areas surrounding Orlando. DEF owns and operates the Crystal River plant (permanent shutdown/retired). DEF is a regulated public utility, and is subject to the regulatory provisions of the Florida Public Service Commission, the NRC and the Federal Energy Regulatory Commission. In addition, the FSAR (Sections 1.4 and 13.1.1) states that Duke Energy Corporation, the ultimate corporate parent of DEF, has over 40 years of experience in the design, construction and operation of nuclear power stations, and currently has twelve nuclear operating units.

Because DEF has demonstrated its ability to build and operate a nuclear unit, the staff finds that DEF is qualified to hold a 10 CFR Part 52 license. The staff notes that Section 17.5 of the LNP COL FSAR discusses the QA program to be implemented at the receipt of the COL. The staff's evaluation of Section 17.5 of the LNP COL FSAR is in Section 17.5 of this SER. Based on DEF's experience with building and operating a nuclear power plant and the staff's evaluation of DEF's QA program, the staff finds that DEF is technically qualified to hold a 10 CFR Part 52 license in accordance with 10 CFR 52.97(a)(1)(iv).

LNP 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.

LNP 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.

LNP 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.

LNP COL FSAR Section 1.8

- LNP SUP 1.8-1

As discussed in SER Section 1.4.2, the applicant identifies departures in LNP COL FSAR Table 1.8-201 from the referenced AP1000 DCD and proposed additional departures. Section 1.3 of this SER provides a cross-reference to where these departures are discussed in this SER.

- LNP SUP 1.8-2

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

> *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.*

- LNP SUP 1.8-3

AP1000 DCD Table 1.8-1 presents interface items for the AP1000. This section of the DCD identifies certain interfaces with the standard design that have to be addressed in accordance with 10 CFR 52.47(a)(1)(vii).[8] As required by 10 CFR 52.79(d)(2), the COL application must demonstrate how these interface items have been met. In the LNP COL FSAR, the applicant did not explicitly identify how these interface items have been met. In a letter dated August 31, 2009, the applicant provided LNP COL FSAR Table 1.8-203, which explicitly identifies the FSAR location of information addressing the interface items identified in

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

Section 1.8 of the AP1000 DCD. The staff's review of the identified FSAR locations confirmed that interface items are adequately addressed in the LNP COL FSAR. The technical discussions related to specific interface requirements are addressed in related sections of this SER (e.g., SER Sections 8.2.4 and 11.3.2).

- LNP DEP 1.8-1

This Tier 2 departure, appearing in the FSAR Table 1.8-203 listing of AP1000 plant interfaces, corrects an error in 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 Appendix O of 10 CFR Part 50 to 10 CFR 52.137(a)(11). In issuing the final rule for 10 CFR Part 52 in the *Federal Register* (see 72 FR 49352; August 28, 2007), the requirement relating to providing this interface information was moved from Appendix O of 10 CFR Part 50 to a new location in 10 CFR 52.137 (see 72 FR 49391; August 28, 2007). 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.

LNP COL FSAR Section 1.9

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

The following portion of this technical evaluation section is reproduced from Section 1.4.4 of the VEGP FSER[9]:

> *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.*

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

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.

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 above. The staff considers Open Item 1.4-2 resolved for VEGP.

Evaluation of Site-Specific Information Related to Standard Content (LNP COL 1.9-1)

In comparing VEGP COL FSAR Table 1.9-201 and Appendix 1AA to the respective tables in the LNP COL FSAR, the staff notes that there are several differences. These differences are associated with site-specific information and are reflected in the LNP COL FSAR by a "LNP COL 1.9-1" designation. The staff reviewed the site-specific differences in Table 1.9-201 and Appendix 1AA and has determined that the LNP 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 Section 1.4.4 of the VEGP SER:

- *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 steamline 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.

- LNP SUP 1.9-1

LNP COL FSAR Table 1.9-202 contains both site-specific and standard information about the application's conformance with NUREG-0800. The technical discussions related to the specific acceptance criteria of NUREG-0800 are addressed in the related sections of the LNP 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 DCD is not incorporated into the LNP COL FSAR; but is addressed in the LNP 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.

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

- *STD SUP 1.9-3*

This COL supplemental item is addressed as VEGP SUP 8.1-2 [LNP SUP 8.1-3] *in SER Section 8.1*.

LNP COL FSAR Section 1.10

In this section of the application, the applicant provides 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).

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

- *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.

- LNP SUP 1.10-1

The supplemental information states that the power blocks for LNP Units 1 and 2 have a minimum separation of at least 900 feet between plant centerlines and notes that SSCs important to safety are described in LNP COL FSAR Chapter 3 and the LCOs for LNP Units 1 and 2 are identified in Part 4 of the COL application. In the standard portion of LNP COL FSAR Section 1.10, there is a discussion that the primary consideration in setting the 900-foot 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 resolution of Open Item 1.4-3.

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

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 applicant and was discussed at a public meeting on August 26, 2010.

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 structures, 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:

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 to 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

For the reasons discussed in the technical evaluation section above, the following FSAR commitment is identified as the responsibility of the licensee:

- **LNP Commitment Number 1.4-1** - A site-specific construction plan and startup schedule will be provided after issuance of the COL.

1.4.6 Conclusion

The NRC staff reviewed the application and checked the referenced DCD. The NRC staff's review confirmed that the applicant addressed the required information relating to principal review matters, and there is no outstanding information expected to be addressed in the LNP COL FSAR related to this section. The results of the NRC staff's technical evaluation of the information incorporated by reference in the LNP 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:

Merger of Progress Energy with Duke Energy Corporation

On July 2, 2012, a merger occurred between Duke Energy Corporation (Duke) and Progress Energy Inc., the holding company of PEF. On February 6, 2013, PEF filed amended articles of incorporation with the Florida Department of State to change its corporate name to Duke Energy Florida, Inc. This name change became effective on April 29, 2013. Through this merger and subsequent name changes, Duke became the ultimate holding company of Progress Energy Inc. Progress Energy, Inc. continues to be the parent of Florida Progress Corporation, which is the direct parent of DEF. Following the July 2012 merger, Duke, the holding company and ultimate parent of DEF, is now the largest electric power holding company in the United States with more than $100 billion in total assets.

Duke Energy Florida, LLC

DEF, a subsidiary of Duke, is primarily engaged in the generation, transmission, distribution, and sale of electricity in portions of central and north Florida. DEF serves approximately 1.7 million customers in a territory encompassing over 20,000 square miles, including the cities of St. Petersburg, Clearwater, and areas surrounding Orlando. The address of the applicant is Duke Energy Florida, LLC, 299 First Avenue North, St. Petersburg, FL 33701. DEF is a corporation organized and existing under the laws of the State of Florida. DEF owns and operates Crystal River Nuclear Plant Unit 3, now in permanent shutdown mode, located near Crystal River, Florida, on a site that also includes four coal-fired generating units.

REGULATORY EVALUATION:

DEF's request (formerly a request by PEF) for the NRC to issue two COLs pursuant to Section 103 of the Atomic Energy Act of 1954, as amended, is subject to, among other things, the requirements of 10 CFR Part 52, Subpart C; 10 CFR Part 50; and 10 CFR Part 140. This SER reviews the following areas: financial qualifications, decommissioning funding assurance, antitrust, foreign ownership control or domination, and nuclear insurance and indemnity.

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.

Construction Cost Estimate:

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 has been 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 or an explanation given as to any departure therefrom.

In accordance with 10 CFR 50.33(f) and 10 CFR Part 50, Appendix C, DEF has estimated the construction costs for the two proposed units at the LNP site (LNP Units 1 and 2), which is provided in Part 9 of the LNP COL application. The costs are based upon a construction period for the project beginning in the third quarter of 2016 and ending with Unit 1 commercial operation in the third quarter of 2023, and Unit 2 commercial operation in the first quarter of 2025.

In its application, DEF described the basis for the foregoing cost estimate. DEF stated that the estimate was derived from the current LNP Total Project Cost analysis developed using cost estimates based on the best available information from internal and external sources for all aspects of plant costs. The estimate is consistent with the Florida Public Service Commission (FPSC) filing submitted on April 30, 2012, by DEF. LNP is expected to operate at an estimated gross electrical power output of approximately 2234 MWe (1117 MWe per unit).

The NRC staff reviews studies from independent sources and collects projected construction cost estimates from all COL applications, as they are submitted, for comparison and reasonableness.[10] According to these sources, the cost of constructing a plant comparable to LNP Units 1 and 2 ranges from approximately $3,221/kilowatt electric (kWe) to $5,072/kWe

[10] The staff's consideration of the cost information submitted by the applicant focused on the estimated production plant cost and cost of fuel. Cost estimates provided by the applicant were presumed to be true and accurate under 10 CFR 50.9, "Completeness and accuracy of information," and no further assessment of that estimate was performed.

(Massachusetts Institute of Technology [MIT] Study) installed.[11] Based, in part, on information provided by the applicant, staff independently calculated DEF's overnight cost per unit to be approximately $6,461,500,000. This is above the range derived from the studies developed from independent sources, and is also greater than construction cost estimates reviewed to date for comparable plants. In addition, based on estimated electrical power output of 1117 MWe per unit as reported by the applicant, staff independently calculated the construction cost of each LNP unit to be approximately $5,785/kWe. This value is derived by dividing the overnight cost per unit by the MWe output per unit. This value is also above the maximum construction cost per unit kilowatt electric cited above. Accordingly, based on data from independent sources and staff's analyses, the NRC staff finds DEF's overnight cost estimate to be reasonable.

Sources of Construction Funds:

Pursuant to 10 CFR Part 50, Appendix C, Section 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.

According to the COL application, in 2006, Florida enacted legislation that included cost recovery mechanisms supportive of nuclear plant investment. In 2007, the FPSC approved a new rule that allowed PEF to recover prudently incurred siting and preconstruction costs, and allowance for funds used during construction (AFUDC) on an annual basis through the capacity cost-recovery clause. The nuclear cost recovery rule also allows recovery of costs should a project be abandoned once the utility receives a final order granting a Determination of Need.

According to the COL application, DEF expects to finance this project through a combination of debt and equity in a manner that will support its investment grade credit ratings. The equity will come from DEF's retained earnings and equity contributions from Duke, as needed to maintain appropriate capital structures. Accordingly, the staff concludes that both DEF and Duke have sufficient financing capacity to fund this project from a number of sources: internally generated operating cash flows, commercial paper and bank facilities, and access to long-term debt and equity capital markets.

Financial Qualifications

Pursuant to 10 CFR Part 50, Appendix C, Section 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

[11] The 2009 update to the MIT interdisciplinary study entitled "The Future of Nuclear Power."

> all pertinent notes thereto and certification by a public accountant should be furnished.

Duke Energy Florida, LLC

DEF provided, at the time of application, financial statements filed with the Securities and Exchange Commission (SEC). Following the Duke Energy Corporation and Progress Energy 2012 merger, Duke Energy Corporation filed with the SEC a combined Form 10-Q which reflected financial information for DEF. Combined financial statements for Duke and DEF can be found at the SEC web site or by link through Duke's web site at:

http://www.duke-energy.com/investors/financials-sec-filings.asp?company=all

Prior to the 2012 merger and 2013 name change, PEF submitted, pursuant to 10 CFR Part 50, Appendix C, Section I.A.3, annual financial statements. Additionally, updated financial information was submitted to the NRC on December 7, 2015 (ADAMS Accession Nos. ML15349A770 and ML15349A100). The NRC staff performed an independent review of the applicant's December 7, 2015, financial information submittals and did not identify anything in DEF's, Duke's, or Progress Energy's, financial statements, submitted or otherwise, that warranted further inquiry.

In consideration of the foregoing, the NRC staff finds that the applicant has demonstrated it possesses or has reasonable assurance of obtaining the funds necessary to cover estimated construction costs and related fuel cycle costs. Therefore, the NRC staff finds that the applicant is financially qualified to construct the facilities.

Operating License

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

> If the application is for a combined license under subpart C of 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.

As previously discussed, Duke is a holding company that owns regulated and non-regulated subsidiaries, including DEF. DEF, the applicant for the proposed LNP 1 and 2 COLs, is primarily engaged in the generation, transmission, distribution, and sale of electricity in portions of central and north Florida. DEF is a regulated public utility, and is subject to the regulatory provisions of the Florida Public Service Commission, the NRC and the Federal Energy Regulatory Commission. DEF recovers the cost of electricity through rates established by the Federal Energy Regulatory Commission or the Florida Public Service Commission.

In consideration of the foregoing, the NRC staff finds that DEF is an electric utility and exempt from providing financial qualification information related to operating cost recovery. Because it is an electric utility, DEF is 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 § 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)).

Decommissioning Funding Estimate:

LNP is a two-unit PWR site that is incorporating by reference the Westinghouse AP1000 certified design, as documented in the referenced DCD including any supplemental material.

In its December 7, 2015, submittal to the NRC, DEF stated that it will provide decommissioning funding assurance in an amount of $373.4 million (2007 dollars) per unit. The NRC staff independently calculated the minimum funding acceptable under 10 CFR 50.75(c), and found the applicant's amounts to be consistent with staff's calculation and therefore acceptable.

Decommissioning Funding Mechanism:

DEF stated in the application that it would use an external sinking fund as the method to provide decommissioning funding assurance. Under 10 CFR 50.75(e)(1)(ii), an external sinking fund may be used as an exclusive method by a:

> . . . licensee that recovers, either directly or indirectly, the estimated total cost of decommissioning through rates established by 'cost of service' or similar ratemaking regulation.

The NRC staff will verify the acceptability of the decommissioning funding mechanism and prospective financial instrument in the future consistent with the schedule set forth in 10 CFR 50.75(e)(3) for the submission of reports by a holder of the COL.

Therefore, at this time, the NRC staff finds that DEF has complied with the applicable decommissioning funding assurance requirements.

ANTITRUST REVIEW:

The Energy Policy Act of 2005 (EPAct) removed the antitrust review authority in Section 105.c of the Atomic Energy Act of 1954 (AEA), as amended, regarding license applications for production or utilization facilities submitted under Sections 103 or 104.b 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 COL application.

FOREIGN OWNERSHIP, CONTROL, OR DOMINATION:

Section 103 of the AEA prohibits the Commission from issuing a license for a nuclear power plant under Section 103 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 50.38, "Ineligibility of certain applicants," is the regulatory provision that implements this statutory prohibition.

DEF is a corporation organized and existing under the laws of the State of Florida and is a wholly-owned subsidiary of Florida Progress Corporation. Progress Energy and Duke Energy Corporation merged on July 2, 2012. Following the merger, Duke Energy Corporation became the ultimate holding company of Progress Energy, Inc., and Progress Energy, Inc., continues to be the parent of Florida Progress Corporation, which is the direct parent of DEF. Duke Energy Corporation is the ultimate parent of DEF.

By letter dated December 7, 2015 (ADAMS Accession ML15349A100, Duke Energy Corporation notified the NRC of its corporate name change from a "corporation" to an "LLC", as well as changes to its Board of Directors, executive officers, and senior nuclear leadership team. The COL application includes the names and addresses of the directors and officers of Duke Energy Corporation and indicates that all are United States citizens. According to the COL application, neither Duke Energy Corporation, Progress Energy, Inc., Florida Progress Corporation, nor DEF are owned, controlled, or dominated by any alien, foreign corporation, or foreign government. The COL application was originally filed by PEF on its own behalf and not as an agent or representative of any other person.

As described above and in the application there is a Board of Directors for Duke Energy. There is also a separate Board of Directors for DEF. The business of DEF is conducted by its own Board of Directors, although for internal governance purposes, the Duke Energy Corporation Board of Directors also has approval authority over certain types of transactions. All members of the senior management and the Board of Directors for Duke Energy Corporation and for DEF are United States citizens. Staff conducted an independent analysis, including open-source research and verification of the information provided in the application and found no evidence of foreign ownership, control, or domination.

Based on its review, the NRC staff does not know or have reason to believe that Duke Energy Corporation or any of its subsidiaries, including DEF, are foreign owned, controlled, or dominated.

NUCLEAR INSURANCE AND INDEMNITY:

This section of the SER addresses the applicant's offsite and onsite insurance requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) 140.11(a)(4) and 10 CFR 50.54(w), as well as the requirements of 10 CFR 140.21, "Licensee guarantees of payment of deferred premiums," and 10 CFR 140.20, "Indemnity agreements and liens."

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 require, in part, each holder of a license issued pursuant to 10 CFR Part 50 or 10 CFR Part 52 to have and maintain financial protection. Under these regulations, DEF is required to provide satisfactory documentation that it has obtained financial protection required by 10 CFR 140.13, "Amount of financial protection required of certain holders of construction permits and combined licenses under 10 CFR Part 52," 10 CFR 140.11(a)(4), at least the amount of financial protection required by 10 CFR 50.54(w), and evidence that it maintains a guarantee of payment of deferred premiums pursuant to 10 CFR 140.21. In addition, as required by 10 CFR 140.20, DEF will enter into an agreement of indemnity with the NRC.

The requirements in 10 CFR 140.13 provide the amount of financial protection required by a license holder, who also holds a license under 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," during the period of construction and before the Commission makes the finding under 10 CFR 52.103(g) (i.e., a finding that a nuclear reactor is authorized to initially load fuel and operate). Because the Part 70 license will be issued with the COL, DEF 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. By letter dated May 1, 2015 (ADAMS Accession No. ML15126A181), DEF's insurance broker, Marsh USA, Inc., provided proof of insurance coverage from American Nuclear Insurers in the amount of $1,000,000. On January 19, 2016, DEF supplemented this submittal with a certificate of insurance that reflects updated insurance coverage for 2016. DEF's $1,000,000 insurance policy will remain in effect until the 52.103(g) finding. Therefore, the staff concludes that the proof of financial protection provided by DEF will satisfy the requirements in 10 CFR 140.13.

The staff notes that although licensees of large operating reactors under Parts 50 and 52 must have and maintain financial protection upon NRC action authorizing operation, the timing provisions for reporting under 10 CFR Part 140 and 10 CFR Part 50 are not the same as for Part 52 licenses; these regulations do not specifically address the Part 52 process. Thus, under

the requirements in 10 CFR 140.11(a)(4), 10 CFR 50.54(w), and 10 CFR 140.21, the NRC staff notes that coverage for offsite and onsite insurance, and the guarantee of payment of deferred premiums, are only required for reactors authorized to load fuel and operate. Under the Part 52 COL process, this is the time period beginning once the 52.103(g) finding has been made by the Commission, which also authorizes a licensee to load fuel and operate. Therefore, these requirements will be deferred until the date that the 52.103(g) finding has been made by the Commission. This time period is consistent with the time period under Part 50 for which an operating license has been granted. As such, the staff proposes the following license conditions to meet the requirements in 10 CFR 140.11(a)(4), 10 CFR 50.54(w), and 10 CFR 140.21.

The staff proposes the following license condition to address the deferred reporting of 10 CFR 140.11(a)(4) requirements for primary and secondary financial protection, and the deferred reporting of 10 CFR 50.54(w) requirements for onsite financial protection:

> License Condition (1-1) - Before the scheduled date for initial fuel load, DEF 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 financial protection (insurance) required of licensees pursuant to 10 CFR Part 140 and 10 CFR 50.54(w).

With the license condition as described above, the staff finds that DEF will satisfy the requirement of 10 CFR 140.11(a)(4) and 10 CFR 50.54(w).

The staff proposes the following license condition to address the deferred reporting of 10 CFR 140.21 for guarantee of payment of deferred premiums:

> 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*, the licensees shall provide evidence to the NRC that they 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) 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.

With the license condition as described above, the staff concludes that DEF will satisfy the requirement in 10 CFR 140.21. Thereafter, the licensee shall provide evidence of the guaranteed payment of deferred premiums in accordance with the timing provisions specified in 10 CFR 140.21.

For these two license conditions, the staff notified the applicant of the above-proposed language, and the applicant accepted the license conditions (ADAMS Accession No. ML16084A126).

As required by 10 CFR 140.20, the Commission will enter into an indemnity agreement with DEF concurrent with the issuance of a license (issued under 10 CFR Part 70) authorizing the licensee to possess and store special nuclear material at the site of the nuclear reactor after issuance of an operating license. This agreement will also address indemnity as described in 10 CFR 140.92, "Appendix B – Form of indemnity agreement with licensees furnishing insurance policies as proof of financial protection," between the period when the 10 CFR Part 70 license is issued and the time the 52.103(g) finding has been made by the Commission.

CONCLUSION:

Based on the foregoing, and the updated information provided to the NRC on December 7, 2015, the NRC staff finds that there is reasonable assurance that DEF is financially qualified to engage in the proposed activities regarding LNP Units 1 and 2, as described in the application, and that there are no decommissioning funding assurance, foreign ownership, control, or domination, or nuclear insurance and indemnity issues.

1.5.2 Nuclear Waste Policy Act

Section 302(b) of the Nuclear Waste Policy Act of 1982, as amended, states, "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."

In a letter dated February 4, 2009, the applicant stated that on December 18, 2008, it signed contracts with the U.S. Department of Energy (DOE) establishing the terms and conditions applicable to the DOE's responsibility for disposal of spent nuclear fuel and high-level radioactive waste generated at the proposed LNP Units 1 and 2. The DOE contract numbers referenced in the letter are DE-CR01-09RW09019 for LNP Unit 1 and DE-CR01-09RW09020 for LNP Unit 2.

Because Progress Energy has entered into contracts with the DOE for the disposal of high-level radioactive waste and spent nuclear fuel for LNP Units 1 and 2, the staff considers that the applicable requirements of Section 302(b) of the Nuclear Waste Policy Act of 1982 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 Section 657 of the *Energy Policy Act of 2005*, the NRC consulted with the Department of Homeland Security (DHS) with respect to the PEF COL application for LNP Units 1 and 2. Between February 17, 2009, and February 19, 2009, DHS conducted a site visit and was accompanied by NRC staff (ADAMS Accession No. ML091950039). On August 31, 2009, NRC issued a DHS consultation report regarding the DHS site visit with the

applicant (ADAMS Accession No. ML091960397). The DHS report concludes that the applicant and the NRC staff have satisfied 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 10 CFR 50.43(a), on December 15, 2011, the NRC notified the Public Service Commission of Florida of the LNP COL application (ADAMS Accession No. ML112521258). In addition, in November and December 2008, the NRC published notices of the application in *The Newscaster/Nature Coast News*, the *Ocala Star Banner*, the *Levy County Journal*, and the *Citrus County Chronicle*. In accordance with Section 182c., the staff also published a notice of the 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 completion of notifications to regulatory agencies and the public notices described above, the staff concludes that, for the purposes of issuing COLs for LNP 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 Numbering in the Application and Exemption Associated with Special Nuclear Material Control and Accounting Program

Evaluation of Departures and Exemption Associated with Numbering in the Application

In STD DEP 1.1-1, the applicant renumbered LNP COL FSAR sections to include content consistent with RG 1.206 and NUREG-0800. The departure and the exemption associated with the numbering scheme of the FSAR are closely related. The departure provided in Part 7 of the COL application provides the specific sections of the LNP COL FSAR that deviate from the DCD numbering scheme.

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 Part 7, "Departures and Exemptions," of the LNP COL application, the applicant states 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 NRC review. The applicant states that the subject deviations are considered 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 DC rule, then the Commission may grant the exemption if the exemption complies with the appropriate change provision in the referenced DC 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 DC 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 DC 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 DC 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 DC information (e.g., Tier 1 and Tier 2) that is incorporated by reference in the DCRs," (72 FR 49444; August 28, 2007). 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.

Because there is not an applicable change provision in the referenced DC, 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) to be acceptable for the review of the exemption related to STD DEP 1.1-1.

Pursuant to the exemption described above, the NRC staff has reviewed the exemption related to STD DEP 1.1-1 to determine whether it meets the requirements in 10 CFR 52.7. This exemption would allow the applicant to provide an FSAR with numbering and topics more closely related to NUREG-0800 and RG 1.206, and 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 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 LNP COL FSAR to be acceptable.

Exemption Associated with Special Nuclear Material Control and Accounting Program

In a letter dated April 19, 2011, 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; 10 CFR 74.41; or 10 CFR 74.51[12]. 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 as required under 10 CFR Part 74 Subparts C through E and to request Commission approval prior to implementing program changes. 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 applicant stated that 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 applicant stated that 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 Parts 70 and 74, respectively. Therefore, by demonstrating that the exemption criteria in 10 CFR 50.12 are satisfied, 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 applicant stated that the subject exemption would allow nuclear reactors licensed under 10 CFR Part 52 to be explicitly excepted 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 *Federal Register* 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 Parts 70 and 74). In particular, the exception for nuclear reactors licensed under

[12] 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.

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.

In addition, pursuant to 10 CFR 74.7, 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 NRC 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 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 PEF's letter transmitting Revision 2 of the COL application, dated October 4, 2010, and in Part 1, "General and Financial Information," of the application, PEF 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 COL encompass those

necessary to support granting 10 CFR Parts 30, 40, and 70 licenses. In this respect, the 10 CFR Part 52 COLs for LNP 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 LNP COL as would relate to authorization pursuant to the regulations in 10 CFR Parts 30, 40, and 70[13]:

> Subject to the conditions and requirements incorporated herein, the Commission hereby licenses DEF:
>
> (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

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

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 LNP 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")

- Physical Protection 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 a letter dated April 19, 2011, the applicant proposed to revise the LNP COL FSAR Table 13.4-201 to add information (milestones and requirements) related to the SNM MC&A program. In addition, as documented in the Table 1-3, the LNP applicant endorsed VEGP standard content letters related to this subject.

Table 1-3. LNP COL Applicant Endorsements of VEGP COL Standard Content Letters

VEGP Letter Date	VEGP Letter ADAMS Accession Number	LNP Endorsement Letter Date	LNP Letter ADAMS Accession Number
July 9, 2010	ML101940025	September 23, 2011	ML102740219
July 29, 2009	ML092120064	December 7, 2009	ML093450351
October 15, 2010	ML102920120	April 19, 2011	ML11111A125
November 23, 2010	ML103300034	April 19, 2011	ML11111A125
March 3, 2011	ML110660153	April 19, 2011	ML11111A125
March 16, 2011	ML110800088	April 19, 2011	ML11111A125
March 16, 2011	ML110770137	April 19, 2011	ML11111A125
May 6, 2011	ML11129A155	July 28, 2011	ML11213A096
June 22, 2011	ML11175A169	July 28, 2011	ML11213A096

These letters identify the portions of the LNP COL application that satisfy the basis for meeting the requirements of 10 CFR Parts 30, 40, 70, and 74. In addition, in a letter dated April 19, 2011, 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. This exemption request is addressed in Section 1.5.4 of this SER.

Additionally, in a letter dated November 20, 2014, submitted in response to RAI Letter No. 120 dated July 2, 2014, the applicant provided a revised physical protection program for SNM possessed onsite prior to establishment of a protected area per 10 CFR 73.55 to meet the requirements of 10 CFR 73.67.

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 (VEGP Units 3 and 4) were equally applicable to the LNP Units 1 and 2 COL application, the staff undertook the following reviews:

- The staff compared the VEGP COL FSAR, Revision 5 to the LNP COL FSAR. In performing this comparison, the staff considered changes made to the LNP 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 confirmed that the April 19, 2011, LNP submittal endorses the SNM MC&A Program description submitted by Southern Nuclear Operating Company (SNC) in a letter dated November 23, 2010.

- The staff confirmed that the July 28, 2011, LNP submittal endorses the VEGP New Fuel Shipping Plan submitted by SNC in a letter dated May 6, 2011.

- The staff confirmed that the supplemental information in support of 10 CFR Part 70 SNM license application found in Part 11 of the VEGP COL application is identical to the material found in Part 11 of the LNP COL application.

- The staff verified that 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 incorporation of the LNP SNM MC&A Program description, the SNM physical protection plan (SNMPPP), and the new fuel shipping plan into the LNP COL application is **LNP Confirmatory Item 1.5-1**.

Resolution of LNP Confirmatory Item 1.5-1

Confirmatory Item LNP 1.5-1 is an applicant commitment to revise the LNP COL application to include the LNP SNM MC&A Program description, the SNMPPP, and the new fuel shipping plan. For the SNM MC&A Program description and the new fuel shipping plan, the staff verified that the LNP COL application was appropriately revised. For the SNMPPP, the applicant submitted a revised plan, as described above. The staff review of the revised plan appears below, following the review of the standard content material. As a result, Confirmatory Item LNP 1.5-1 is now closed.

The staff has completed its review and found the evaluation performed for the standard content to be directly applicable to the LNP COL application, with the site-specific exceptions noted. 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.

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

> *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 [Part 11 of the LNP COL 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 1.5-3 stating that no SNM onsite will exceed a 10-percent uranium-235 isotope enrichment level, the applicant updated its COL application to include Part 11F, "Supplemental Information of 10 CFR Part 70 Special Nuclear Material License Application" acknowledging that LNP 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 Section 1.5.5 of the VEGP SER:

> *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.*

Resolution of Standard Content Confirmatory Item 1.5-2

Confirmatory Item 1.5-2 is an applicant commitment to revise 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) [Part 11 of the LNP COL application] *of its application were appropriately revised. As a result, Confirmatory Item 1.5-2 is now closed.*

The following portion of this technical evaluation section is reproduced from Section 1.5.5 of the VEGP SER. Portions of the standard content review addressing SNM physical protection superseded by the staff's review of additional site-specific information have been deleted from the standard content review appearing below. The staff review of the additional site-specific information, including a revised SNMPPP appears below following the review of the standard content material.

Security Review for 10 CFR Part 70 Materials

[Standard content deleted as noted above]

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.

[Standard content deleted as noted above]

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 E) are appropriately updated.

[Standard content deleted as noted above]

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.

[Standard content deleted as noted above]

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: LNP COL FSAR Section 1.4.1 has a similar discussion regarding the applicant's operation of its other nuclear power plants. The staff's evaluation of the technical qualifications of the applicant appears in Section 13.1 of this SER. As discussed in Section 1.4 of the SER, the staff also concludes the applicant is technically qualified to engage in the proposed activities associated with this license based on the applicant's on-going experience with the safe operation of its other nuclear power plants. In addition, Section 1.5.1 of this report finds that the financial qualifications for the LNP COL application are acceptable.

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

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).

<u>Emergency Plan (SNM, Fuel, and Non-Fuel)</u>

The applicant will be storing the new fuel in the new fuel racks (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 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 site PSP.

1.5.5.1.2 Summary of Application

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 5.66, "Access Authorization Program for Nuclear Power Plants," Revision 1, July 2009 (Official Use Only – Security-Related Information)
- 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).
- 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. Regulatory Guide 5.59 (1983)."

1.5.5.1.4 Technical Evaluation

The staff performed a technical evaluation of the LNP Units I and 2 COL application 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. In addition, the staff requested information related to how the applicant addressed the post September 11, 2001, security order measures for SNM of low strategic significance (nonpublic). The staff sent a letter conveying the order measures on July 2, 2014, (ADAMS Accession No. ML141813240) and the safeguards information containing orders were sent under separate cover (Safeguards Lan Electronic Safe (SLES) Accession No. NS113122). A technical evaluation of how the order measures were addressed was also performed. The applicant submitted a letter on November 20, 2014, that 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. ML14325A657).

1.5.5.1.4.1. Fixed Site General Performance Objectives

The applicable physical protection 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 performance objectives for fixed sites.

The physical protection requirements of 10 CFR 73.67(a)(1), stated, "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 LNP 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 states in the "Implementation Milestone" column of FSAR Table 13.4-201 under Item 15 (ADAMS Accession No. ML14258A229) its commitment to meet the requirements of 10 CFR 73.67 "[p]rior to initial receipt of special nuclear material." Establishment of the physical protection system is outlined in the SNMPPP, Revision 1, dated September 2014 (SLES Accession No. NS113156 (nonpublic)). Specifically, Section 4.4.1 "Establishment of the Physical Protection System," describes 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, Section 4.4.2, "Maintenance of the Physical

protection System," of the SNMPPP contains an explanation of the maintenance that will be applied to the physical protection system.

The DEF application states that 10 CFR 73.67 will be fully implemented before SNM is onsite. Also, the application outlined establishment and maintenance elements for the physical protection system. The establishment of physical protection elements is sufficient because before the physical protection infrastructure will be considered operational: 1) the lighting necessary for human detection through visual observation will be tested and confirmed as adequate, 2) visual assessment systems will be tested as functioning as necessary to support security operations, 3) alarm stations will be validated as having the ability to adequately support physical security activities for the protection of the SNM of low strategic significance, 4) communication technologies that are to be relied upon to enable the physical security strategy to operate effectively will be tested and confirmed to allow for intelligible voice interfaces, 5) the means of access control will be tested for its performance to support the physical security strategy, and 6) the physical barriers that provide containment of the SNM of low strategic significance will be inspected to ensure a comprehensive impediment to personnel entry is in place. The development of a maintenance program for the six physical protection elements established is committed to in the application. In addition, the application states that the maintenance program will have periodicity of maintenance configured for each of the six physical protection system elements that is commensurate with each of the elements' intended function. Therefore, the staff finds that 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 states in the "Implementation Milestone" column of FSAR Table 13.4-201 under Item 15 its commitment to meet the requirements of 10 CFR 73.67, "[p]rior to initial receipt of special nuclear material." In addition, the SNMPPP describes in Section 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 explaining how the physical protection system will work to meet the requirement. In addition, the SNMPPP within Section 5.3.2, "Monitoring SNM (New Fuel Assemblies)," describes adversary scenarios applied to SNM reactor fuel and explains how the physical protection system will work to meet this requirement as well.

The DEF application states that 10 CFR 73.67 will be fully implemented before SNM is delivered. In addition, its SNMPPP describes how the possibilities for unauthorized removal are minimized in ways consistent with the consequences of such actions. The application describes potential adversarial scenarios for all activities involving SNM of low strategic significance and highlights how the six physical protection system elements work in a coordinated fashion to adequately minimize the risk of theft of the materials. Therefore, the staff finds that 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 SNM in ways 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 states in the "Implementation Milestone" column of FSAR Table 13.4-201 under Item 15 its commitment to meet the requirements of 10 CFR 73.67, "[p]rior to initial receipt of special nuclear material." 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 SNM.

The DEF application states that 10 CFR 73.67 will be fully implemented before SNM is delivered. In addition, its SNMPPP describes the detection, assessment and response attributes of the physical protection system that would facilitate the location and recovery of missing SNM. The application explicitly points out how the planned-for detection and assessment physical protection system elements function to provide adequate detection and assessment of malevolent activities in order to initiate a specific response that would enable the location and recovery of SNM of low strategic significance. Scenarios that depict adversary actions, operation of physical security system elements, and security force response activities provide assurance that the requirement of 10 CFR 73.67(a)(1)(ii) would be met. Therefore, the staff finds that 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 SNM) 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 the "Implementation Milestone" column of FSAR Table 13.4-201 under Item 15 its commitment to meet the requirements of 10 CFR 73.67, "[p]rior to initial receipt of special nuclear material." In addition, its SNMPPP in Sections 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 SNM.

The DEF application states that 10 CFR 73.67 will be fully implemented before SNM is delivered. In addition, their SNMPPP describes the physical protection strategies for early detection and assessment to address unauthorized access or activities by an external adversary within the controlled access area containing SNM. These physical protections strategies are consistent with staff guidance in RG 5.59. 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 SNM) 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 states in the "Implementation Milestone" column of FSAR Table 13.4-201 under Item 15 its commitment to meet the requirements of 10 CFR 73.67, "[p]rior to initial receipt of special nuclear material." In addition, its SNMPPP in Sections 5.3.1 and 5.3.2 describes how the physical protection system provides early detection of removal of SNM by an external adversary from a controlled access area.

The DEF application states that 10 CFR 73.67 will be fully implemented before SNM is delivered. In addition, its SNMPPP describes the physical protection strategies for early detection and assessment to address removal of SNM by an external adversary from a controlled access area. These physical protections strategies are consistent with staff guidance in RG 5.59. Therefore, the staff finds that the requirement of 10 CFR 73.67(a)(2)(ii) (to have a physical protection system that provides early detection of removal of SNM 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 states in the "Implementation Milestone" column of FSAR Table 13.4-201 under Item 22 its commitment to meet the requirements of 10 CFR Part 74, "Material Control and Accounting of Special Nuclear Material" "[p]rior to receipt of special nuclear material" as a license condition. Also, the applicant states in Part 11D of the COL application, "Special Nuclear Material (SNM) Material Control and Accounting Program Description," (ADAMS Accession No. ML14258A226) that the applicant will establish, a "…SNM control and accounting system… including…internal control, physical inventory, and shipment of SNM."

In addition, the applicant describes in its SNMPPP in Sections 5.1.1, "Receipt of Non-Fuel SNM," 5.1.2, "Receipt of SNM - Fuel Assemblies/Fuel Components," (pertaining to fuel SNM), and 5.8, "Internal Transfers," material control and accounting (MC&A) measures specific to the non-fuel and fuel SNM, respectively.

The DEF application states that the appropriate provisions of 10 CFR Part 74 will be fully implemented before SNM is received. The application also states that: 1) notification will be made to the shipper upon receipt of the SNM of low strategic significance; 2) an investigation will be initiated as required per 10 CFR 73.67 and 10 CFR74.11 if the shipment is not received as scheduled; 3) the NRC Operations Center will be notified within an hour after assessing that a shipment has not arrived and/or within an hour of SNM of low strategic significance recovery; 4) the licensee will conduct an inspection of tamper seal devices on containers of SNM of low strategic significance after accessing the shipment conveyance that has been received at the nuclear reactor facility; and 5) the licensee will verify that the shipment is consistent with the shipment's manifest in regard to identification markings and numbers of SNM containers. The applicant has described in their SNMPPP how specific MC&A measures apply to meet this general performance objective; therefore, the staff finds

that the requirement of 10 CFR 73.67(a)2(iii) (to assure proper placement and transfer of custody of SNM) 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 states in the "Implementation Milestone" column of FSAR Table 13.4-201 under Item 15 its commitment to meet the requirements of 10 CFR 73.67, "[p]rior to initial receipt of special nuclear material." In addition, its SNMPPP in Section 5.10, "Contingency Response," 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 the local law enforcement (LLEA) agency, etc.) was pointed out in the SNMPPP by citing Section 8, "LOCAL LAW ENFORCEMENT LIASON," of the reactor PSP, Revision 4, dated June 3, 2011 (SLES Accession No. NS108206), and Sections 5.6, "LOCAL LAW ENFORCEMENT AGENCIES (LLEA)," 5.7, "STATE RESPONSE ACTIONS," and 5.8, "FEDERAL RESPONSE ACTIONS," of the reactor Contingency Plan, Revision 4, dated June 3, 2011 (SLES Accession No. NS108206).

The DEF application states that 10 CFR 73.67 will be fully implemented before SNM is delivered. In addition, its SNMPPP describes the early detection, assessment, and response physical protection strategies that would facilitate recovery of missing or stolen SNM. Specifically, the applicant described in the SNMPPP detection, assessment, communication, and response scenarios associated with all locations of SNM of low strategic significance. In addition, the response protocols described are consistent with both RG 5.59 and the response measure criteria in the post September 11, 2001, SNM of low strategic significance security order. Therefore, the staff finds that 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 SNM 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 three 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 three 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 three years. . ." "Copies of the superseded material must be retained for three 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 SNMPPP describes the required retention parameters for the SNMPPP and changes to it. Therefore, the staff finds that 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 states in the "Implementation Milestone" column of FSAR Table 13.4-201 under Item 15 its commitment to meet the requirements of 10 CFR 73.67, "[p]rior to initial receipt of special nuclear material."

Additionally, the staff proposes to impose the following license condition, based on License Condition 6, as listed in Part 10 of the COL application:

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

In the application, the applicant has stated that the requirements of 10 CFR 73.67 will be implemented before SNM is received. Also, a license condition has been applied to ensure the NRC staff is aware of the scheduled date for implementation of the requirements of 10 CFR 73.67. Therefore, the requirement to either implement the SNMPPP within 30 days after NRC approval of it, or as designated by the NRC in writing, will be met, by the required schedule for implementation of operational programs.

1.5.5.1.4.3. Fixed Site 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," include 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 three 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 three 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 LNP 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 states in the "Implementation Milestone" column of FSAR Table 13.4-201 under Item 15 its commitment to meet the requirements of 10 CFR 73.67, "[p]rior to initial receipt of special nuclear material." In addition, its SNMPPP in Sections 5.2, "Storage," and 5.8, "Internal Transfers," and Figures 1 through 13 describes the physical characteristics of the controlled access area. The description of the controlled access area depicted in the SNMPPP includes temporary and permanent controlled access areas to enable protection during receipt and long-term storage of SNM, respectively. In addition, the described physical characteristics of the controlled access area are consistent with the recommended penetration resistance features explained in RG 5.59. Furthermore, as described in the application, both the fuel SNM and non-fuel SNM of low strategic significance will always be protected within a

controlled access area. The non-fuel SNM is described as only being removed from the its controlled access area and into its functioning location after the protected area of the nuclear reactor has been established per 10 CFR 73.55(e)(8), which is an acceptable practice because when the SNM is located inside a protected area, it is provided adequate protection.

The DEF application states that 10 CFR 73.67 will be fully implemented before SNM is delivered. In addition, the SNMPPP describes the characteristics of their planned-for controlled access area; therefore, the staff finds that 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 the "Implementation Milestone" column of FSAR Table 13.4-201 under Item 15 its commitment to meet the requirements of 10 CFR 73.67, "[p]rior to initial receipt of special nuclear material." In addition, its SNMPPP in Sections 5.3, "Monitoring," 5.3.1, "Monitoring SNM (Non fuel SNM…," and 5.3.2, "Monitoring SNM (New Fuel Assemblies)," 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.

The DEF application states that 10 CFR 73.67 will be fully implemented before SNM is received. In addition, its SNMPPP describes the detection processes that would result in recognition of unauthorized penetrations or activities in the locations of SNM and the controlled access area. Specifically, the applicant described in its SNMPPP the detection techniques and assessment methods that would result in a high probability of detection and accurate assessment of malevolent acts or potentially malevolent indications. In addition, administrative controls were described in the SNMPPP that would reduce the risk of not detecting a malevolent act or indications of potential malevolent acts to an acceptable level. 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 states in the "Implementation Milestone" column of FSAR Table 13.4-201 under Item 15 its commitment to meet the requirements of 10 CFR 73.67, "[p]rior to initial receipt of special nuclear material." In addition, its SNMPPP in Sections 5.3.1, "Monitoring SNM (Non fuel SNM…," 5.3.2, "Monitoring SNM (New Fuel Assemblies)," and 5.10, "Contingency Response," 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 PSP, Revision 4, dated June 3, 2011 (SLES Accession No. NS108206), and Sections 5.6, 5.7 and 5.8 of the reactor Contingency Plan, Revision 4, dated June 3, 2011 (SLES Accession No. NS108206).

The DEF application states that 10 CFR 73.67 will be fully implemented before SNM is received. In addition, its SNMPPP and other information referenced in the SNMPPP describe the detection, assessment, and response measures for the physical protection of the material. The applicant provided details in the SNMPPP of the protocols of detection, assessment, communications, and response that would work to adequately protect the SNM. In addition, those protocols or both onsite and offsite response actions were committed to be developed and implemented via written procedures. Therefore, the staff finds that 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 three 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 three years after each change."

The applicant states in the "Implementation Milestone" column of FSAR Table 13.4-201 under Item 15 its commitment to meet the requirements of 10 CFR 73.67, "[p]rior to initial receipt of special nuclear material." In addition, Sections 4.1, "Procedures," 5.3.1, "Monitoring SNM (Non fuel SNM…," 5.3.2, "Monitoring SNM (New Fuel Assemblies)," 5.7, "Audits and Records," and 5.10, "Contingency Response," of the SNMPPP describe the framework of and details to the development of response procedures. In addition, Section 5.7 "Audits and Records," of the SNMPPP notes the retention for 3 years of response procedures and changes thereof.

The DEF application states that 10 CFR 73.67 will be fully implemented before SNM is delivered. In addition, its SNMPPP describes the framework of the response procedures, the details on the development of response procedures, and the retention actions of 3 years of the response procedures; therefore, the staff finds that 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 LNP Units I 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, "Shipment," of its SNMPPP. The SNMPPP states that a SNM-qualified licensed shipper, other than DEF, 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 DEF 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 DEF 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 SNMPPP states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance and that DEF will confirm that the licensed shipper has physical protection measures in place to meet each general performance objective; therefore, the staff finds that 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 its SNMPPP. The SNMPPP states that a SNM-qualified licensed shipper, other than DEF, 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 DEF 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 DEF 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 SNM consistent with the potential consequences of such actions.

The DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF will confirm that the licensed shipper has physical protection measures in place to meet each general performance objective; therefore, the staff finds that the requirement of 10 CFR 73.67(a)(1)(i) to minimize the possibilities for unauthorized removal of SNM 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. The SNMPPP states that a SNM-qualified licensed shipper, other than DEF, 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 DEF 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 DEF 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 SNM.

The SNMPPP states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance and that DEF will confirm that the licensed shipper has physical protection measures in place to meet each general performance objective; therefore, the staff finds that 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 intends 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 DEF, 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 DEF 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 DEF 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 SNM.

The DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance and that DEF will confirm that the licensed shipper has physical protection measures in place to meet each general performance objective; therefore, the staff finds that the requirement of 10 CFR 73.67(2)(i) to provide, "[e]arly 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 described 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 DEF, 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 DEF 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 DEF 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 SNM by an external adversary from a controlled access area.

The SNMPPP states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF will confirm that the licensed shipper has physical protection measures in place to meet each general

performance objective; therefore, the staff finds that the requirement of 10 CFR 73.67(2)(ii) to provide, "[e]arly 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 described 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 DEF, 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 DEF 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, DEF has described the process for receiving and placing SNM in Sections 5.1.1, "Receipt of Non-Fuel SNM," and 5.1.2 (for fuel SNM) of its SNMPPP. 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 DEF 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, 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 DEF 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 SNM.

The DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF will confirm that the licensed shipper has physical protection measures in place to meet each general performance objective. In addition, DEF 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 that the requirement of 10 CFR 73.67(2)(iii) to assure proper placement and transfer of custody of SNM 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 described how it intended to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of their SNMPPP. The SNMPPP states that a SNM-qualified licensed shipper, other than DEF, 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 DEF 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 DEF 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 SNM and then notify the appropriate response forces of its removal in order to facilitate its recovery.

The DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF will confirm that the licensed shipper has physical protection measures in place to meet each general performance objective; therefore, the staff finds that the requirement of 10 CFR 73.67(a)(2)(iv) (to respond to indications of an unauthorized removal of SNM 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 three 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 three 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 three years. . ." "Copies of the superseded material must be retained for three years after each change."

The applicant described 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 DEF, 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 DEF 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.

The DEF application states that 10 CFR 73.67 will be fully implemented before SNM is received. In addition, its 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 DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF will confirm that the licensed shipper has provisions in place to meet 10 CFR 73.67(c)(1); therefore, the staff finds that the requirements of 10 CFR 73.67(c)(1), as described above, 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 intends 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 DEF, 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 DEF 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.

The DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance and that DEF will confirm that the licensed shipper has provisions in place to meet 10 CFR 73.67(c)(1); therefore, the staff finds that the requirement of 10 CFR 73.67(c)(1) (to "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") 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 three 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 three 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 LNP 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 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 DEF, 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 DEF 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. Because DEF 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), subsequently 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 DEF application stated that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF 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 that 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 its SNMPPP. The SNMPPP states that a SNM-qualified licensed shipper, other than DEF, will be used to transport SNM of low strategic significance both to and from the site. In addition, Section 6 of the SNMPPP states that DEF 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 DEF 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 DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF 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 that 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. The SNMPPP states that a SNM-qualified licensed shipper, other than DEF, 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 DEF 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 DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF 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 that 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 its SNMPPP. Specifically, Sections 5.1.1.4 (for non-fuel SNM) and 5.1.2.4 (for fuel SNM) state that the integrity of both shipping containers and tamper-seals will be checked.

The DEF application states that shipment containers and tamper-seals applied to those containers would be checked upon receipt; therefore, the staff finds that 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. . ."

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

The DEF application states that shipper would be notified in accordance with 10 CFR 74.15 for both non-fuel and fuel SNM; therefore, the staff finds that 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 its SNMPPP. The SNMPPP states that a SNM-qualified licensed shipper, other than DEF, 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 DEF 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. Because DEF 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)(2)(iii), the staff finds that this requirement would be met.

The DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF will confirm that the licensed shipper has provisions in place to meet10 CFR 73.67(g)(2)(iii). Therefore, the staff finds that 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 three 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 three years after each change."

The applicant included a description of how it intends 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 DEF, 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 DEF 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 DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF will confirm that the licensed shipper has provisions in place to meet 10 CFR 73.67(g)(3)(i); therefore, the staff finds that the requirement of 10 CFR 73.67(g)(3)(i) to, "[e]stablish and maintain response procedures …," as described above, 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 intends 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 DEF, 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 DEF 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 states that DEF will use an SNM licensed shipper and that DEF will verify that the shipper will be able to meet the requirement.

The DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF will confirm that the licensed shipper has provisions in place to meet10 CFR 73.67(g)(3)(ii). Therefore, the staff finds that 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 intends 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 DEF, 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 DEF 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. DEF has committed to meeting the requirement in Sections 5.1.1.1 (for non-fuel SNM) and 5.1.2.1 (for fuel SNM) of its SNMPPP. Also, DEF noted that a procedure would be developed for notification processes in Section 4.1 of the SNMPPP.

The DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF will confirm that the licensed shipper has provisions in place to meet 10 CFR 73.67(g)(3)(iii). In addition, DEF has committed to meeting the 10 CFR 73.67(g)(3)(iii) trace investigation/notification requirement. Therefore, the staff finds that 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 three 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 three years after each change."

How the requirements of 10 CFR 73.67(c) would be met by the applicant are described above in Section 1.5.5.1.4.2 of this SER. Also, the applicant included a description of how it intends 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 DEF, 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 Duke Energy 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 DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance and that DEF 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 above in Section 1.5.5.1.4.6 of this SER. Therefore, the staff finds that the requirement of 10 CFR 73.67(g)(4), as described above, 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 three 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 three years after each change."

The applicant included a description of how it intends 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 DEF, 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 DEF 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 DEF application states that arrangements with a SNM-qualified licensed shipper would be made for the transport of SNM of low strategic significance, and that DEF will confirm that the licensed shipper has provisions in place to meet 10 CFR 73.67(c) requirements, as

specified in SNMPPP Section 6.1. How the requirements of 10 CFR 73.67(c), (g)(2) and (g)(3) would be met by the applicant are described above in this SER. Therefore, the staff finds that the requirement of 10 CFR 73.67(g)(5), as described above, 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 intends to meet the in-transit physical protection requirements of 10 CFR 73.67(g) in Section 6 of its SNMPPP. Specifically, Sections 5.1.1.1 (for non-fuel SNM) and 5.1.2.1 (for fuel SNM) of the SNMPPP, state that the shipper would be notified upon receipt of SNM. In addition, the development of procedures for "[r]eceiving and shipping SNM" is described in Section 4.1 of the SNMPPP.

The staff finds that because DEF 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 "[r]eceiving 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. Section 13.5.2.2.8 of the FSAR

The applicant noted in the letter to the NRC dated September 18, 2014, that Section 13.5.2.2.8 of the FSAR would be modified to include the fact that the SNMPPP covers non-fuel SNM of low strategic significance (ADAMS Accession No. ML14267A029).

This inclusion presents, 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 Levy site. The staff verified that FSAR Section 13.5.2.2.8 as proposed by the applicant.

Therefore, the staff finds that the requirement to apply 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 Order 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 should be addressed. Section 1 of the SNMPPP discusses the analysis that justified only Parts C and D of the order needed to be addressed. The analysis provided by the applicant describes the details of the assessment as to whether or not the nuclear reactor would have a critical target area, as defined in the security order text. Therefore, the staff finds that 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.

The staff finds that, because the applicant committed to development of response implementing procedures that would be subject to NRC inspection, the order requirement of Part 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. of the order in Section 5.10, "Contingency Response," of the SNMPPP.

The staff finds that, because the applicant described the response attributes that aligned with Part C.2. of the order, the order requirement of Part 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. The applicant stated that uranium hexafluoride would not be brought on the nuclear power reactor site and was not associated with the license application whatsoever.

The staff finds that, because the applicant described the conditions associated with uranium hexafluoride with the Levy site, the order requirement of Part D.1. 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," of the SNMPPP. 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.

The applicant described an acceptable means to reduce storage of hazardous material on-site to the minimal necessary in order to avoid disrupting operations. Therefore, the staff finds that, because the applicant described a strategy to address Part D.2. of the order and committed to development of a procedure to implement that strategy, the order requirement of Part D.2. 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. The applicant committed to supplementing the Emergency Action Levels and their thresholds in response to a range of credible or imminent threats. The staff reviewed the applicant's description of the Emergency Action Level actions to be accomplished and found that the order measure was addressed in an acceptable manner.

The staff finds that, because the applicant described how the requirement of Part D.3. of the order would be addressed, the order requirement of Part D.3. 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. Specifically, the applicant committed to the evaluation of computer and communication networks for vulnerabilities, including modem access vulnerabilities, and to address them as necessary.

Therefore, the staff finds that, because the applicant described how the requirement of Part D.4. of the order would be addressed, the order requirement of Part D.4. 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. Specifically, the applicant coordinated with off-site fire departments and developed a response plan to notify those departments if and when necessary to facilitate fire suppression efforts.

Therefore, the staff finds that, because the applicant described how the requirement of Part D.5. of the order would be addressed, the order requirement of Part D.5. 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. Specifically, the applicant identified two local medical care facilities available for utilization given such a need was requested.

Therefore, the staff finds that, because the applicant described how the requirement of Part D.6. of the order would be addressed, the order requirement of Part D.6. would be met.

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

The applicant discussed Part D.7. of the order in Section 5.7, "Audits and Records," of the SNMPPP. Specifically, the applicant addressed establishing limited access to plant information that could possibly aid an adversary in planning and conducting an attack. The

information would be protected as proprietary type information per 10 CFR 2.390, "Public inspections, exemptions, requests for withholding."

The staff finds that, because the applicant described how the requirement of Part D.7. of the order would be addressed, the order requirement of Part D.7. 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. Section 14.1 of the PSP, Revision 4, dated June 3, 2011 (SLES Accession No. NS108206), identifies the RG 5.66, "Access Authorization Program for Nuclear Power Plants," as 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 described escort methodologies developed for the Levy power reactors.

The applicant stated that RG 5.66 would be applied to meet Part 3 of the order and the staff recognizes that in doing so a more stringent access authorization process would be utilized than that described in Part 3 of the order. Therefore, the staff finds that the order requirements of Part 3, which include fingerprinting and other access authorization provisions, would be met.

1.5.5.2 Conclusion and Post Combined License Activities

Based on the above, the NRC staff finds that the information 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 fuel and non-fuel SNM (Fission Chambers), conforms to the applicable guidance in NUREG-1520 and NUREG-0800 and, therefore, is acceptable.

With respect to the applicable physical protection requirements specified in 10 CFR 73.67 and the post September 11, 2001, security order for the possession, use, and transport 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 applicable requirements and the guidance 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 DEF:

(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. The 10 CFR Part 37 rule affects any licensee that possesses an aggregated Category 1 or Category 2 quantity of radioactive material, any licensee that transports these materials using ground transportation, and any licensee that transports small quantities of irradiated reactor fuel. The compliance date for the 10 CFR Part 37 regulation was March 19, 2014.

By letter dated January 2, 2014 (ADAMS Accession No. ML14002A334), the NRC issued RAI 01.05-2 for the LNP Units 1 and 2 COL application. RAI 01.05-2 requested the applicant to provide descriptions in the FSAR, (e.g., Chapter 13), to address how the applicant, prior to taking possession of an aggregated Category 1 or Category 2 quantity of radioactive material, will implement the requirements of 10 CFR Part 37, by establishing, implementing, and maintaining a security program for LNP Units 1 and 2. By letter dated February 11, 2014 (ADAMS Accession No. ML14043A399), the applicant provided a response to RAI 01.05-2. Upon further review by the staff, it was determined that the regulations of 10 CFR Part 37 do not require COL applicants to address 10 CFR Part 37. After COL issuance, a COL licensee becomes subject to the requirements of this regulation upon taking possession of an aggregated Category 1 or Category 2 quantity of radioactive material. Therefore, the NRC withdrew RAI 01.05-2 as stated in a letter dated April 28, 2014 (ADAMS Accession No. ML14094A244). By letter dated May 27, 2014 (ADAMS Accession No. ML14149A263), the applicant withdrew its response to RAI 01.05-2. Since the initial RAI response proposed changes to be incorporated into a future revision of LNP Units 1 and 2 COL application, and the applicant subsequently rescinded the proposed changes, the staff verified that subsequent submittal of the updated COL application did not include the rescinded changes.