POLICY ISSUE
Information

August 8, 2016 SECY-16-0094

FOR: The Commissioners

FROM: Victor M. McCree
Executive Director for Operations

SUBJECT: STAFF STATEMENT IN SUPPORT OF THE UNCONTESTED HEARING FOR ISSUANCE OF COMBINED LICENSES FOR THE WILLIAM STATES LEE III NUCLEAR STATION UNITS 1 AND 2 (DOCKET NOS. 52-018 AND 52-019)

PURPOSE:

The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of the application for two combined licenses (COLs) to authorize construction and operation of the William States Lee III Nuclear Station (WLS) Units 1 and 2, located in Cherokee County near Gaffney, South Carolina. This subsequent COL (SCOL) application references the AP1000 Design Control Document (DCD), Revision 19.

The staff presents this information paper in accordance with the revised Internal Commission Procedures dated March 24, 2016. Issuance of this paper follows the issuance of the final safety evaluation report (FSER) on August 1, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16160A414). On December 31, 2013, the

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agency issued the WLS final environmental impact statement (EIS) (NUREG-2111, Volumes 1, 2 and 3 (ADAMS Accession Nos. ML13340A005, ML13340A006, and ML13340A007, respectively)). The draft COLs for WLS Units 1 and 2, and the draft Summary Record of Decision are referenced in this Commission paper (ADAMS Accession Nos. ML16175A483, ML16196A384, and ML16064A266, respectively). This paper does not address any new commitments or resource implications.

This paper serves as the staff's primary pre-filed testimony for the uncontested (mandatory) hearing for issuance of the COLs for WLS Units 1 and 2. This paper, with its references, also provides the information requested to support the Commission's determination that the staff's review has been adequate to support the findings set forth in Title 10, "Energy," of the *Code of Federal Regulations* (10 CFR) 52.97, "Issuance of combined licenses," and 10 CFR 51.107, "Public hearings in proceedings for issuance of combined licenses; limited work authorizations."

In accordance with the Internal Commission Procedures, this paper focuses on non-routine matters. Non-routine matters, with regard to areas of particular importance in supporting the findings related to 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," and Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," are matters that relate to unique features of the facility or novel issues that arose as part of the review process.

SUMMARY:

This paper addresses each of the findings in 10 CFR 52.97(a) and 10 CFR 51.107(a) and provides an adequate basis for the Commission to conclude that each of these findings can be made for the WLS Units 1 and 2 COL application (COLA). This paper focuses on non-routine matters, such as unique features of the facility or novel issues that arose as part of the review process. This paper does not address routine aspects of the safety and environmental review process.

BACKGROUND:

I. Application History

Application, Ownership, and Location

In a December 12, 2007, letter (ADAMS Accession No. ML073510494), Duke Energy Carolinas, LLC (DEC or the applicant), which is a wholly owned subsidiary of Duke Energy Corporation, submitted a COLA to the NRC for two Westinghouse Electric Company (Westinghouse) AP1000 pressurized water reactors pursuant to the requirements of Sections 103 and 185(b) of the Atomic Energy Act of 1954, as amended (AEA), and 10 CFR Part 52. These reactors will be identified as WLS Units 1 and 2, and will be located in the eastern portion of Cherokee County in north central South Carolina, approximately 35 miles southwest of Charlotte, North Carolina, approximately 25 miles northeast of

Spartanburg, South Carolina, and approximately 7.5 miles southeast of Gaffney, South Carolina. DEC will be the licensed owner and operator of WLS Units 1 and 2.

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

DEC most recently updated the WLS Units 1 and 2 COLA on April 11, 2016 (ADAMS Accession No. ML16124A854). The publicly available portions of the application are available in ADAMS and on the NRC Web site at http://www.nrc.gov/reactors/new-reactors/col/lee.html. There are portions of the application that contain nonpublic information, including the security plan, which contains Safeguards Information (SGI). The SGI portion of the WLS Units 1 and 2 COLA is located on the NRC's secure local area network.

In addition, the applicant submitted a request for the associated material licenses under 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material;" 10 CFR Part 40, "Domestic Licensing of Source Material;" and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material."

Additional information about the applicant and ownership appears in Part 1 (General and Administrative Information) of the COLA. Additional information about the site location and characteristics appears in Part 2 (Final Safety Analysis Report (FSAR)), Chapters 1 and 2, of the COLA.

Referenced Design Certification and Design Certification Amendments

The WLS Units 1 and 2 COLA references the AP1000 certified design, as amended in DCD Revision 19. Westinghouse was the applicant for design certification of the AP1000 amended design. The Revision 19 design (ADAMS Accession No. ML11171A287) was certified in Appendix D, "Design Certification Rule for the AP1000 Design," to 10 CFR Part 52. The NRC staff issued the FSER for this DCD (ADAMS Accession No. ML112061231) in August 2011 and subsequently published the FSER as Supplement 2 to NUREG-1793, "Final Safety Evaluation

Report Related to Certification of the AP1000 Standard Design," in September 2011, Volumes 1 and 2 (ADAMS Accession Nos. ML11293A087 and ML11292A141, respectively). On December 30, 2011, the NRC published the AP1000 design certification amendment final rule (ADAMS Accession No. ML113480014) in the *Federal Register* (FR).

Subsequent Combined License

The staff followed the design centered review approach which is described in Regulatory Issue Summary 2006-006 (ADAMS Accession No. ML053540251). In this approach, the first COLA for a given design is designated the reference COL (RCOL) application and subsequent COLs are designated SCOL applications. The staff performs a single review of information documented in an RCOL application and, if identical information (designated as "standard") appears in a later SCOL application, the staff confirms that the appropriate information submitted by the SCOL applicant is identical to that previously reviewed for the RCOL application. The staff also evaluates any site-specific differences to ensure that they do not adversely affect the SCOL application analysis.

SECY-11-0110, "Staff Statement in Support of the Uncontested Hearing for Issuance of Combined Licenses and Limited Work Authorizations for Vogtle Electric Generating Plant, Units 3 and 4 (Docket Nos. 52-025 and 52-026)," discusses how initially the Bellefonte Units 3 and 4 (Docket Nos. 52-014 and 52-015) COLA and later the Vogtle Electric Generating Plant (Vogtle) Units 3 and 4 COLA were designated as the RCOL application for the AP1000 design center (ADAMS Accession No. ML110600264).

The WLS Units 1 and 2 COLA is designated as an SCOL application in the AP1000 design center and contains some of the same information initially evaluated in the FSER for the Vogtle Units 3 and 4 COLs. In addition, the staff applied the design centered review approach in Chapter 21, "Design Changes Proposed In Accordance With ISG-11," of the FSER in conducting its evaluation of the five requests by the applicant to depart from the AP1000 certified design. These five departure requests were identical to departure requests in the Levy Nuclear Plant (Levy) Units 1 and 2 COL review, where Levy acted as the RCOL for these issues.

In this paper, the staff does not discuss issues addressed under the Bellefonte Units 3 and 4, Vogtle Units 3 and 4, or Levy Units 1 and 2 COLA reviews that the staff recognized as "standard" matters under the design centered review approach and that are also applicable to the WLS Units 1 and 2 COLA. The FSER for the WLS Units 1 and 2 COLA identifies matters from the Bellefonte Units 3 and 4, Vogtle Units 3 and 4, and Levy Units 1 and 2 COLAs determined to be "standard" and applicable to the WLS Units 1 and 2 COLA, and the FSER discusses them in Section 1.2.3.

Advisory Committee on Reactor Safeguards

To support the Advisory Committee on Reactor Safeguards (ACRS) in providing an independent review and report to the Commission regarding the WLS Units 1 and 2 COLA, the staff presented the results of its safety review to the ACRS AP1000 subcommittee on October 21–22, 2015. The staff presented the results of its WLS Units 1 and 2 COLA safety review to the ACRS full committee on December 3–4, 2015. The ACRS issued its final report fulfilling the requirement of 10 CFR 52.87, "Referral to the Advisory Committee on Reactor Safeguards," on December 14, 2015 (ADAMS Accession No. ML15348A196). The ACRS conclusions and recommendations and the staff's response are discussed further in later sections of this paper.

II. Outreach

Public Meetings

Before the NRC docketed the WLS Units 1 and 2 COLA, the staff held a public outreach meeting in Gaffney, South Carolina, on August 30, 2007, to explain the safety and environmental review of the anticipated COLA, to describe opportunities for public participation in the review process, and to take questions from the public.
The NRC staff held two scoping meetings on May 1, 2008, in Gaffney, South Carolina, to discuss the environmental scoping process and to give members of the pubic an opportunity to provide comments on environmental issues that the NRC should consider during its review of the application (ADAMS Accession No. ML081410109).

On June 17, 2010, the NRC staff held a public scoping meeting in Gaffney, South Carolina, to solicit public input regarding the scope of the environmental review as it pertained to the addition of Make-Up Pond C (ADAMS Accession No. ML101800423). Make-Up Pond C is a proposed off-site reservoir that would serve as a source of supplemental cooling water for WLS.

After issuing the draft EIS, NUREG-2111, "Draft Environmental Impact Statement for Combined Licenses (COLs) for William States Lee III Nuclear Station Units 1 and 2," Volumes 1 and 2, December 13, 2011 (ADAMS Accession Nos. ML11343A010 and ML11343A011 respectively), the staff held two public meetings in Gaffney, South Carolina on January 19, 2012. These meetings were held to provide an overview of the draft EIS and to accept public comments on the document.

In total, NRC staff conducted approximately 80 public meetings and public teleconferences during the review of the application.

Federal Register Notices

The NRC published the following *FR* notices, as required for licensing process key milestones.

- After receiving the COLA on December 12, 2007, the agency published notice of the receipt on February 1, 2008 (73 FR 6218).

- The NRC staff published a notice of docketing the COLA on February 29, 2008 (73 FR 11156).

- On March 14, 2008, the NRC published a notice of intent to prepare an EIS and to conduct scoping (73 FR 15009).

- On April 28, 2008, the NRC published a notice of hearing and opportunity to petition for leave to intervene (73 FR 22978).

- On February 21 and 28, as well as November 14 and December 5, 2011, the NRC published notices of availability of the application in accordance with Section 182(c) of the AEA, and 10 CFR 50.43(a)(3) (76 FR 72725, 75566, 71608, and 77021, respectively).

- On December 12, 2011, the NRC published a notice of the availability of the draft EIS for public comment and notice of public meetings to present an overview of the draft EIS and to accept public comments on the document (76 FR 79228).

- On December 17, 2013, the NRC published a notice of availability of the final EIS (78 FR 77508).

Consultations

In accordance with Section 657 of the Energy Policy Act of 2005, the NRC consulted with the U.S. Department of Homeland Security (ADAMS Accession No. ML082190569). As part of its environmental review in accordance with the National Environmental Policy Act of 1969, as amended, (NEPA) and other applicable statutes, including the Endangered Species Act (ESA) and the National Historic Preservation Act (NHPA), the staff consulted with and obtained input from appropriate Federal, State, Tribal, and local organizations.

Adjudicatory Actions

On April 28, 2008, the NRC published in the FR a notice of hearing and opportunity to petition for leave to intervene in the WLS Units 1 and 2 COL proceeding (73 FR 22978). In response to this notice, the NRC received one petition to intervene. On September 22, 2008 (LBP-08-17; ADAMS Accession No. ML082660504), and April 29, 2009 (ADAMS Accession No. ML091270627), the Atomic Safety and Licensing Board (ASLB) issued memoranda and orders denying all eleven proposed contentions. One contention, regarding the greenhouse gas analysis in the application's environmental report, was deemed inadmissible by the ASLB but was referred to the Commission for review pursuant to 10 CFR 2.323(f). The Commission declined to review the ASLB's decision in an order issued November 3, 2009 (CLI-09-21; ADAMS Accession No. ML093070690).

Following the Fukushima nuclear power plant accident in Japan in March 2011, a petition to suspend all reactor licensing decisions and certain aspects of ongoing licensing proceedings was filed in the WLS proceeding and in other proceedings on April 14, 2011. The Commission denied the suspension petition, but granted the intervenors' request for a safety analysis to the extent that the NRC would conduct a short-term and long-term lessons-learned analysis of the Fukushima accident (CLI-11-05, ADAMS Accession No. ML11252A847). A contention related to the Fukushima accident subsequently was filed in this proceeding on August 11, 2011. The ASLB dismissed the contention as premature in an order issued on October 18, 2011 (LBP-11-27; ADAMS Accession No. ML11291A126). On November 30, 2011, the ASLB declined to reinstate the contention (LBP-11-36; ADAMS Accession No. ML11334A040). The Commission upheld the ASLB's decision in LBP-11-27 on March 16, 2012 (CLI-12-07; ADAMS Accession No. ML12076A194).

A petition to suspend final reactor licensing decisions related to continued on-site storage of

spent nuclear fuel was filed in the WLS proceeding and other proceedings on June 18, 2012. On July 10, 2012, a motion to reopen was filed in the WLS proceeding, along with a motion to file a new contention regarding on-site waste disposal. The Commission directed that the contention be held in abeyance on August 29, 2012 (CLI-12-16; ADAMS Accession No. ML12242A332). On August 26, 2014, the Commission issued an order directing the ASLB to dismiss this contention (CLI-14-08; ADAMS Accession No. ML14238A222).

A contention, motion to reopen, and suspension petition concerning safety issues related to disposal of spent nuclear fuel were filed in the WLS proceeding and other proceedings on September 29, 2014. The Commission denied the contention, motion to reopen, and suspension petition on February 26, 2015 (CLI-15-04; ADAMS Accession No. ML15057A277). On January 28, 2015, a petition was filed to supplement the final EIS in the WLS proceeding and other proceedings to reference the "Continued Storage" generic EIS. The Commission denied this petition on April 23, 2015 (CLI-15-10; ADAMS Accession No. ML15113A295). A hearing request, intervention petition, and motion to reopen seeking admission of a "place-holder" contention regarding the NRC's reliance on the Continued Storage Rule and generic EIS were filed on April 22, 2015. The Commission denied these requests on June 9, 2015 (CLI-15-15; ADAMS Accession No. ML15160A179).

Currently, all contested issues in this proceeding have been resolved.

III. Review Process/Methodology

The key processes and methodologies used to ensure quality, consistency, and completeness in preparation of the FSER and final EIS are described in the following documents:

NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants (LWR [Light Water Reactor] Edition)" (ADAMS Accession No. ML070660036). The principal purpose of the standard review plan (SRP) is to ensure the quality and uniformity of staff safety reviews. The staff uses the SRP as a routine tool for evaluating the safety of nuclear power plant designs. The SRP, comprehensively updated in 2007, is the most definitive basis available for evaluating whether an application meets the set of regulations established by the Commission. Each section of the SRP outlines the specific regulations that will be met when the review is complete, including the general design criteria from Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." Section 1.9.2 of the applicant's FSAR identifies the departures from the SRP associated with the WLS Units 1 and 2 COLA. This listing does not include SRP departures associated with the AP1000 DCD that have been incorporated by reference.

NUREG-1555, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Environmental Standard Review Plan." This guidance, including a 2007 update that addresses environmental reviews for COL applications, includes environmental SRPs that NRC staff uses when conducting environmental reviews of applications related to nuclear power plants, in accordance with the NEPA and the NRC's NEPA implementing regulations in 10 CFR Part 51. (http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1555/)

NUREG-2157, "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel," (ADAMS Accession No. ML14198A440). The NRC prepared a final generic EIS that provides a regulatory basis for the final rule entitled "Continued Storage of Spent Nuclear Fuel." As directed by 10 CFR 51.23(b), the impacts assessed in NUREG-2157 are deemed to be incorporated in an EIS for a COLA**.**

SRM-SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami," (ADAMS Accession No. ML120690347). This staff requirements memorandum (SRM) provides direction to the staff on implementing the Commission-approved recommended actions to be taken in response to Fukushima lessons learned.

Design-Centered Review Approach, SECY-06-0019, "Semiannual Update on the Status of New Reactor Licensing Activities and Future Planning for New Reactors" (ADAMS Accession No. ML053530315). Under the design-centered review approach, the Office of New Reactors (NRO) has used, to the extent practicable, a "one issue-one review-one position" strategy to optimize the review effort and resources needed to perform these reviews. Within the AP1000 design center, the staff has conducted one technical review for each reactor design issue and is using this one decision to support the review of multiple COLAs.

"Addressing Construction and Preconstruction Activities, Greenhouse Gas Issues, General Conformity Determinations, Environmental Justice, Need for Power, Cumulative Impact Analysis, and Cultural/Historical Resources Analysis Issues in Environmental Impact Statements," internal NRC NRO memorandum, December 10, 2010 (ADAMS Accession No. ML100760503). This guidance assisted the staff in addressing certain aspects of the environmental reviews for early site permit (ESP) and COLAs that: (1) had evolved since the last update to NUREG-1555 (in 2007) or (2) had been identified in conducting the first several reviews of ESP and COLAs.

Regulatory Guides. Regulatory guides (RGs) provide guidance to licensees and applicants on implementing specific parts of the NRC's regulations, techniques used by the NRC staff in evaluating specific problems or postulated accidents, and data needed by the staff in its review of applications for permits or licenses.

The WLS COL FSAR Appendix 1AA, "Conformance with Regulatory Guides," supplements the detailed discussion presented in the referenced AP1000 DCD Appendix 1A, "Conformance with Regulatory Guides."

Interim Staff Guidance. For areas in which the existing SRP does not contain review guidance, the staff prepared and used interim staff guidance (ISG) documents. ISGs are found at http://www.nrc.gov/reading-rm/doc-collections/isg/. The ISGs clarify technical review approaches and address questions related to processes and licensing. The staff used the following ISGs in the WLS Units 1 and 2 COL review, and indicated below is the FSER section(s) to which each ISG primarily relates:

- DC/COL-ISG-1, “Interim Staff Guidance on Seismic Issues of High Frequency Ground Motion,” dated May 19, 2008; see FSER Sections 3.7.1, 3.7.2, and 19.55

- DC/COL-ISG-3, “PRA Information to Support Design Certification and Combined License Applications,” dated June 11, 2008; see FSER Sections 19.55, 19.58, and 19.59

- DC/COL-ISG-7, “Assessment of Normal and Extreme Winter Precipitation Loads on the Roofs of Seismic Category I Structures,” dated June 23, 2009; see FSER Section 2.3.1

- DC/COL-ISG-8, “Necessary Content of Plant-Specific Technical Specifications,” dated December 9, 2008; see FSER Section 16.1

- DC/COL-ISG-11, “Finalizing Licensing-Basis Information,” dated November 2, 2009; see FSER Sections 1.2.3 and 1.3
- DC/COL-ISG-15, “Post-Combined License Commitments,” dated October 7, 2009; see FSER Sections 1.4.4 and 1.5.5

- DC/COL-ISG-16, “Compliance with 10 CFR 50.54(hh)(2) and 10 CFR 52.80(d),” (nonpublic), dated June 9, 2010; see FSER Section 19A

- DC/COL-ISG-20, “Seismic Margin Analysis for New Reactors Based on Probabilistic Risk Assessment,” dated March 15, 2010; see FSER Section 19.55

- DC/COL-ISG-22, “Interim Staff Guidance on Impact of Construction of New Nuclear Power Plants on Operating Units at Multi-Unit Sites,” dated February 7, 2011; see FSER Section 1.4.4

- JLD-ISG-2012-01,“Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events,” dated August 29, 2012; see FSER Section 20.1

- JLD-ISG-2012-03,“Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation,” dated August 29, 2012; see FSER Section 20.2

- NSIR/DPR-ISG-01, “Emergency Planning for Nuclear Power Plants,” dated November 2011; see FSER Section 13.3

Office Instructions. In its review, the staff followed administrative guidance contained in a number of office instructions. These internal documents address a range of procedural matters, including the staff’s process for issuing requests for additional information (RAI); handling audits; ensuring the qualification and training of technical staff and managers; ensuring consistency between staff offices; and overseeing interactions with applicants, intervenors, and public stakeholders.

New and Significant Review Process. The staff has developed a generic process to address circumstances in which there is an extended delay between the issuance of the final EIS for a particular license application review and the start of that proceeding's mandatory hearing phase (ADAMS Accession No. ML13199A170). This process provides guidance to the environmental staff on identifying potentially new and significant information after the draft EIS or final EIS is issued in order to determine its significance, and to consider whether this information requires supplementation of the draft EIS or final EIS in accordance with 10 CFR 51.72(a) or 10 CFR 51.92(a). For example, the staff applied this process to the recent Memorandum and Order, CLI-16-07 (ADAMS Accession No. ML16125A150), issued by the Commission on May 4, 2016.

IV. Advisory Committee on Reactor Safeguards Reports

The ACRS review of the WLS Units 1 and 2 COLA resulted in a letter to the Commission dated December 14, 2015 (ADAMS Accession No. ML15348A196), concluding in part, that there is reasonable assurance that WLS Units 1 and 2 can be built and operated without undue risk to public health and safety and that the Commission should approve the WLS Units 1 and 2 COLA subject to the approval of generic issues identified by the applicant, which affect standard content material for the AP1000. The generic issues identified by the ACRS are the five technical exemption requests and departures discussed in this paper and resolved on the Levy docket. Consistent with the design centered review approach, Levy acted as the RCOL for these issues, and the ACRS review of these exemption requests resulted in a letter to the Commission dated April 18, 2016 (ADAMS Accession No. ML16102A149), for Levy Units 1 and 2 (discussed in SECY-16-0076). The ACRS report fulfills the requirement of 10 CFR 52.87 that the ACRS report on those portions of the application which concern safety.

The ACRS conclusions are summarized below:

- There is reasonable assurance that WLS Units 1 and 2 can be built and operated without undue risk to the health and safety of the public.
- Site seismic inputs requiring a departure from the AP1000 certified design have been adequately addressed by the applicant and the staff, and this departure should be approved. This departure is discussed in the Unique Facility Features or Novel Issues and the Exemptions and Departures sections of this paper.

- The departure providing for a consolidated Technical Support Center (TSC) for the WLS Units 1 and 2 should be approved. This departure is discussed in detail in the Exemptions and Departures section of this paper.

- The location exception for a consolidated Emergency Operations Facility (EOF) should be approved. A detailed discussion relative to the relocation of the EOF is discussed in the Unique Facility Features or Novel Issues section of this paper.

- The DEC COLA for WLS should be approved following approval of generic changes which are pending submittal and which affect standard content material for the AP1000. These generic changes are discussed in the Exemptions and Departures section of this paper.

The ACRS review of the Levy Units 1 and 2 COLA resulted in a letter to the Commission dated April, 18, 2016 (ADAMS Accession No. ML16102A149), concluding in part:

- Five exemptions to the AP1000 certified design have been included in the Levy Units 1 and 2 COLA. The exemptions are needed to enable the certified design to perform intended functions and should be approved.

As indicated in the ACRS letter on the WLS Units 1 and 2 COLA, dated December 14, 2015, other COL applicants referencing the AP1000 certified design will also include the exemptions in accordance with the design center review approach described in that letter.

V. Near-Term Task Force Recommendations Regarding the Evaluation of Fukushima Dai-ichi Nuclear Power Plant Events and the Review of the Application.

SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami (ADAMS Accession No. ML12039A103) and its associated SRM (ADAMS Accession No. ML120690347) address the requirements and regulatory actions resulting from the Fukushima Near-Term Task Force (NTTF) Tier 1 recommendations. The NRC staff determined that the three NTTF Tier 1 recommendations below were applicable to the WLS Units 1 and 2 COLA.

1. Recommendation 4.2: Equipment covered under 10 CFR 50.54(hh)(2) – Order licensees to provide reasonable protection for equipment currently provided pursuant to 10 CFR 50.54 Conditions of licenses, (hh)(2) from the effects of design-basis external events and to add equipment as needed to address multiunit events while other requirements are being revised and implemented.

2. Recommendation 7.1: Spent fuel pool (SFP) instrumentation – Order licensees to provide reliable SFP level instrumentation.

3. Recommendation 9.3: Emergency preparedness regulatory actions (staffing and communications) – Order licensees to do the following until rulemaking is complete:

    - Determine and implement the required staff to fill all necessary positions for response to a multi-unit event.

    - Provide a means to power communications equipment needed to communicate onsite (e.g., radios for response teams and between facilities) and offsite (e.g., cellular telephones and satellite telephones) during a prolonged station blackout.

The NRC staff evaluated the applicant's submittals relative to the three NTTF Tier 1 recommendations in FSER Chapter 20, "Requirements Resulting from Fukushima Near-Term Task Force Recommendations." A discussion of the remaining Tier 1 recommendations and why they did not apply to the WLS Units 1 and 2 COLA review appears in the introduction to

Chapter 20 of the FSER. The draft licenses for WLS Units 1 and 2 contain license conditions to address Recommendations 4.2, 7.1, and 9.3.

Fukushima NTTF Recommendation 4.2, Mitigating Strategies for Beyond-Design-Basis Events

In SECY-12-0025, the NRC staff indicated its intent to review information provided by COL applicants to describe their mitigating strategies for beyond-design-basis external events. The AP1000 standard design includes passive design features that provide core cooling, containment, and SFP cooling capabilities for 72 hours, without reliance on alternating current (ac) power. The AP1000 design also includes equipment to maintain required safety functions in the long term (beyond 72 hours to 7 days). As such, provisions related to obtaining sufficient offsite resources to sustain these functions indefinitely must be addressed. The corresponding staff review for WLS Units 1 and 2 appears in Section 20.1 of the FSER.

The NRC staff reviewed the applicant's description of mitigating strategies for WLS Units 1 and 2 to determine if the strategies provide assurance of core cooling, containment, and SFP cooling capabilities in the event of a beyond-design-basis external event resulting in an extended loss of ac power event. The staff finds that the approach for mitigating beyond-design-basis external events described in the COLA for WLS Units 1 and 2 is consistent with NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design Basis External Events," and both general and AP1000-specific NRC guidance (including Nuclear Energy Institute (NEI) 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Appendix F, as endorsed by the NRC staff). Therefore, the staff concludes that the mitigating strategies for beyond-design-basis external events described for WLS Units 1 and 2 are acceptable.
The staff proposes to include License Condition (20-1), "Mitigation Strategies for Beyond-Design-Basis External Events," to verify the implementation of the mitigating strategies for beyond-design-basis external events at WLS Units 1 and 2.

Fukushima NTTF Recommendation 7.1, Spent Fuel Pool Instrumentation

SECY-12-0025 states that the staff will request all COL applicants to provide information regarding SFP instrumentation through the review process. The corresponding staff review for WLS Units 1 and 2 appears in Section 20.2 of the FSER. The NRC issued an RAI requesting that the applicant address this recommendation. The applicant provided the Westinghouse Technical Report, "Response to NRC Orders EA-12-051 and EA-12-063, and Background Information for Future Licensees on AP1000 Spent Fuel Pool Instrumentation, Redacted" (ADAMS Accession No. ML13023A265). The report adequately identified aspects of the AP1000 certified design that addressed requirements for arrangement, environmental qualification, power supply, and display, and provided additional information about accuracy and recalibration following an extended loss of ac power. The applicant incorporated key aspects of the additional recalibration information into Section 9.1.3 of the FSAR. The applicant provided a license condition to address the maintenance and training requirements.

The staff proposes to include License Condition (20-2) to verify the implementation of NTTF Recommendation 7.1.

Fukushima NTTF Recommendation 9.3, Emergency Preparedness Communications and Staffing

SECY-12-0025 states that the staff will request all COL applicants to provide information regarding emergency preparedness communications and staffing through the review process. The corresponding staff review for WLS Units 1 and 2 appears in Section 20.3 of the FSER.

The NRC issued an RAI dated April 25, 2012, to the applicant, concerning implementation of the Fukushima NTTF Recommendation 9.3 in the WLS Units 1 and 2 COLA. In response, the applicant proposed a license condition to address the 10 CFR 50.54(f) request for information letters sent to existing licensees–including COL applicants–regarding communications and staffing for NTTF Recommendation 9.3 (ADAMS Accession No. ML12053A340). This license condition was subsequently revised in the license application. As part of its proposed license condition, the applicant committed to perform assessments for NTTF Recommendation 9.3 using NEI 12-01, Revision 0, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," confirmed by staff to be an acceptable method for licensees to employ when responding to the 10 CFR 50.54(f) letters regarding NTTF Recommendation 9.3. The applicant proposed the license condition on communications and staffing in Section C of License Condition 12 in Part 10 of the WLS Units 1 and 2 COLA. The staff reviewed the applicant's proposed license condition and revised the timeframe of the completion of this license condition to be consistent with the schedules provided in section (a) of 10 CFR 52.99, "Inspection during construction; the inspection, test, analysis, and acceptance criteria (ITAAC) schedules and notifications; NRC notices," and section a of 10 CFR 52.103, "Operation under a combined license." The staff proposes to include License Condition (20-3) to verify the implementation of NTTF Recommendation 9.3.

DISCUSSION:

I. Excluded Matters

This paper does not discuss matters that were previously addressed and resolved in the context of other reviews undertaken as part of the 10 CFR Part 52 process. Such excluded matters include issues addressed under the AP1000 design certification amendment review.

Also excluded from consideration in the uncontested hearing are substantive issues within the scope of contentions admitted and adjudicated during the COL contested proceeding. As described above, there are currently no contested issues in the proceeding.

II. Exemptions and Departures

Part 7 of the WLS Units 1 and 2 COLA requested 7 exemptions and identified 13 departures from the AP1000 certified design. Three of the departures are unique to the WLS Units 1 and 2 COLA. The other departures are common to other AP1000 COLAs. Five of these departures (those discussed in Chapter 21 of the FSER) mirror ones that were first proposed in the Levy Units 1 and 2 COLA. These five departures also contain changes to the AP1000 Tier 1 information or technical specifications (TS). As such, exemptions are required in accordance

with 10 CFR Part 52 Appendix D, Section VIII in order for the staff to find them acceptable. The remaining two exemption requests are similar to other exemptions requested by other COL applicants and approved by the Commission.

Exemptions from NRC Regulations

The staff evaluated and found acceptable the following seven exemptions from NRC regulations associated with the review of the application.

Description	Regulation	Location of Evaluation in FSER
COLA organization and numbering.	10 CFR Part 52, Appendix D, Section IV.A.2.a	Section 1.5.4
Special nuclear material control and accounting (MC&A) program description.	10 CFR 70.22(b), 70.32(c), 74.31, 74.41, 74.51	Section 1.5.4
Containment cooling changes in regard to passive core cooling system condensate return.	10 CFR Part 52 Appendix D, Section III.B	Section 21.1
Main control room dose.	10 CFR Part 52 Appendix D, Section III.B	Section 21.2
Main control room heatup.	10 CFR Part 52 Appendix D, Section III.B	Section 21.3
Combustible gas control in containment.	10 CFR Part 52 Appendix D, Section III.B	Section 21.4
Source range neutron flux doubling block permissive.	10 CFR Part 52 Appendix D, Section III.B	Section 21.5

a. Exemptions similar to those granted to COL holders

COLA Organization and Numbering

The exemption request for COLA organization and numbering is substantively the same as the exemption request by Vogtle Units 3 and 4 and Virgil C. Summer Nuclear Station (Summer) Units 2 and 3. For this request, the applicable regulation requires that a COLA referencing a certified design include a plant specific DCD using the same organization and numbering as the generic DCD. In support of its exemption request, the applicant asserted that complying with this requirement would be less efficient and indicated that a modified organization is needed to address the topics identified in

RG 1.206, “Combined License Applications for Nuclear Power Plants (LWR Edition),” and NUREG-0800 and to include plant-specific discussions. The staff’s reasoning in finding this exemption acceptable is the same as that used to address the corresponding exemption request considered in the Vogtle and Summer COL reviews and is described in SECY-11-0110 and SECY-11-0115 (ADAMS Accession Nos. ML110600264 and ML111320113).

Special Nuclear MC&A Program Description

The MC&A program exemption request is similar to exemptions granted to other COL applicants for the Vogtle Units 3 and 4, Summer Units 2 and 3, Enrico Fermi Nuclear Plant (Fermi) Unit 3, and South Texas Project (STP) Units 3 and 4. The applicable regulations in 10 CFR Part 70 and 10 CFR Part 74, “Material control and accounting of special nuclear material,” require that a special nuclear material license application describe an MC&A program and that the applicant establish, implement, maintain, and follow an MC&A program. These regulations contain an exclusion for licensees governed by 10 CFR Part 50 but not 10 CFR Part 52. The applicant noted that when reviewing the MC&A program there is no reason to treat reactors licensed under these two parts differently. The staff’s reasoning in finding this exemption acceptable is the same as that used to address the corresponding exemption request considered in the STP COL review and is described in SECY-15-0123 (ADAMS Accession No. ML15316A408).

b. Exemption requests common to other COL applicants referencing the AP1000 design

The following departures concern five generic issues which affect standard content material for the AP1000. The applicant incorporated in the WLS Units 1 and 2 COLA the same information that Duke Energy Florida incorporated into the Levy Units 1 and 2 COLA regarding these departures. The staff’s reasoning for finding these departures acceptable is the same as that used to address the corresponding departures in the Levy Units 1 and 2 COLA review (discussed in SECY-16-0076 (ADAMS Accession No. ML12188A087)).

Containment Cooling Changes in Regard to Passive Core Cooling System Condensate Return

The applicant revised Tier 1 information by adding components to the condensate return system used to direct water that has condensed on the containment shell to the in-containment refueling water storage tank (IRWST) during accident scenarios. This change adds intermediate gutters at the top and bottom of the polar crane girder and at the containment shell intermediate ring stiffener. It blocks drain holes that were in these structures and adds dams where needed to collect condensate. It adds downspouts from these gutters to the IRWST. It also modifies the gutter drip lip so that condensate is not lost between the containment wall and the gutter. This change would increase the fraction of condensate returning to the IRWST when there is steam in containment and enable the passive core cooling system to more effectively perform its design functions.

The applicant's request also proposed changes to the generic TS Surveillance Requirement regarding the downspout screens.

Main Control Room Dose

Westinghouse, vendor for the AP1000 design, identified the need to update the design-basis accident (DBA) analyses in order to show compliance with the main control room (MCR) habitability regulatory requirements in 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 19, "Control Room," because: (1) the analyses did not account for the MCR emergency habitability system (VES) filter direct dose in the control room and (2) the nuclear island nonradioactive ventilation system (VBS) radiation monitor setpoints for control room ventilation system actuation did not account for all DBA release scenarios. The applicant also chose to revise the analyses that estimated the MCR dose contribution from direct radiation and skyshine. The applicant determined that a comprehensive change was necessary to correct the errors in the certified design. The applicant provided revisions to the AP1000 DBA dose analyses that affect both the MCR and offsite dose results. The applicant revised Tier 1 information and generic TS to reflect the revised DBA dose analyses and design changes

Main Control Room Heat Up

Westinghouse identified additional heat sources in the control room that were not accounted for in the original analysis that may challenge the ability of the plant to meet control room habitability requirements and equipment qualification limits. The AP1000 design normally uses the nonsafety-related VBS to provide heating, ventilation, cooling, and filtration to the MCR when power is available. During events where VBS is unavailable, however, the VES uses a combination of bottled air and passive heat sinks to maintain the MCR in a habitable state. As a result of development of the detailed AP1000 design, the applicant identified that the VES is not capable of maintaining the MCR in an acceptable condition for human performance during certain transients. During events where the MCR is isolated and VES is actuated, but offsite power is available to power other plant equipment, the heat loads in the MCR exceed those set forth in the certified design. Considering the above, the applicant determined that a revised approach to evaluate the heat load in the MCR was required. The applicant revised Tier 1 information and a generic TS to reflect, in part, a design change to add a load shedding arrangement to some of the MCR heat loads and a revision of the heat loads in the MCR and associated equipment rooms to reflect revised analyses.

Combustible Gas Control in Containment

The ITAAC currently contained in the AP1000 DCD for control of containment hydrogen concentration for beyond-design-basis accidents was based on the original AP600 and AP1000 design. The applicant determined that changes during the development of the current detailed design have resulted in inconsistencies between the design and the ITAAC acceptance criteria. The applicant revised the ITAAC acceptance criteria for (1)

the primary vent paths through the ceilings of the passive core cooling system valve/accumulator rooms and (2) the proximity of these paths to the containment shell.

Source Range Neutron Flux Doubling Block Permissive

According to 10 CFR 50.55a(h)(3), "Safety Systems," applicants for a COL must comply with Institute of Electrical and Electronics Engineers (IEEE) Std. 603–1991, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations," and the associated correction sheet dated January 30, 1995. Operating bypasses are addressed in Clause 6.6 of the standard. Under certain conditions, it may be acceptable to bypass a safety function. All of the conditions that permit bypassing the function must exist before the bypass is activated. If an operating bypass has been activated and plant conditions change so that the bypass is no longer permissible, the safety system must automatically do one of three things: restore plant conditions so that bypass is permissible, remove the active bypass, or initiate the safety function.

In the AP1000 certified design, safety functions are initiated by the protection and safety monitoring system (PMS). All of the protective actions initiated by the PMS in Revision 19 of the AP1000 DCD comply with IEEE Std. 603–1991, Clause 6.6, "Operating Bypasses," with one exception. The exception is the manually activated operating bypass of the safety function called the boron dilution block from the source range neutron flux doubling logic. The boron dilution blocking function is normally activated when neutron flux doubles too quickly while reactor power is in the source range. Boron dilution cannot lead to inadvertent criticality above a certain temperature, a plant condition that permits bypassing the block. The AP1000 design of the PMS flux doubling logic for the boron dilution block did not meet the operating bypass requirements of IEEE Std. 603–1991 because no permissive conditions, as required, were programmed into the PMS to permit the block of the flux doubling logic. The applicant made required changes for the PMS source range neutron flux doubling logic to comply with the requirements of IEEE Std. 603–1991, Clause 6.6 and changed generic TS to add the appropriate permissive.

10 CFR Part 52, Appendix D, Section VIII.A.4 states that exemptions from Tier 1 information are governed by the requirements of 10 CFR 52.63(b) and 10 CFR 52.98(f). 10 CFR Part 52, Appendix D, Section VIII.C.4 states that an applicant may request an exemption from the generic TSs or other operational requirements. The Commission may grant such a request only if it determines that the exemption will comply with the requirements of 10 CFR 52.7, "Specific Exemptions."

The staff has determined that, as required by Section VIII.A.4 of Appendix D to 10 CFR Part 52, the exemptions from Tier 1 information described above: (1) are authorized by law, (2) present no undue risk to the public health and safety, (3) are consistent with the common defense and security, (4) have special circumstances that outweigh the potential decrease in safety because of reduced standardization, and (5) do not significantly reduce the level of safety at the applicant's facility. The staff has also determined, pursuant to Section VIII.C.4 of Appendix D to

10 CFR Part 52, that the generic TS portions of these exemption requests: (1) are authorized by law, (2) present no undue risk to the public health and safety, (3) are consistent with the common defense and security, and (4) demonstrate the existence of special circumstances.

Therefore, the staff grants the applicant the requested exemptions. The staff's evaluation of these exemption requests appear in FSER Chapter 21.

Departures from AP1000 Design Control Document *Revision 19*

The staff evaluated and found acceptable the applicant's proposed departures from information in the AP1000 DCD Revision 19, presented in the table below. Part 7, Section A, of the COLA describes and justifies the departures and evaluates each departure against the criteria in Section VIII.B.5 of Appendix D to 10 CFR Part 52 to determine whether the applicant could implement the departure without NRC approval. Part 7 of the COLA also identifies the affected FSAR sections and provides a summary, justification, and evaluation of each departure.

The departure (DEP) designated in the table below as "STD," is standard for COL applicants adopting the AP1000 design. Of the remaining departures designated as "WLS," three departures, WLS DEP 2.0-1, WLS DEP 3.8-1 and WLS DEP 18.8.1 are unique to the WLS Units 1 and 2 COLA. The other departures are common to multiple COLAs.

Description	Location of Evaluation in FSER
STD DEP 1.1-1. Administrative Departure for organization and numbering for the FSAR sections.	1.5.4
WLS DEP 1.8-1. Corrects an inconsistency in regulatory citation in an interface description.	1.5.4
WLS DEP 2.0-1. WLS site-specific foundation response spectra	2.0.2
WLS DEP 3.2-1. Adds downspouts to the condensate return portion of the Passive Core Cooling System.	21.1
WLS DEP 3.8-1. WLS passive earth pressures	3.8
WLS DEP 3.11-1. Departure revising the "Envir. Zone" numbers for SFP level instruments.	20.2
WLS DEP 6.2-1. ITAAC Acceptance Criteria for the in containment vents are revised to reflect the current plant configuration	21.4
WLS DEP 6.3-1. Quantification of the term "indefinitely" as used in the DCD for maintenance of safe shutdown conditions using the passive residual heat removal heat exchanger (PRHR HX) during non-loss-of-coolant accident (LOCA) accidents.	21.1
WLS DEP 6.4-1. MCR operator dose.	21.2
WLS DEP 6.4-2. MCR Heatup.	21.3

Description	Location of Evaluation in FSER
WLS DEP 7.3-1. Modification of the engineered safety features to provide an operating bypass for the boron dilution block to meet the requirements of IEEE Std. 603-1991 in accordance with 10 CFR 50.55a (h), "Protection and safety systems."	21.5
WLS DEP 8.3-1. Class 1E voltage regulating transformer current limiting features.	8.3.2
WLS DEP 18.8-1. Emergency Response Facility locations	18.2

STD DEP 1.1-1 – This departure identifies instances where the renumbering of FSAR sections is necessary to effectively include content consistent with RG 1.206, as well as NUREG-0800. This departure requires NRC approval.

WLS DEP 1.8-1 – This departure corrects an inconsistency in DCD Tier 2 Table 1.8-1 (Sheet 6 of 6), Item 13.1. This item references 10 CFR Part 50, Appendix O, for features that may affect plans for coping with emergencies as opposed to 10 CFR 52.137(a)(11). There is no change in substantive requirements, only a clarification of the reference to the applicable regulation. This departure does not require NRC approval.

WLS DEP 2.0-1 – This departure addresses the WLS site-specific foundation response spectra, which exceeds the AP1000 Certified Seismic Design Response Spectra (CSDRS) and hard rock high frequency (HRHF) spectra. A site-specific analysis was performed to demonstrate the adequacy of the standard design for the WLS site. This departure requires NRC approval.

WLS DEP 3.2-1. This departure adds downspouts and downspout screens to the condensate return portion of the Passive Core Cooling System. The proposed changes increase the amount of condensate available in the In-containment Refueling Water Storage Tank (IRWST) after the initiation of a design basis event compared to the design described in the AP1000 DCD Revision 19. This departure requires NRC approval.

WLS DEP 3.8-1– This departure addresses the WLS site-specific lateral earth pressure on below-grade walls (assuming full passive earth pressures), which exceeds the AP1000 design pressure evaluated and documented in the AP1000 DCD. A site-specific analysis was performed to demonstrate that actual WLS site-specific lateral pressures are bounded by the AP1000 certified design. This departure requires NRC approval.

WLS DEP 3.11-1 – This departure corrects an inconsistency in a DCD table. The environmental zone numbers for three SFP level instruments are being revised to accurately reflect their actual location; the location of the SFP instruments are not being changed from the designed location. This departure does not require NRC approval.

WLS DEP 6.3-1 – This departure deals with the quantification of the term "indefinitely" as used in the DCD for maintenance of safe shutdown conditions using the PRHR HX during non-LOCA accidents. This departure does not require NRC approval.

WLS DEP 6.4-1 – This departure improves the mitigating capabilities of the MCR Habitability System and addresses the MCR dose analysis errors. The MCR dose to the operators slightly decreases for the limiting DBA large-break loss-of-coolant accident and the analysis shows that the results do not exceed the GDC 19 requirements of 5 rem. This departure requires an exemption from the requirements of 10 CFR Part 52, Appendix D, Section III.B, which requires compliance with Tier 1 requirements of the AP1000 DCD and the generic TSs. This departure requires NRC approval.

WLS DEP 6.4-2. – This departure ensures that the MCR emergency habitability system can perform its design, functions including maintaining an environment suitable for MCR habitability and equipment qualification. This departure requires an exemption from the requirements of 10 CFR Part 52, Appendix D, Section III.B, which requires compliance with Tier I requirements of the AP1000 DCD and the generic TSs. This departure requires NRC approval.

WLS DEP 7.3-1. – This departure modifies the engineered safety features to provide an operating bypass for the boron dilution block to meet the requirements of IEEE 603-1991 in accordance with 10 CFR 50.55a(h), “Protection and safety systems.” This departure requires an exemption from the requirements of 10 CFR Part 52, Appendix D, Section III.B, which requires compliance with generic TSs of the AP1000 DCD. This departure requires NRC approval.

STD DEP 8.3-1 – This standard departure involves the applicant’s use of breakers and fuses to provide the isolation function instead of current limiting devices in Class 1E voltage regulating transformers. It is the same as the departure that the staff previously evaluated for the Vogtle and Summer COLAs. This departure does not require NRC approval.

WLS DEP 18.8-1– This departure addresses emergency response facility locations. The referenced DCD states, "The TSC is located in the control support area (CSA)." This is not the case for WLS. The TSC location is moved to a central location such that a single TSC can serve both WLS Units 1 and 2 as identified in the Emergency Plan. This departure does not require NRC approval.

A detailed discussion and justification for each exemption request is provided in Part 7 of the WLS Units 1 and 2 COLA.

III. Unique Facility Features or Novel Issues

Safety Matters

a. Emergency Operations Facility

DEC has filed a request to have the WLS EOF located in the Charlotte General Office in the Energy Center at 526 South Church Street, Charlotte, North Carolina, which is currently used as the EOF for DEC’s existing nuclear facilities at McGuire Nuclear Station, Catawba Nuclear

Station, and Oconee Nuclear Station.[1] NRC approval prior to implementation is required in accordance with Appendix E, IV.E.8.b of 10 CFR 50 because the location of the Charlotte EOF is greater than 25 miles from the affected reactor sites. This is the first COL action that involves the Commission's express approval of a consolidated EOF for a new facility as part of the final review in a COL action.

In part 10 of the WLS Units 1 and 2 COLA, the applicant proposed License Condition 4, "Emergency Planning Actions," to demonstrate the integrated capability and functionality of the EOF. The staff refers to this as License Condition (13-7).

License Condition (13-7) requires that:

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

The staff's review of DEC's request and its evaluation of License Condition (13-7) are described Chapter 13.3 of the SER. The staff concluded that the EOF would not impede the ability of the respective COL applicants and organizations with emergency response responsibilities, such as Federal, State, and local governments, from performing their duties. The staff also concluded that the centralized EOFs would continue to provide reasonable assurance that adequate protective measures can and will be implemented in the event of a radiological emergency.

b. **Seismic Design**

The seismic design of the AP1000 standard plant is based on the CSDRS as addressed in AP1000 DCD, Revision 19, Section 3.7.1.1. The AP1000 DCD also includes HRHF spectra and respective evaluation of structures, systems, and components that demonstrate that the HRHF input is non-damaging. In accordance with the AP1000 DCD, these HRHF spectra are an alternative spectra for evaluation of site-specific ground motion response spectrum (calculated at the plant foundation). Because the WLS site-specific horizontal and vertical spectra exceed the CSDRS and HRHF spectra, the applicant needed to request a departure from AP1000 certified design (WLS DEP 2.0-1).

Because the exceedances required additional evaluations in accordance with the AP1000 DCD, the applicant performed additional evaluations on nuclear island (NI) seismic Category I and

[1] DEC and Duke Energy Progress, Inc. have submitted a license amendment request (LAR) seeking approval to integrate the EOFs for Brunswick Steam Electric Plant Units 1 and 2; Shearon Harris Nuclear Power Plant, Unit No. 1; and H. B. Robinson Steam Electric Plant, Unit No. 2 into the EOF in Charlotte, North Carolina. Although the WLS Units 1 and 2 COLA and the LAR are being processed in parallel, given the current review schedules, it is anticipated that the COLA will be decided significantly before the LAR.

adjacent seismic Category II structures, primary components, piping systems, and electro-mechanical equipment to demonstrate that the high frequency exceedances of the DCD are non-damaging and are therefore adequately addressed in the design.

The staff's review of WLS DEP 2.0-1, which is documented in Sections 3.7.2.4, 3.9.2, 3.10.4, and 3.12.4 of the FSER, thoroughly considered the range of evaluations and inputs supporting the applicant's site-specific analysis. The staff reviewed the site-specific analysis performed by the applicant pertaining to the NI seismic Category I and seismic Category II structures and determined that the AP1000 forces adequately bound the site-specific forces on NI seismic Category I structures, and that no physical interaction occurs between NI seismic Category I and adjacent seismic Category II structures. Similarly, the staff reviewed the analysis performed by the applicant with respect to primary components such as component supports and nozzles and piping packages which demonstrated that the forces and stresses induced by the site-specific response spectra are adequately enveloped by the AP1000 forces and stresses, respectively. Further, AP1000 DCD Appendix 3I, which identifies potential high frequency sensitive equipment, was used by the applicant to identify WLS specific equipment for which high frequency amplification was important. The staff review concluded that the applicant adequately demonstrated that the test response spectra for representative high frequency sensitive equipment bound the site-specific required response spectra (RRS). Additionally, based on its supplemental evaluations to Appendix 3I for the WLS Units 1 and 2 COLA, the applicant committed to ensure that the future qualification testing for high frequency sensitive equipment identified in WLS Units 1 and 2 COLA Appendix 3I will envelope the WLS site-specific RRS.

Following careful consideration of these multiple aspects of the applicant's site-specific evaluations, including RAIs and an audit of the applicant's structural analysis, the staff found that WLS DEP 2.0-1 is acceptable because the applicant's site-specific evaluations demonstrated in each of these respects that the AP1000 DCD design is adequate for use at the WLS site and that these evaluations are consistent with the guidance in NUREG-0800, Sections 3.7.2, 3.9.2, 3.10, 3.12, and DC/COL-ISG-1. In conclusion, the staff found that the applicant has provided sufficient information to satisfy the requirements in 10 CFR Part 50, Appendix A, GDC 2, "Design Bases for Protection Against Natural Phenomena;" 10 CFR Part 50, Appendix S, "Earthquake Engineering Criteria for Nuclear Power Plants;" and 10 CFR 100.23, "Geologic and Seismic Siting Criteria."

Environmental Matters

c. Make-Up Pond C

The WLS Units 1 and 2 COLA initially proposed a two-pond off-stream water storage system using existing Make-Up Ponds A and B. These impoundments were created in the late 1970s during the initial construction phase of the unfinished Cherokee Nuclear Station. Make-Up Pond B was to be used in low water conditions as the backup to Make-Up Pond A, which draws water from the Ninety-Nine Islands Reservoir. The Ninety-Nine Islands Reservoir, an impoundment of

the Broad River formed by Ninety-Nine Islands Dam and adjacent to WLS, is also the water source for the Ninety-Nine Islands Hydroelectric Project. The reservoir was built for hydroelectric power (not flood control), and has run-of-the river reservoirs with no significant storage capacity. WLS Units 1 and 2 would have to operate within the minimum release constraints of the Ninety-Nine Islands Hydroelectric Project License.

During normal flow periods on the Broad River, WLS would withdraw all of its operational water requirements from Ninety-Nine Islands Reservoir through the intake into existing Make-Up Pond A. DEC anticipated this would be the normal withdrawal scheme employed greater than 95 percent of the time. DEC initially proposed that WLS would proportionally withdraw its consumptive water requirements from Ninety-Nine Islands Reservoir and Make-Up Pond B as the Broad River flow drops below normal flow.

The EIS review team (NRC and the U.S. Army Corps of Engineers (USACE)) looked at the WLS Units 1 and 2 COLA water data and found that the 2002-2007 drought years were not included in the WLS Units 1 and 2 COLA's water balance calculations. The review team recognized that under DEC's anticipated withdrawal plan, low water flows at certain times of the year, while not violating the Environmental Protection Agency's proportional flow limitation (5 percent mean annual flow) in regulations implementing Section 316(b) of the Clean Water Act (CWA), would have resulted in impacts to aquatic biota and downstream water users.

Subsequent to the review team's initial review, DEC revised its water balance calculations to incorporate the 2002-2007 drought years. Revision of the water balance led DEC to the proposal of an additional offsite reservoir (known as Make-Up Pond C) as supplemental storage to Make-Up Pond A and Make-Up Pond B.

From May 24, 2010, through July 2, 2010, the NRC staff conducted a supplemental scoping process to obtain additional public insights and inform of the NRC's review of DEC's supplement to the Environmental Report (ER) (ADAMS Accession No. ML092810257). The primary change to the ER was the alternative evaluation process and addition of proposed Make-Up Pond C.

The review team reviewed DEC's ER supplement. The supplement included an evaluation of deepening Make-Up Pond B, raising the dam height of Make-Up Pond B, releasing water from upstream reservoirs, and three possible locations for Make-Up Pond C in the vicinity of the WLS Nuclear Station.

The creation of Make-Up Pond C would inundate most of the London Creek stream network and forested valley, converting approximately 600 acres to a supplemental water reservoir to be managed as a cooling water supply. Make-Up Pond C would alone impact 12.46 miles of streams, 3.55 acres of wetlands, and 17.58 acres of open water. Impacts to streams would account for most of the WLS project's aquatic impacts. The proposed compensatory mitigation plan entails a sizeable stream restoration and preservation effort at two separate locations. This mitigation plan evolved as details were worked out through the USACE permitting process as the mitigation design matured. For example, the South Carolina Department of Natural

Resources recommended that Duke pursue other available mitigation opportunities in lieu of utilizing mitigation bank credits.

Through careful consideration of the potential impacts of the Make-Up Pond C plans, the review team determined that the proposed disturbance of approximately 1,100 acres needed to build the reservoir and buffer around Make-Up Pond C, would alter the nature of the terrestrial and aquatic habitats and wildlife resources in the London Creek watershed. The review team determined that the related terrestrial impacts of habitat loss and wildlife mortality, disturbance, and displacement would be substantial and mostly permanent in nature. Creation of Make-Up Pond C also would alter the functionality of the London Creek corridor as a wildlife travel corridor, particularly for some migrant songbirds, many of which are of conservation priority in South Carolina.

The review team also determined that impounding the London Creek stream network and building the Make-Up Pond C supplemental water reservoir would replace an existing creek system with a deep water lake habitat, resulting in a clearly noticeable and permanent change in aquatic resources in London Creek and its tributaries. Although the aquatic resources found in London Creek are not unique to the region, the habitat type is becoming increasingly rare as development in the region increases. In time, the aquatic habitat of the new reservoir would be valuable for other reasons, but it would not mitigate the loss of adjacent terrestrial habitat within the region.

As a result of its review, the review team determined that the construction of Make-Up Pond C would have MODERATE aquatic and terrestrial impacts. The impacts would noticeably alter these resources, but the important aspects of these attributes would not be destabilized as habitat and wildlife resources found in the London Creek watershed are also found in other areas in the upstate Piedmont region. Similarly, though the stream ecosystem in the watershed will be impacted by the construction of Make-Up Pond C, it will be transformed into a deep water ecosystem which would have aquatic ecological value.

The impacts to waters of the United States resulting from the construction of Make-Up Pond C necessitated a landscape-scale compensatory mitigation project to comply with USACE mitigation requirements intended to offset the project's impacts. To meet this need, DEC plans to accomplish a stream restoration and preservation effort at two separate locations: the privately-owned Turkey Creek Tract, and the Woods Ferry Tract in the Enoree Ranger District of Sumter National Forest. The Turkey Creek Tract will have a perpetual conservation easement. The Turkey Creek Tract offers an opportunity for mitigation that is substantial enough to provide regional benefits in the form of preservation and buffer enhancement. The goals of Woods Ferry Tract restoration effort are to reconnect streams to their respective floodplains, reduce sedimentation and stabilize stream banks, improve in-stream and adjacent habitats, and improve water quality. While these restoration efforts are expected to mitigate the environmental impacts of Make-Up Pond C, the impacts to the resource areas would remain MODERATE as the stream ecosystem will be transformed into a deep water ecosystem.
As part of its permitting process, USACE collaborated with the U.S. Forest Service (USFS) to develop details and implement mitigation requirements. USFS prepared an EIS to comply with NEPA regarding its own federal action to issue a Special Use Permit to DEC to complete the

aforementioned compensatory mitigation work in the national forest. The USACE served as a cooperating agency in the preparation of the USFS's "Final Environmental Impact Statement: Chester County Stream and Riparian Restoration/Enhancement Project, Chester County, South Carolina," dated November 19, 2014. This USFS final EIS contains an environmental review of DEC's planned compensatory mitigation work in the national forest. The USFS issued its Record of Decision on July 1, 2015, resulting in issuance of the Special Use Permit to DEC.

The USACE issued its Record of Decision and a Department of the Army permit to DEC for the WLS on September 29, 2015, allowing DEC to move forward with the mitigation plan implementation. Special Condition H, "Compensatory Mitigation," of the permit defines the implementation and monitoring requirements for this exceptional mitigation plan. The mitigation measures and requirements ultimately imposed in the USFS and USACE permits remain fully consistent with the analysis and conclusions in the WLS final EIS.

The NRC staff followed its processes to ensure a hard look at the environmental impacts of the construction and operation of WLS, in particular the novel nature of the Make-Up Pond C development and the extensive compensatory mitigation plan. In so doing, the NRC conducted a timely additional scoping process that further informed its review and preparation of the final EIS. NRC also worked effectively with USACE as a cooperating agency on the EIS to take advantage of the USACE's areas of expertise and permitting requirements to develop a document that served both agencies' regulatory needs and ultimately supported USFS's work as well. In sum, the analysis and conclusion in the final EIS reflected appropriate evaluation of the water supply needs of the WLS project and the associated impacts and mitigation measures, while also enhancing consistency and efficiency in the decision making of the NRC and other agencies under NEPA and related environmental requirements.

IV. Findings

10 CFR 52.97(a)(1)

(i) The applicable standards and requirements of the AEA and the Commission's regulations have been met.

The NRC staff reviewed the WLS Units 1 and 2 COLA and evaluated it against the applicable regulations in 10 CFR Parts 20, 26, 30, 31, 32, 40, 50, 51, 52, 55, 70, 73, 74, 100, and 140. The staff performed this evaluation using applicable portions of both the safety and environmental SRPs, ISG documents, RGs, bulletins, NUREGs and generic letters. Based on the NRC staff's review, documented in the FSER and the final EIS, and the conclusions of the ACRS, the NRC staff concludes that, for the purpose of issuing COLs for WLS Units 1 and 2, the applicable standards and requirements of the AEA and the Commission's regulations have been met.

(ii) Required notifications to other agencies or bodies have been duly made.

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

South Carolina, the North Carolina Utilities Commission and the Federal Energy Regulatory Commission of the WLS Units 1 and 2 COLA (ADAMS Accession No. ML112450014, ML112450028 and ML112450007).

In accordance with Section 182c. of the Act, as amended, the staff also published notices of the application in the FR on November 18, November 25, December 2, and December 9, 2011 (FR 71608, 72725, 75566, and 77021).
Based on the staff's notifications to regulatory agencies and the public notices described above, the staff concludes that, for the purposes of issuing COLs for WLS Units 1 and 2, required notifications to other agencies or bodies have been made.

(iii) *There is reasonable assurance that the facility will be constructed and will operate in conformity with the licenses, the provisions of the AEA, and the Commission's regulations.*

The staff reviewed information provided by the applicant to ensure that the plants will be constructed and will operate in conformity with the license, the applicable provisions of the AEA, as amended, and applicable regulations. This includes the FSAR and other portions of

the application, including general and financial information; TS; the emergency plan; requests for departures and exemptions; the quality assurance (QA) plan; and the security plan.

In areas where the staff found that the information submitted initially was incomplete or insufficient to allow the staff to reach a reasonable assurance conclusion, the staff issued RAIs to the applicant to obtain sufficient information. The staff reviewed applicant responses to ensure that the additional information provided was sufficient to support the staff conclusion. Where necessary, the applicant provided multiple supplemental responses. As necessary, the staff also conducted audits of the applicant's records and calculations and performed its own confirmatory calculations to confirm applicant statements.

In some cases, the staff's finding of "reasonable assurance" required the imposition of license conditions or ITAAC as part of the licenses. The draft COL lists the license conditions and ITAAC. The basis for each license condition and ITAAC appears in the technical evaluations in the WLS Units 1 and 2 COL FSER and the AP1000 DCD FSERs referenced by the WLS Units 1 and 2 COLA.

On the basis of the staff's review of the application discussed in this paper and documented in the FSER and final EIS, the staff concludes that, for the purpose of issuing COLs for WLS Units 1 and 2, there is reasonable assurance that the facility will be constructed and will operate in conformance with the licenses, the provisions of the AEA, as amended, and the Commission's regulations.

(iv) The applicant is technically and financially qualified to engage in the activities authorized.

Technical Qualification. The staff reviewed information provided by the applicant regarding technical qualifications. The review included an evaluation of the applicant's operating experience, organizational structure, and QA program. The applicant holds 10 CFR Part 50 licenses for Catawba Units 1 and 2, McGuire Units 1 and 2, and Oconee Units 1, 2, and 3 and has demonstrated its ability to build and operate nuclear power reactors. The applicant has demonstrated the ability to choose and manage the oversight of nuclear steam supply system vendors, architect-engineers, and constructors of nuclear-related work. Thus, the NRC staff concludes that the applicant has the capability to subcontract, to procure, to schedule, and to manage the work associated with the detailed design (including licensing), procurement, and construction of WLS Units 1 and 2. The staff's review of the applicant's organizational structure concluded that the management, technical support, and operating organizations are acceptable. The staff reviewed the QA program and found it acceptable.
The staff's evaluation of this information appears in Sections 1.4 and 13.1 and Chapter 17 of the FSER. Based on the staff's evaluation of the applicant's experience with licensing and operating nuclear power plants, its operating organization, and its QA program, the staff finds that the applicant is technically qualified to hold a 10 CFR Part 52 license in accordance with 10 CFR 52.79(a)(1)(iv).

Financial Qualifications, Decommissioning Funding Assurance, Foreign Ownership, Control, or Domination (FOCD), and Nuclear Insurance and Indemnity

The staff reviewed information provided by the applicant about financial qualifications, decommissioning funding assurance, foreign ownership, and nuclear insurance and indemnity.

The staff evaluated information pertaining to the total cost of WLS Units 1 and 2, consisting of engineering, procurement, construction costs, owner's costs, financing costs, inflation, and information pertaining to funding sources for the owner. Applicable regulations and guidance considered by the staff included 10 CFR 50.33; 10 CFR 50.75; 10 CFR 52.97(a)(1)(iv); 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;" and NUREG-1577, "Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance." Based on the financial information provided by the applicant, the NRC staff concludes that the owner of WLS Units 1 and 2 has demonstrated that it possesses or has access to the financial resources necessary to meet estimated construction costs and related fuel cycle costs. Therefore, the NRC staff concludes that the applicant is financially qualified to construct WLS Units 1 and 2 and to engage in the activities authorized by the licenses. The applicant is a utility and will generate and distribute electricity and recover the cost of electricity through cost-of-service based rates established by the North Carolina Public Utility Commission, South Carolina Public Service Commission, and Federal Energy Regulatory Commission; therefore, the applicant is not subject to financial qualifications for operations pursuant to 10 CFR 50.33(f)(2). Based on information provided by the applicant, staff also concludes that the applicant meets all decommissioning funding assurance requirements.

Staff evaluated the applicant for FOCD issues, and concludes that it does not know or have reason to believe that the applicant is owned, controlled, or dominated by a foreign interest, and conforms to the guidance provided in the SRP for FOCD and meets the requirements of 10 CFR 50.38. The applicant also meets the nuclear insurance requirements of 10 CFR 50.54(w) and the indemnity requirements of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements."

The staff's evaluation of this information appears in Chapter 1 of the FSER. In summary, the applicant meets all requirements associated with financial qualifications, decommissioning funding assurance, FOCD, and nuclear insurance and indemnity.

(v) Issuance of the licenses will not be inimical to the common defense and security or to the health and safety of the public.

The NRC staff reviewed the application to assure that issuance of the licenses will not be inimical to the common defense and security or to public health and safety.

Specifically, the staff evaluated the applicant's analysis and conclusions about site specific conditions, including the geography and demography of the site; nearby industry, and transportation infrastructure; site meteorology; site hydrology; and site geology, seismology, and geotechnical engineering to ensure that issuance of the licenses will not be inimical to public health and safety. The review also evaluated the design of structures, components, equipment, and systems to ensure safe operation, performance, and shutdown when subjected to extreme weather, floods, seismic events, missiles (including aircraft impacts), chemical and radiological releases, and loss of offsite power to the extent not already resolved by the incorporation of the AP1000 design. The review confirmed that radiological releases and human dose during both normal operation and accident scenarios will remain within regulatory limits, which supports the staff's conclusion that issuance of the licenses will not be inimical to public health and safety.

The review determined that the security measures to be implemented at the site are adequate to protect the facility in accordance with NRC security regulations, which supports the staff's conclusion that issuance of the licenses will not be inimical to the common defense and security. Also, the staff is not aware of any information presenting inimicality or foreign ownership, control, or domination concerns. The applicant is based in the United States. DEC is a corporation organized and existing under the laws of the State of North Carolina. All members of the senior management and the Board of Directors for Duke Energy Corporation are United States citizens.

The review also determined that operational programs identified by the applicant are sufficiently described to assure the staff of compliance with regulations.

The NRC staff's evaluation addressed the operational programs identified in the SRM, dated February 22, 2006, on SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," as well as additional operational programs, including a cybersecurity program, and a program for handling special nuclear material (SNM), and an SNM

transportation physical security program. The staff's review of the applicant's emergency planning information concluded that the emergency plan is acceptable and supports the staff's conclusion that issuance of the licenses will not be inimical to public health and safety.

On the basis of the staff's review of the application, as discussed in this paper and the referenced documents, the staff concludes that issuance of the COLs for WLS Units 1 and 2 will not be inimical to the common defense and security or to public health and safety.

(vi) The findings required by Subpart A of Part 51 of this chapter have been made.

As discussed below, the staff concludes that, for the purpose of issuing a COL for WLS Units 1 and 2, the environmental review has been adequate to support the findings set forth in 10 CFR 51.107(a).

10 CFR 52.97(a) (2):

The staff concludes that there are no acceptance criteria from ITAAC in the referenced standard DC that the applicant has asserted are met. Therefore, no Commission finding under this section is required for the purpose of issuing COLs for WLS Units 1 and 2.

10 CFR 51.107(a):

(i) Determine whether the requirements of Sections 102(2) (A), (C), and (E) of NEPA and the regulations in Subpart A of 10 CFR Part 51 have been met.

The staff reviewed the application and evaluated it against the applicable regulations in 10 CFR Parts 50, 51, 52, and 100. The staff performed this evaluation using applicable portions of NUREG-1555, issued in 2000 and updated in 2007, and ISG documents, RGs, and generic letters. The staff addressed supplemental guidance providing additional information on contemporary and evolving issues from the memorandum dated December 10, 2010 (ADAMS Accession No. ML100760503).

In accordance with NEPA Section 102(2) (A) (42 U.S.C. § 4332(2) (A)), the staff prepared the final EIS (NUREG-2111) based on its independent assessment of the information provided by the applicant and information developed independently by the staff, including through consultation with other agencies. The staff's technical analysis used a systematic, interdisciplinary approach to integrate information from numerous fields, including the natural and social sciences. Consequently, the staff concludes that its review comports with the NRC's requirements in Appendix A, "Format for Presentation of Material in Environmental Impact Statements," to 10 CFR Part 51.

In accordance with NEPA Sections 102(2)(C)(i–v) (42 USC § 4332(2)(C)(i–v), the final EIS for the WLS Units 1 and 2 COLs addresses (1) the environmental impact of the proposed action, (2) unavoidable adverse environmental effects, (3) alternatives to the proposed action, (4) the relationship between local short-term uses of the environment and the maintenance and

enhancement of long-term productivity, and (5) irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented.

As supported by correspondence presented in Appendix F to the final EIS, the staff concludes that it fulfilled the requirement of NEPA Section 102(2) (C) by consulting with and obtaining comments from other Federal agencies with jurisdiction by law or special expertise (see 42 USC § 4332(2) (C)). The USACE fully participated with the NRC in preparing this EIS as a cooperating agency and participated collaboratively on the review team under the Commission's Memorandum of Agreement with the USACE.

The staff concludes that the final EIS demonstrates that the staff adequately considered alternatives to the proposed action to the extent that it involves unresolved conflicts concerning alternative uses of available resources, consistent with the requirements of NEPA Section 102(2)(E) (42 USC § 4332(2)(E)). The alternatives considered in the final EIS include the no-action alternative, energy alternatives, alternative sites, system design alternatives, and mitigation alternatives for severe accidents.

For the reasons given above, the staff also concludes that its review comports with the NRC's requirements in Appendix A, "Format for Presentation of Material in Environmental Impact Statements," to 10 CFR Part 51. The staff concludes that environmental findings in the final EIS constitute the "hard look" required by NEPA and have reasonable support in logic and fact.

(ii) *Independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken.*

Section 10.6.3 of the final EIS provides the staff summary of the cost-benefit assessment. The staff concludes that "the building and operation of proposed WLS, with mitigation measures identified by the review team, would accrue benefits that most likely would outweigh the economic, environmental, and social costs. For the NRC-proposed action (i.e., NRC-authorized construction and operation), the accrued benefits would also outweigh the costs of construction, preconstruction, and operation of the proposed WLS units."

(iii) *Determine, after weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, whether the COL should be issued, denied, or appropriately conditioned to protect environmental values.*

As noted above, in its final EIS, the staff considered the cost-benefit analysis, including the need for power, as well as reasonable alternatives. Based on that analysis, the staff recommends that the COLs be issued. The staff based its recommendation on (1) the WLS Units 1 and 2 COLA ER, (2) consultation with Federal, State, Tribal, and local agencies (3) the staff's own independent review, (4) the NRC staff's consideration of public comments and, (5) the assessments summarized in the final EIS, including the potential mitigation measures identified in the ER and in the final EIS. In addition, in making its recommendation, the staff determined that none of the alternative sites assessed is environmentally preferable or obviously superior to

the WLS site. The NRC staff also determined that none of the reasonable energy alternatives and none of the reasonable system design alternatives were environmentally preferable to those proposed.

The NRC's determination is independent of the USACE's determination of a "least environmentally damaging practicable alternative" under the CWA Section 404(b)(1) guidelines and its required public interest review (PIR). The USACE's independent regulatory permit decision documentation referenced relevant analyses from the EIS and, as necessary, included a supplemental PIR; CWA Section 404(b)(1) evaluation; cumulative impact analysis; compensatory mitigation plan that is in accordance with 33 CFR Part 332, "Compensatory Mitigation for Losses of Aquatic Resources;" and other information and evaluations that may be outside the NRC's scope of analysis and not included in the final EIS, but that are required by the USACE to support its permit decision.

(iv) Determine, in an uncontested proceeding, whether the National Environmental Protection Act review conducted by the NRC staff has been adequate.

The staff conducted an independent evaluation of the application; developed independent, reliable information; and conducted a systematic, interdisciplinary review of the potential impacts of the proposed action on the human environment and of reasonable alternatives to the applicant's proposal. Before developing the draft EIS, the staff issued a notice of intent to conduct scoping and invited public participation. The staff also provided opportunities for governmental and general public participation during the public meeting on the draft EIS and used publicly available guidance in the development of its final EIS.

The staff considered the purpose of and need for the proposed action, the environment that could be affected by the action, and the consequences of the proposed action, including mitigation that could reduce impacts. The final EIS considered the no-action alternative, energy alternatives, alternative sites, system design alternatives, and the potential impact of conservation measures in determining the demand for power and consequential need for additional generating capacity. The final EIS compared the alternatives to the proposed action. The staff considered any adverse environmental effects that could not be avoided should the proposed action be implemented, the relationship between short-term uses of the human environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources that would be involved in the proposed project.

The NRC filed the draft EIS with the Environmental Protection Agency for its review consistent with the requirements of Section 309, "Policy Review," of the Clean Air Act (see 42 U.S.C. 7609). The staff considered all comments received on the draft EIS and, in Appendix E to the final EIS, described the manner in which each comment was dispositioned.

On these bases, the staff concludes that, for the purpose of issuing the COLs, it conducted a thorough and complete environmental review sufficient to meet the requirements of NEPA and adequate to inform the Commission's action on the COL request.

V. Other Aspects of the Staff Review Not Tied to Specific Findings

a. Severe Accident Management Guidelines

The staff identified an additional area of interest related to a recent Commission decision about the draft rule on mitigation of beyond-design-basis events (SECY-15-0065 (ADAMS Accession No. ML15049A213)). In the draft rule, the staff proposed to require implementation of severe accident management guidelines (SAMGs). In the associated SRM, the Commission approved publication of the draft rule for public comment subject to the removal of the proposed requirements for SAMGs (ADAMS Accession No. ML15239A767).

SAMGs were an industry initiative and remain voluntary for most licensees. However, the AP1000 design certification rule incorporates the AP1000 DCD, which specifies implementing the AP1000 severe accident management guidance on a site-specific basis. This is a condition of license for current AP1000 COLs (Vogtle Units 3 and 4 and Summer Units 2 and 3). For consistency within the AP1000 design center, one of the proposed license conditions for Levy Units 1 and 2 (discussed in SECY-16-0076) and the WLS Units 1 and 2 is the implementation of site-specific SAMGs.

COLs referencing other certified designs have addressed SAMGs differently. By reference, the Economic Simplified Boiling Water Reactor (ESBWR) design certification rule incorporates the ESBWR DCD, which specifies that a severe accident management program will be developed by each COL holder that references the ESBWR DCD. Consequently, implementation of site-specific SAMGs is a condition of the Fermi license. On the other hand, the Advanced Boiling Water Reactor (ABWR) design certification rule incorporates the ABWR DCD, which specifies a COL action item. Applicants referencing the ABWR design must address procedures and training related to accident management. The COL for STP Units 3 and 4 references the ABWR design and includes a commitment to implement accident management in the STP FSAR (ADAMS Accession No. ML15124A421). The staff accepted this in the STP FSER and no license condition was proposed (ADAMS Accession No. ML15232A128).

b. Non-Concurrence Involving NHPA

In the course of the environmental review, a non-concurrence was filed that was identical to the non-concurrence filed during the Levy Units 1 and 2 review. The non-concurrence concerned the environmental review and related NHPA and ESA consultations regarding a general license to construct and operate an independent spent fuel storage installation. Staff, management, and the non-concurring individuals agreed to a resolution of the concern and the non-concurring staff ultimately concurred on the document. The non-concurrence concern was resolved consistent with the resolution of the identical non-concurrence filed during the Levy Units 1 and 2 review. In accordance with Management Directive 10.158, the resolution of the non-concurrence is documented in NCP-2016-007 (ADAMS Accession No. ML16214A211), which is nonpublic because it contains deliberative process and attorney-client privileged information.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection.

/RA/

Victor M. McCree
Executive Director
for Operations

Enclosure:
NCP-2016-007

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection.

/RA/

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Enclosure:
NCP-2016-007

ADAMS Accession Number: ML16216A079 ***Concurred via e-mail** **SECY-012**

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