

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE COMMISSION**

In the Matter of	)	Docket Nos. 52-025-COL and 52-026-COL
Southern Nuclear Operating Company	)	September 13, 2011
(COL Application for Vogtle Electric Generating Plant, Units 3 and 4)	)	

**SOUTHERN NUCLEAR OPERATING COMPANY’S RESPONSE  
TO THE COMMISSION’S ORDER OF AUGUST 31, 2011**

**BACKGROUND**

On August 31, 2011, the Nuclear Regulatory Commission (“Commission”) issued the “Order (Transmitting Pre-Hearing Questions)”<sup>1</sup> providing initial questions associated with the mandatory hearing for the Vogtle Units 3 and 4 combined license application (“COLA”) and associated request for a Limited Work Authorization (“LWA-B”).<sup>2</sup> Pursuant to the Order, Southern Nuclear Operating Company (“SNC”) hereby responds to the Commission’s questions (“SNC’s Response”).<sup>3</sup> SNC answers questions 18, 24, 26(b), 31, 35(c), and 36. No information is provided relative to questions the Commission directed exclusively to the NRC Staff in the Order.

Staff Requirements Memoranda on SECY-10-0082 Mandatory Hearing Process For Combined License Application Proceedings Under 10 C.F.R. Part 52 (Dec. 23, 2010), and SECY-11-0042, Revisions To Internal Commission Procedures Section On Mandatory Hearings

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<sup>1</sup> Order (Transmitting Pre-Hearing Questions), Docket Nos. 52-025-COL & 52-026-COL (Aug. 31, 2011) (“Order”).

<sup>2</sup> Acronyms not defined herein are those provided in the Order, at note 2.

<sup>3</sup> SNC’s responses are supported by the attached affidavit of Charles R. Pierce.

(Mar. 25, 2011), note the following limitations on the scope of information presented in this mandatory hearing:

- Information should not address matters already resolved by the Vogtle Early Site Permit.<sup>4</sup>
- Information should not address matters that are (or are being) resolved in the AP1000 certified design amendment rulemaking.<sup>5</sup>
- Information should not address issues within the scope of admitted contentions in the closed contested proceeding for the Vogtle Units 3 and 4 COLA and LWA.<sup>6</sup>

Accordingly, to the extent practicable and consistent with providing full and complete answers to the Commission's questions, SNC has attempted to include information in its responses that is within the scope of the mandatory hearing as described in the above-referenced Staff Requirements Memoranda.<sup>7</sup> In some cases, however, references to the AP1000 DCD or the Vogtle 3 and 4 ESP were necessary to fully respond to the question.

#### RESPONSES TO COMMISSION'S QUESTIONS

Question No.	Category	Reference	Question
18	Safety	General	What process was used to determine which technical areas involved interfaces between the COL and matters addressed by the design certification that would have otherwise been excluded from consideration in the COL review?

**Response:** The process used by the applicant to determine which technical areas involved DCD interfaces necessary to be addressed in the COL Final Safety Analysis Report, Revision 5

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<sup>4</sup> See Staff Requirements – Secy-10-0082 – Mandatory Hearing Process For Combined License Application Proceedings Under 10 C.F.R. Part 52 (Dec. 23, 2010), at No. 8(b) (instructing NRC Staff on what should be excluded from its pre-filed testimony).

<sup>5</sup> See *id.*

<sup>6</sup> SECY-11-0042, Revisions To Internal Commission Procedures Section On Mandatory Hearings (Mar. 25, 2011), Enc. at p.2.

<sup>7</sup> See *id.* Enc. at p.4.

(“FSAR”) or other portions of the COL application involved several considerations. These included addressing:

- Any areas where the COL application departs from the DCD, Revision 19 as identified in FSAR Table 1.8-201;
- COL information items as identified in FSAR Table 1.8-202;
- COL interface items as identified in FSAR Table 1.8-205;
- DCD site parameter comparisons as provided in FSAR Table 2.0-201; and
- Any variations from DCD conceptual design information as identified in various sections of the COLA FSAR Chapters 8, 9, and 10.

The FSAR Tables cited in this response are referenced here in lieu of the corresponding DCD Tables because the certified DCD Revision 15 Tables included additional items which have since been addressed on the DCD docket. The items addressed by Westinghouse in the DCD Revisions 16, 17, 18, and 19 need not be addressed by the COL applicant.

It is noted that the only interface items to be addressed were provided in Tier 2 of the DCD Table 1.8-1. No Tier 1 site interfaces were identified in the DCD. Note that FSAR Table 2.0-201 is a comprehensive table that addresses the site parameters contained in both DCD Tier 1 Table 5.0-1 and DCD Tier 2 Table 2-1.

Additionally, the DCD was reviewed by the applicant for any references to “site specific” information so that could be addressed within the COL application. Finally, the DCD addressed many operational requirements, but also left many to the COL applicant. Regulatory Guide 1.206, which provides guidance for information to be included in a COL application, was reviewed, and any information not sufficiently addressed by the DCD was included in the COLA.

Question No.	Category	Reference	Question
24	Safety	General	Describe the plant’s ability to deal with a station blackout event.

**Response:** The ability of an AP1000 plant to deal with a station blackout event was addressed in the design certification. The Westinghouse DCD Subsection 1.9.5.1.5 provides the following information:

The AP1000 is in conformance with the NRC guidelines for station blackout.

The AP1000 design minimizes the potential risk contribution of station blackout by not requiring ac power sources for design basis events. Safety-related systems

do not need nonsafety-related ac power sources to perform safety-related functions.

The AP1000 safety-related passive systems automatically establish and maintain safe shutdown conditions for the plant following design basis events, including an extended loss of ac power sources. The passive systems can maintain these safe shutdown conditions after design basis events, without operator action, following a loss of both onsite and offsite ac power sources.

Subsection 1.9.5.4 provides additional information on long-term actions following an extended station blackout beyond 72 hours.

The AP1000 also includes redundant nonsafety-related onsite ac power sources (diesel-generators) to provide electrical power for the nonsafety-related active systems which provide defense in depth.

AP1000 design features that mitigate the consequences of a station blackout are as follows:

- A full-load rejection capability to reduce the probability of loss of onsite power
- Safety-related passive residual heat removal heat exchanger
- Safety-related passive containment cooling
- Bleed and feed capability, using the safety-related automatic depressurization system in conjunction with the water available from the core makeup tanks, the accumulators, and the in-containment refueling water storage tank
- Class 1E batteries sized for 72 hours of operation under station blackout conditions
- Nonsafety-related reserve auxiliary transformers to provide power to selected ac power systems
- A nonsafety-related ac power system that includes two diesel-generators that automatically start on loss of offsite power
- An automatic nonsafety-related load-sequencing circuit that starts the following redundant nonsafety-related equipment after a loss of offsite power, once the associated diesel-generator is started:
  - Startup feedwater pump
  - Component cooling water pump
  - Service water pump
- Reactor coolant pumps without shaft seals
- Passive cooling for the rooms containing equipment assumed to operate during station blackout conditions (the protection and safety monitoring system cabinet rooms and the main control room) so that this equipment continues to operate.

DCD Subsection 1.9.5.4 provides this additional information:

The actions described below are required following an extended loss of these nonsafety-related systems.

The safety functions required include the following:

- Core cooling, inventory, and reactivity control
- Containment cooling and ultimate heat sink
- Main control room habitability and post-accident monitoring
- Spent fuel pool cooling

The AP1000 design includes both onsite equipment and safety-related connections for use with transportable equipment and supplies to provide the following extended support actions:

- Provide electrical power to supply the post-accident and spent fuel pool monitoring instrumentation, using the ancillary diesel generators or a portable, engine-driven ac generator that both connect to electrical connections at the ancillary diesel generator electric panel. See Section 8.3 for additional information.
- Provide makeup water to the passive containment cooling water storage tank to maintain external containment cooling water flow, using one of the two PCS recirculation pumps powered by an ancillary diesel generator or a portable, engine-driven pump that connects to a safety-related makeup connection. See subsection 6.2.2 for additional information.
- Ventilation and cooling of the main control room, the instrumentation and control rooms, and the dc equipment rooms is provided by open doors and ancillary fans or portable fans powered by an ancillary diesel generator or a portable, engine-driven ac generator.
- Provide makeup water to the spent fuel pool from the passive containment cooling water storage tank, passive containment cooling water ancillary water storage tank, and from the long term makeup connection. See subsection 6.2.2.4 for a discussion of the operation of the passive containment cooling system and subsection 9.1.3.4.3 and 9.1.3.5 for discussion of makeup to the spent fuel pool.
- Provide a vent path between the fuel handling area and outside environment to vent water vapor generated by elevated spent fuel pool water temperature. See subsection 9.1.3.4.3.4 for additional information.

As indicated in FSAR Subsection 1.9.5.1.5, the applicant will provide appropriate procedures and training to utilize the above described plant design capabilities, and to restore offsite power. These procedures will be produced and finalized prior to fuel load. These actions are accomplished by the site support personnel, in coordination with the main control room operators. These actions are performed separate from, but in parallel with, other actions taken by the plant operators to directly mitigate the consequences of an event.

Question No.	Category	Reference	Question
26(b)	Safety	FSER Sec. 1.5.1	b) The Staff's financial assessment was based on the construction period beginning in November 2011 and ending with Unit 3 operation in April 2016 and Unit 4 operation in April 2017. Do the current projected operation dates differ, and could this impact the Staff's analysis?

**Response:** The current projected operation dates for Vogtle Units 3 and 4 do not differ from those upon which the NRC Staff's assessment of the Owners', and by extension SNC's, financial qualification was based. Moreover, SNC notes that a change in expected operation dates would not necessarily impact either SNC's estimate of the construction cost of the Units or the NRC Staff's assessment of financial qualification.

Question No.	Category	Reference	Question
31	Safety	FSER Sec. 19A  SECY-11-110 p. 18	Since this is the first COL review regarding loss of large areas of the plant due to explosions or fire, please describe how the Applicant's approach was similar to that used by operating reactors under 10 C.F.R. Part 50. Where program details in the Mitigating Strategies document could not be finalized and implemented until the construction phase, the Applicant identified commitments for future action prior to fuel load. Please describe these commitments.

**Response:** Like other Part 50 licensees, including Vogtle Units 1 and 2, the COLA for Vogtle Units 3 and 4 followed NRC guidance to address the Phase 1 LOLA requirements. The NRC guidance issued for Phase 1 of Section B.5.b of the Interim Compensatory Measures ("ICM") Order, EA-02-026, titled "Developing Mitigating Strategies/Guidance for Nuclear Power Plants to Respond to Loss of Large Areas of the Plant in Accordance with B.5.b of the February 25, 2002, Order," dated February 25, 2005, was used to determine the items that needed to be addressed for Vogtle Units 3 and 4.<sup>8</sup> That guidance document identified numerous items to be assessed on an individual plant site basis, such as onsite fire fighting capability, off-site fire fighting resources, accelerant-fed fire fighting capabilities, hoses and self-contained pumps for moving water for fire fighting and core cooling, etc. Most of these items involved assessments, evaluations, action plans and the development of procedures that cannot be accomplished until the facility is near the completion of construction. These items were nonetheless Phase 1

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<sup>8</sup> The NRC ICM Order, EA-02-026, and NRC guidance for implementing the ICM Order were determined to contain Safeguards Information ("SGI"), and accordingly, were withheld from public disclosure.

expectations and were identified and listed in the Mitigative Strategies Table (“MST”) as part of the COLA with a short description on how Vogtle Units 3 and 4 plan to meet each expectation. In many cases, the strategy will be the same as Vogtle Units 1 and 2. There are some cases where Vogtle Units 3 and 4 will need to establish separate areas for fire brigade mustering, triage of injured individuals, different personnel and responder assembly areas and different ways to use the installed fire protection system.

Phase 2 of LOLA mitigative strategies concerns the Spent Fuel Pool (“SFP”). Guidance was provided in NEI 06-12, Rev. 2, for existing licensed pressurized water reactors to establish the strategies for installed pool makeup, portable pump spraying, and portable pump makeup. The NRC Staff endorsed NEI 06-12, Rev. 2 on December 22, 2006 (Letter from James E. Dyer (NRC) to Anthony R. Pietrangelo (NEI), December 22, 2006). Vogtle Units 3 and 4 used NEI 06-12, Rev. 3,<sup>9</sup> which was also endorsed by the NRC, to identify different strategies to mitigate damage to fuel in the SFP. Vogtle Units 3 and 4 have also added design enhancements to facilitate the implementation of mitigative measures that eliminate or reduce reliance on operator actions. The MST for Phase 2 contained in the COLA lists each of these mitigative strategies and identifies how Vogtle Units 3 and 4 will implement each strategy. A hard piped redundant spray system has been added to the design to provide both makeup and spray capability. Each of the redundant spray headers can be fed by several sources of water with different motive methods to supply water to the pool. Also, there are two different hard piped external connections at ground level for connecting a fire department pumper truck or a portable pump to the spray system headers.

Phase 3 of the LOLA mitigative strategies is intended to restore or maintain core and containment cooling in order to mitigate potential damage to fuel in the reactor system and to mitigate potential radiological releases through the containment walls or other containment release pathways. The Phase 3 efforts for the industry identified changes based on reactor type (PWR or BWR), and NEI 06-12, Rev. 2, identified different mitigation strategies for PWRs and for BWRs. Vogtle Units 1 and 2 used the seven Phase 3 PWR mitigation strategies plus command and control for conventional PWRs identified in NEI 06-12, Rev. 2. However, the AP1000 is fundamentally different from conventional PWRs because it relies on passive safety systems that are located inside containment to provide long-term core cooling and decay heat removal. Recognizing this fundamental difference between passive plants such as the AP1000 and conventional active plants, NEI 06-12, Rev. 3, included an additional section, Chapter 4 “Actions For New Plants”, to discuss the degree to which mitigating strategies are required for passive safety functions. Chapter 4 of NEI 06-12, Rev. 3, recognized that some new plant designs employ passive features and may need to be evaluated differently for the effects of large area fires and explosions. Therefore, new plants may not need all of the conventional plant mitigative strategies identified in Sections 3.3 and 3.4 of NEI 06-12, Rev. 3, or may need additional strategies to satisfy the key safety functions. For the AP1000, the Phase 3 Chapter 4 evaluations demonstrate that the following key safety functions are addressed:

- RCS Makeup

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<sup>9</sup> NEI 06-12, Rev. 3, contains security-related information and is withheld from public disclosure in accordance with 10 CFR 2.390.



- Safety Injection
- Core Decay Heat Removal
- Containment Cooling
- Containment Isolation

The AP1000 standard plant design includes design enhancements that address the LOLA Mitigative Measures in NEI 06-12, Rev. 3, and the evaluation contained in the Vogtle Units 3 and 4 COLA credited design enhancements to the AP1000 to better respond to the LOLA event. All eight of the previous mitigative strategies contained in NEI 06-12, Rev. 2, for conventional PWRs did not apply to the AP1000 design due to the passive system designs. The five key safety functions identified using the new Chapter 4 criteria in Revision 3 resulted in five new mitigation strategies that are based on the passive safety systems design. The operational and programmatic aspects for Phase 3 mitigative measures, including the command and control measures specified in Section 3.2 of NEI 06-12, Rev. 3, are addressed in the VEGP 3 & 4 COLA MST.

It was expected that the COL would include a License Condition obligating the licensee to implement the operational and programmatic elements of its mitigative strategies for responding to a LOLA event that were developed in accordance with 10 C.F.R. § 50.54(hh)(2). This obligation is expressed in Proposed License Condition 19.A-1. However, throughout the course of the NRC Staff's review of the VEGP 3 & 4 Mitigative Strategies Description ("MSD") and MST, the NRC Staff requested additional information and provided expectations for the inclusion of specific elements to be factored into the implementation of the LOLA mitigation strategies. Many of these items involved assessments, evaluations, action plans and the development of procedures that cannot be accomplished until the facility is near the completion of construction. While the implementation of these items was determined to be impractical prior to COL issuance, the items were identified as commitments and were annotated as such in the MSD/MST, referenced in COLA Part 11, Revision 4 and contained in COLA Part 9, Revision 4. Examples of commitments made by the Applicant for future action prior to implementation of the LOLA mitigation strategies include:

- Performing walk-throughs to validate the guidance,
- Incorporating specific information in LOLA procedures/guidance,
- Training appropriate evaluators, decision makers, and implementers on LOLA procedures/guidance,
- Re-evaluating off-site organizations, including associated memoranda of understanding (MOUs), and
- Conducting periodic tabletop exercises (involving offsite fire responders, onsite fire brigade, and operations staff).



A brief description of each of the commitments made in response to NRC requests is provided as *Attachment 1* to SNC's Response. Implementation of these commitments will be factored into the overall schedule for implementation of the operational and programmatic elements of the applicant's mitigative strategies for responding to a LOLA event.

Question No.	Category	Reference	Question
35(c)	Environmental	General – identifying and evaluating new and significant information	c) Describe the Applicant's methodology for identifying and evaluating potentially new and significant information.

**Response:** The new and significant process is described in the Vogtle Units 3 and 4 ER, as well as in the FSEIS, Section 1.6.1. SNC developed a process to identify new and significant information relevant to the issues and conclusions presented in the ESP EIS. The process is designed to (1) satisfy the requirements of 10 C.F.R. 51.50(c) and (2) provide a methodical, comprehensive review of the conclusions presented in the ESP EIS and the supporting information for those conclusions to identify any new and significant information that could potentially change the NRC's conclusions presented in the ESP EIS. For purposes of the new and significant review, SNC adopted the definitions of "new" and "significant" previously published by the NRC (*see* 72 Fed. Reg. 49352). In August 2008, the NRC Staff performed a site visit and audit of SNC's New and Significant process.

SNC's process for identifying new and significant information not covered in the ESP EIS began with the designation of subject matter experts ("SMEs") with extensive knowledge about plant systems, site environs, station environmental issues, and the regulatory issues relevant to the plant and site. FSEIS Section 1.6.1 goes on to describe SNC's process as follows:

The SMEs performed a line-by-line review of the ESP EIS to identify "key inputs." This review focused on the portions of the EIS where conclusions were directly supported, especially Chapters 4, 5, 6, and 7. The review also considered key assumptions that were included in Appendix J of the ESP EIS, key site characteristics, Westinghouse design parameters and site interface values that were found in Appendix I of the ESP EIS, and dose calculation assumptions provided in Appendix G of the ESP EIS.

The SMEs reviewed the key inputs to determine if any new information exists that could affect the NRC staff's findings or conclusions. This determination typically was based, as appropriate, on current construction plans and designs, site documentation, environmental monitoring and sampling programs, interviews with Federal, State, or local officials, contact with Federal, State, or local agencies, and when necessary, the SMEs' local knowledge. The SMEs conducted

a review of other information sources including interviews with industry peers, academia, and Federal, State, and local resource agencies, a review of the AP1000 Design Control Document, Westinghouse Technical Reports for the AP1000, environmental monitoring reports from existing programs, and applicable scientific literature, to determine if additional information relevant to the COL application was available that was not captured in the direct review of the ESP EIS.

The SMEs then reviewed all information that had been identified as new to determine if it might be significant. When possible, this determination was based on comparison with regulatory limits, guidelines provided in NRC review guidance such as NUREG-1555 [*Standard Review Plans for Environmental Reviews for Nuclear Power Plants*, NUREG-1555, Vol. 1 (includes 2007 revisions)], or other applicable criteria. When such a comparison was not possible, the SMEs used their best professional judgment to determine if new information was considered significant. The results of this review, including the bases for the conclusion on new information and the rationale for determination of significance, were summarized in documents that were audited by the NRC staff during the site audit that was conducted in late September 2009.

SNC's new and significant process is ongoing and will continue through to issuance of the COL. This is a living process that has continued throughout the following activities:

- Issuance of the draft EIS for the ESP (Process was implemented to capture new and significant information subsequent to the NRC Staff's finalization of the Draft EIS for the ESP. This included the time period during the NRC Staff's writing session for the Draft EIS for the ESP.);
- Issuance of the FEIS for the ESP;
- The three ESP License Amendment Requests;
- Issuance of applicable DCD revisions;
- Issuance of the Draft SEIS for the COL;
- Issuance of the Final SEIS for the COL; and
- Will continue until receipt of COL.

Question No.	Category	Reference	Question
36	Environmental	General	What process was used to determine whether there was new and significant information subsequent to the issuance of the EIS for the ESP that should be included in the ER for the COL application or in the SEIS?

**Response:** The same New and Significant process described in the response to Question 35c, which is the process included in the Vogtle Units 3 and 4 Environmental Report and described in Section 1.6.1 of the Vogtle Units 3 and 4 FSEIS, was used to determine whether there was new and significant information after the ESP FEIS was issued.

The initial COLA ER was developed based on information collected during the new and significant review, which incorporated “New” information pertinent to conclusions made in the Draft EIS for the ESP. This information was collected during the short period between issuance of the draft EIS for the ESP (September 2007) and submittal of the Vogtle Units 3 and 4 COLA (March 2008). SNC revised the COLA ER (Revision 1) in December 2009 to include additional “New” information identified during SNC’s continued new and significant review on the ESP FEIS and information the NRC Staff deemed relevant to the conclusions made in the ESP FEIS during the September 2009 New and Significant Audit. For clarity, there was no “New *and* Significant” information identified by SNC or discovered by the NRC Staff during their independent evaluations. This process continued through the issuance of the COL SEIS, and will continue until issuance of the COL. *Attachment 2* to SNC’s Response shows Figure 1: Vogtle Units 3 and 4 NEPA Activities Supported by the New & Significant Process. Figure 1 represents a timeline that describes the new and significant efforts that support the development of the COL.

Respectfully submitted,

(Original signed by M. Stanford Blanton)

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Dated this 13th day of September, 2011.

## Attachment 1

	MSD/MST Section	Commitment Text ( <i>italics</i> ) and Brief Description
1.	MSD 1.0	<p><i>A walk-through is performed, either by simulation or actual performance, of the steps in each procedure/guidance document to validate the guidance and assure the steps can be accomplished in the time required. As part of this walk-through, hose sizes and lengths, pumping capability, and the availability of supply piping to support the mitigative strategies are verified. Also, the walk-through will verify the compatibility of adapters, connections, fittings, electrical cables, connectors, and jumpers, and the availability of attachment devices to secure fire hoses and nozzles to lifting equipment. In addition, each procedure/guidance document is subject to an engineering evaluation. Appropriate evaluators, decision makers, and implementers are trained on procedures/guidance.</i></p> <p><u>Discussion:</u> This commitment discusses a pre-implementation walk-through and engineering evaluation that will be performed to verify that the steps described in the procedures and guidance documents can be performed in the required time and to confirm that the associated hardware is compatible. It also requires training of those responsible for completing the walk-through and evaluations. Plant equipment must be installed to accomplish the objectives of this commitment.</p>
2.	MSD 3.0	<p><i>LOLA procedures/guidance are walked down and validated six months prior to fuel load and any negative impacts on security and/or operations are identified and corrected.</i></p> <p><u>Discussion:</u> The objective of this activity is to verify that the LOLA mitigation strategies can be performed without introducing any negative impacts on security and/or operations. Plant equipment must be installed to accomplish the objectives of this commitment.</p>
3.	MDS 4.0	<p><i>Descriptions of the various staging areas and locations of important equipment needed for the mitigative strategies are included in appropriate procedures/guidance.</i></p> <p><u>Discussion:</u> This commitment describes specific information to be included in the LOLA procedures/guidance. LOLA procedures and guidance are programmatic elements of the LOLA mitigation strategies that will be developed in accordance with the schedule established by Proposed License Condition 19.A-1.</p>
4.	MSD 6.0	<p><i>Guidance will be included in the pool makeup and spray strategies to assist the plant staff in determining which mode of makeup or spray to utilize based on the plant damage assessment and the availability of equipment.</i></p> <p><u>Discussion:</u> This commitment addresses guidance to be included in the LOLA procedures/guidance. LOLA procedures and guidance are programmatic elements of the LOLA mitigation strategies that will be</p>

	MSD/MST Section	Commitment Text ( <i>italics</i> ) and Brief Description
		developed in accordance with the schedule established by Proposed License Condition 19.A-1.
5.	MSD 6.2	<p><i>The portable pump is specified to have sufficient pump head and flow rate to deliver the flow necessary for the mitigating strategy. Detailed design considers friction losses in the piping system and the needed pump head so that appropriate water flow is supplied to the SFP. An engineering basis is available that provides reasonable assurance that the pre-determined flow requirements will be met.</i></p> <p><u>Discussion:</u> This commitment addresses detailed design considerations that will comprise the engineering basis for the portable pump that supports several alternative mitigating strategies. Detailed design of LOLA mitigating equipment will be accomplished in accordance with the schedule established by Proposed License Condition 19.A-1.</p>
6.	MST – Phase 1 Fire Fighting Response Strategy	<p><u>Item 2:</u> <i>The primary location for the fire brigade staging and dress out areas are provided in site procedures.</i></p> <p><u>Discussion:</u> This commitment addresses specific information to be included in site procedures. Procedures and guidance are programmatic elements that will be developed in accordance with the schedule established by Proposed License Condition 19.A-1.</p>
7.	MST – Phase 1 Fire Fighting Response Strategy	<p><u>Item 5:</u> <i>VEGP 3 &amp; 4 will re-evaluate offsite organizations, including any associated MOUs, which could significantly enhance needed skills, equipment, or abilities in the event of a LOLA event.</i></p> <p><u>Discussion:</u> This commitment addresses the re-evaluation of offsite agencies and existing memoranda of understanding to provide personnel and equipment to support the on-site organization’s response to a LOLA event. This activity is best performed closer to the implementation milestone for the LOLA strategies to more accurately identify and assess any gaps between the needs of the onsite response organization and the resources available to the outside organizations.</p>
8.	MST – Phase 1 Fire Fighting Response Strategy	<p><u>Item 8:</u> <i>VEGP updates this coordination agreement [with offsite local fire departments] within one year prior to the initial fuel load at VEGP 3 &amp; 4.</i></p> <p><u>Discussion:</u> Similar to Phase 1 Fire Fighting Response Strategy Item 5, this commitment addresses updating the coordination agreement with the local fire departments to support plant recovery efforts. This activity is best performed closer to the LOLA implementation milestone to more accurately identify and assess any gaps between the needs of the onsite response organization and the resources available to the outside organizations.</p>
9.	MST – Phase 1 Fire Fighting Response Strategy	<p><u>Item 9:</u> <i>For VEGP 3 &amp; 4, one or more staging areas are established and documented in guidance documents for large numbers of responding vehicles. Areas are selected based on the expected volume</i></p>

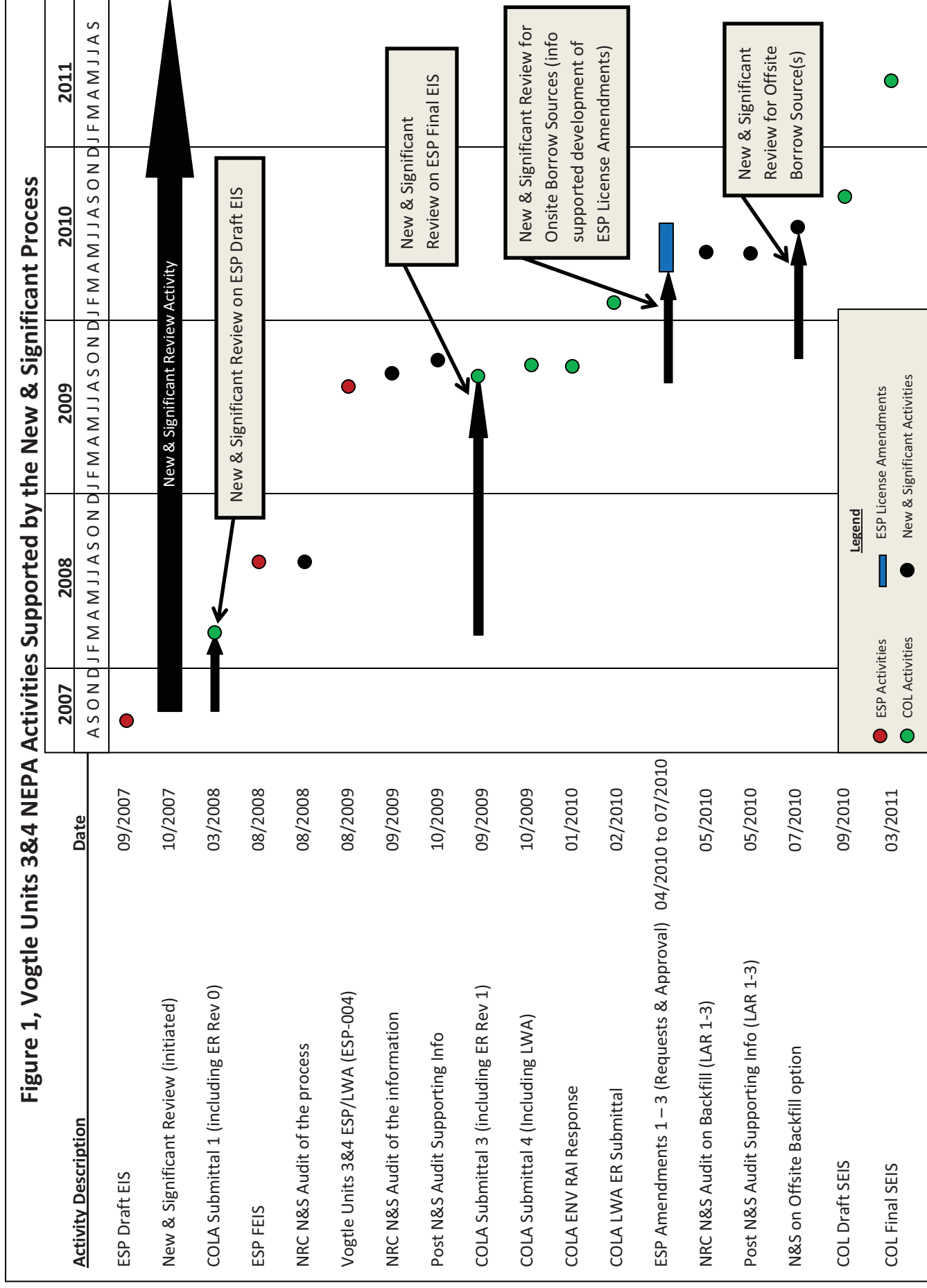
	<b>MSD/MST Section</b>	<b>Commitment Text (<i>italics</i>) and Brief Description</b>
	Strategy	<p><i>and type of vehicles and proximity to the plant (i.e., one near the plant site and one several miles away).</i></p> <p><u>Discussion:</u> This commitment addresses the establishment and documentation of emergency response vehicle staging areas. Identification of these staging areas needs only be performed in time to enable effective coordination with local law enforcement agencies and familiarization training with offsite responders.</p>
10.	MST – Phase 1 Fire Fighting Response Strategy	<p><u>Item 10:</u> <i>The locations and number of radios are included in LOLA procedures/guidance documents.</i></p> <p><u>Discussion:</u> This commitment addresses information to be included in the LOLA procedures/guidance. LOLA procedures and guidance are programmatic elements of the LOLA mitigation strategies that will be developed in accordance with the schedule established by Proposed License Condition 19.A-1.</p>
11.	MST – Phase 1 Fire Fighting Response Strategy	<p><u>Item 11:</u> <i>The designated triage areas are at locations that are expected to survive a potential LOLA event based on their distance from target areas. Other considerations for the selection of triage areas include available utilities, accessibility for responding transport vehicles, and anticipated number of casualties. The areas specified for triage are large enough to adequately handle large numbers of casualties. Applicable procedures/guidance will identify the expected location, size, and capability of triage areas following the selection of these areas.</i></p> <p><u>Discussion:</u> Designation of triage areas and their identification in LOLA response procedures/guidance are programmatic elements of the LOLA mitigation strategies that will be developed in accordance with the schedule established by Proposed License Condition 19.A-1.</p>
12.	MST – Phase 1 Fire Fighting Response Strategy	<p><u>Item 13:</u> <i>A tabletop exercise postulating a LOLA event is conducted periodically to enhance the understanding of the coordinated response strategies for a LOLA event (involving offsite fire responders, onsite fire brigade, and operations staff).</i></p> <p><u>Discussion:</u> This commitment addresses a periodic exercise that will be conducted with onsite and offsite responders. This periodic exercise is expected to take place after the LOLA mitigation strategies are fully implemented.</p>
13.	MST – Phase 1 Plant Operations to Mitigate Fuel Damage	<p><u>Item 2:</u> <i>An evaluation is conducted to determine the number of radios needed to support the operational recovery teams expected to be involved during a LOLA event and to identify the best locations for staging these radios with their chargers and spare batteries.</i></p> <p><u>Discussion:</u> The assessment of emergency communication equipment needs, such as determining the quantity and storage locations of portable radios, is an example of the detailed implementation activities that are associated with satisfying the LOLA mitigating strategies</p>



	MSD/MST Section	Commitment Text ( <i>italics</i> ) and Brief Description
		implementation requirements of Proposed License Condition 19.A-1.
14.	MST – Phase 1 Plant Operations to Mitigate Fuel Damage	<p><u>Item 10:</u> <i>The implementation procedures/guidance provide direction on unique identification of equipment, clearly marking the LOLA-specific equipment or components with reflective signs or other designators, and mapping the guidance to the items required to implement the LOLA strategies.</i></p> <p><u>Discussion:</u> This commitment addresses the incorporation of direction in procedures/guidance on the identification and marking of equipment required to implement LOLA strategies. LOLA procedures and guidance are programmatic elements of the LOLA mitigation strategies that will be developed in accordance with the schedule established by Proposed License Condition 19.A-1.</p>
15.	MST – Phase 1 Plant Operations to Mitigate Fuel Damage	<p><u>Item 13:</u> <i>1. The AP1000 spent fuel loading strategy credits a permanently installed spent fuel spray system to cool spent fuel assemblies in the event of a LOLA resulting in a loss of SFP inventory. Under this strategy, fuel assemblies are placed in a uniform pattern in Regions 1 and 2 of the pool in accordance with spray flux and criticality requirements. (See Section 6.4 for additional details regarding this spent fuel loading strategy.)</i></p> <p><u>Discussion:</u> This commitment addresses the use of a spent fuel loading strategy that includes placement of spent fuel assemblies in a uniform pattern in the spent fuel pool. Spent fuel is not expected to be placed in the pool until after it has been irradiated in the first fuel cycle. Development of the spent fuel loading strategy is an operational strategy that is not required to be completed prior to issuance of the combined license.</p>
16.	MST – Phase 1 Plant Operations to Mitigate Fuel Damage	<p><u>Item 14:</u> <i>... training material on mitigation strategies to prevent fuel damage is designed, developed, and conducted. Training on mitigation strategies is incorporated into initial and requalification licensed operator training programs. Training material for operators, evaluators, decision makers, and implementers is developed using the Systematic Approach to Training (SAT). The frequency of the training is initially the same as SAMG training and is adjusted using the SAT process.</i></p> <p><u>Discussion:</u> This commitment addresses incorporation of LOLA mitigation strategies into the licensed operator training program, including the use of the SAT process for adjusting the frequency of this training. Reactor Operator training will be developed and implemented in accordance with the implementation requirement in Proposed License Condition 13-1; therefore, it is reasonable to address this commitment in a timeframe that is consistent with the implementation requirement of that proposed license condition.</p>
17.	MST – Phase 2	<u>Item 3:</u> <i>Preoperational tests are performed to verify the required flow</i>

	MSD/MST Section	Commitment Text ( <i>italics</i> ) and Brief Description
		<p><i>rates through each spray header and to visually inspect the spray flow into the spent fuel pool. The success criterion for these tests is the ability to deliver the required minimum design flow rate of 400 gpm from each of the east and west spray headers using the credited pumps and simulated water sources, and 290 gpm from the east spray header using gravity flow from the PCCWST. Nozzle tests performed at the vendor facility to verify the individual nozzle spray patterns, coupled with calculations of the combined spray patterns and visual verification of spray coverage provide a reasonable confirmation of adequate SFP spray coverage.</i></p> <p><u>Discussion:</u> This commitment addresses preoperational tests that will be performed on the spent fuel pool spray system. These tests will provide visual verification of spray coverage after the system is installed and functional, and cannot be performed until that time.</p>
18.	MST – Phase 3	<p><u>Item 1:</u> ... <i>SAMG-like procedure/guidance is developed for Command and Control (initial response EDMG) and for accomplishing the following safety functions: Reactor Coolant System (RCS) Inventory Control, RCS Heat Removal, Containment Isolation, Containment Integrity, and Release Mitigation. The EDMG is written to cover an event where the control room staff and resources are substantially affected. The command and control structure is established using EDMG guidance and should state that the most senior operations person that survives the event becomes the onsite incident commander until relieved. The EDMG also covers offsite notifications, ERO callout, and damage assessment. Damage assessments include communications, structures, power systems and safety functions using NEI 06-12, Revision 3 guidance.</i></p> <p><u>Discussion:</u> This commitment addresses certain information that is to be included in the Extensive Damage Mitigation Guideline (“EDMG”). LOLA procedures and guidance, including the EDMG, are programmatic elements of the LOLA mitigation strategies that will be developed in accordance with the schedule established by Proposed License Condition 19.A-1.</p>

## Attachment 2



**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**In the Matter of**

**Docket Nos. 52-025-COL and 52-026-COL**

**Southern Nuclear Operating Company**

**(Vogtle Electric Generating Plant,  
Units 3 & 4)**

**September 12, 2011**

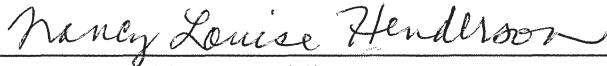
I, Charles R. Pierce do hereby state as follows:

1. I am employed as Nuclear Development AP1000 Licensing Manager for Southern Nuclear Operating Company.
2. I attest to the accuracy of the response to questions, support them as my own, and endorse their introduction into the record of this proceeding. I declare under penalty of perjury that those statements, and my statements in this affidavit, are true and correct to the best of my knowledge, information, and belief.



Charles R. Pierce

Subscribed and sworn before me  
this 12<sup>th</sup> day of September, 2011



Notary Public

My Commission Expires: March 23, 2014

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

<b>In the Matter of</b>	)	
	)	
	)	<b>Docket Nos. 52-025-COL and 52-026-COL</b>
<b>Southern Nuclear Operating Company</b>	)	
	)	
<b>(COL Application for Vogtle Electric</b>	)	<b>September 13th, 2011</b>
<b>Generating Plant, Units 3 and 4)</b>	)	

**CERTIFICATE OF SERVICE**

I hereby certify that copies of SOUTHERN NUCLEAR OPERATING COMPANY'S RESPONSE TO THE COMMISSION'S ORDER OF AUGUST 31, 2011 for the Vogtle Units 3 & 4 COL Mandatory Hearing in the above-captioned proceeding have been served by electronic mail as shown below, this 13th day of September, 2011, and/or by e-submittal.

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Respectfully submitted,

(Original signed by M. Stanford Blanton)

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