



South Carolina Electric and Gas
V. C. Summer Nuclear Station, Units 2 & 3
COL Application

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V. C. Summer Nuclear Station, Units 2 and 3

COL Application

Part 10

Proposed License Conditions and ITAAC

Revision 1

**V. C. Summer Nuclear Station, Units 2 and 3
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Part 10, Proposed License Conditions and ITAAC**

Proposed License Conditions

1. ITAAC (Inspections, Tests, Analyses, and Acceptance Criteria):

There are several ITAAC identified in the COL application. Once incorporated into the COL, the regulations identify the requirements that must be met.

PROPOSED LICENSE CONDITION:

The ITAAC identified in the tables in Appendix B are hereby incorporated into this Combined License. After the Commission has made the finding required by 10 CFR 52.103(g), the ITAAC do not constitute regulatory requirements; except for specific ITAAC, which are the subject of a Section 103(a) hearing, their expiration will occur upon final Commission action in such proceeding.

2. COL HOLDER ITEMS:

There are several COL information items that cannot be resolved prior to issuance of the Combined License. The referenced AP1000 design certification has already justified why each COL holder item (as identified in the AP1000 DCD Tier 2 Table 1.8-2) cannot be resolved before the COL is issued, provides sufficient information on these items to support the NRC licensing decision, and identifies an appropriate implementation milestone. Each COL information item that cannot be resolved completely before the COL is issued is also identified as a COL holder item in the COL application FSAR Table 1.8-202. Therefore, in accordance with the guidance in Regulatory Guide 1.206, section C.III.4.3, the following License Condition is proposed to address these COL holder items. Holder items (per DCD Table 1.8-2) that are addressed by the COLA are not included in the proposed condition. These include COL information item numbers 3.11-1, 9.5-6, 10.1-1, and 13.6-5.

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PROPOSED LICENSE CONDITION:

Each COL holder item identified below shall be completed by the identified implementation milestone through completion of the action therein identified.

SUMMARY OF COMBINED LICENSE INFORMATION HOLDER ITEMS			
COL Item No.	Subject	From DCD Tier 2 Subsection	Implementation Milestone
3.6-1	Pipe Break Hazards Analysis	3.6.4.1	Prior to initial fuel load
<p>After a Combined License is issued, the following activities will be completed by the COL holder:</p> <p>A pipe rupture hazard analysis is part of the piping design. It is used to identify postulated break locations and layout changes, support design, whip restraint design, and jet shield design. The final design for these activities will be completed prior to fabrication and installation of the piping and connected components. The as-built reconciliation of the pipe break hazards analysis in accordance with the criteria outlined in subsections 3.6.1.3.2 and 3.6.2.5 will be completed prior to fuel load.</p>			
3.7-3	Seismic Interaction Review	3.7.5.3	Prior to initial fuel load
<p>The seismic interaction review will be updated by the Combined License holder for as-built information. This review is performed in parallel with the seismic margin evaluation. The review is based on as-procured data, as well as the as-constructed condition. The as-built seismic interaction review is not provided with the COL application, but is completed prior to fuel load.</p>			
3.7-4	Reconciliation of Seismic Analyses of Nuclear Island Structures	3.7.5.4	Prior to initial fuel load
<p>The Combined License holder will reconcile the seismic analyses described in subsection 3.7.2 for detail design changes, such as those due to as-procured or as-built changes in component mass, center of gravity, and support configuration based on as-procured equipment information. Deviations are acceptable based on an evaluation consistent with the methods and procedure of Section 3.7 provided the amplitude of the seismic floor response spectra, including the effect due to these deviations, does not exceed the design basis floor response spectra by more than 10 percent. The Combined License holder will complete this reconciliation prior to fuel load.</p>			
3.9-2	Design Specification and Reports	3.9.8.2	Prior to initial fuel load
<p>After a Combined License is issued, the following activities are completed by the COL holder:</p> <p>Reconciliation of the as-built piping (verification of the thermal cycling and stratification loadings considered in the stress analysis discussed in subsection 3.9.3.1.2) is completed by the COL holder after the construction of the piping systems and prior to fuel load.</p>			
4.4-2	Confirm Assumptions for Safety Analyses DNBR Limits	4.4.7	Prior to initial fuel load
<p>Combined License applicants referencing the AP1000 certified design will address changes to the reference design of the fuel, burnable absorber rods, rod cluster control assemblies, or initial core design from that presented in the DCD. Following selection of the actual plant operating instrumentation and calculation of the instrumentation uncertainties of the operating plant parameters as discussed in subsection 7.1.6 and prior to fuel load, the Combined License holder will calculate the design limit DNBR values. The calculations will be completed using the RTDP with these instrumentation uncertainties and confirm that either the design limit DNBR values as described in Section 4.4 remain valid, or that the safety analysis minimum DNBR bounds the new design limit DNBR values plus DNBR penalties, such as rod bow penalty.</p>			

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SUMMARY OF COMBINED LICENSE INFORMATION HOLDER ITEMS			
COL Item No.	Subject	From DCD Tier 2 Subsection	Implementation Milestone
5.3-1	Reactor Vessel Pressure – Temperature Limit Curves	5.3.6.1	Prior to initial fuel load
The COL Holder shall update the P/T limits using the PTLR methodologies approved in the AP1000 DCD using the plant-specific material properties or confirm that the reactor vessel material properties meet the specifications and use the Westinghouse generic PTLR curves.			
5.3-4	Reactor Vessel Materials Properties Verification	5.3.6.4.1	Prior to initial fuel load
The Combined License holder will complete prior to fuel load verification of plant-specific belt line material properties consistent with the requirements in subsection 5.3.3.1 and Tables 5.3-1 and 5.3-3. The verification will include a pressurized thermal shock evaluation based on as-procured reactor vessel material data and the projected neutron fluence for the plant design objective of 60 years. This evaluation report will be submitted for NRC staff review.			
9.1-7	Coupon Monitoring Program	9.1.6	Prior to commercial operation
A spent fuel rack Metamic coupon monitoring program is to be implemented when the plant is placed into commercial operation. This program includes tests to monitor bubbling, blistering, cracking, or flaking; and a test to monitor for corrosion, such as weight loss measurements and or visual examination.			
10.2-1	Turbine Maintenance and Inspection	10.2.6	Prior to initial fuel load
The Combined License holder will submit to the NRC staff for review prior to fuel load, and then implement a turbine maintenance and inspection program. The program will be consistent with the maintenance and inspection program plan activities and inspection intervals identified in subsection 10.2.3.6. The Combined License holder will have available plant-specific turbine rotor test data and calculated toughness curves that support the material property assumptions in the turbine rotor analysis after the fabrication of the turbine and prior to fuel load.			
14.4-2	Test Specifics and Procedures	14.4.2	Prior to initial fuel load
NOTE: Addressed by proposed License Condition #6.			
14.4-3	Conduct of Test Program	14.4.3	Prior to initiating test program
A site-specific startup administration manual (procedure), which contains the administration procedures and requirements that govern the activities associated with the plant initial test program, as identified in DCD Subsection 14.2.3 and as described in APP-GW-GLR-038 (DCD Reference 2), is provided prior to initiating the plant initial test program.			
14.4-4	Review and Evaluation of Test Results	14.4.4	Prior to initial fuel load
The Combined License holder is responsible for review and evaluation of individual test results as well as final review of overall test results and for review of selected milestones or hold points within the test phases. Test exceptions or results which do not meet acceptance criteria are identified to the affected and responsible design organizations, and corrective actions and retests, as required, are performed.			
14.4-6	First-Plant-Only and Three-Plant-Only Tests	14.4.6	Prior to preoperational testing

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COL Item No.	Subject	From DCD Tier 2 Subsection	Implementation Milestone
<p>The COL holder for the first plant and the first three plants will perform the tests listed in Subsection 14.2.5. For subsequent plants, either tests listed in Subsection 14.2.5 shall be performed, or the COL applicant shall provide a justification that the results of the first-plant-only tests or first-three-plant tests are applicable to the subsequent plant.</p> <p>The Combined License holder(s) for the first AP1000 plant (or first three plants) available for testing will perform the tests defined during preoperational and startup testing as identified in Subsections 14.2.9 and 14.2.10. Combined License holders referencing the results of the tests will provide the report as necessary. The schedule for providing this information will be provided prior to preoperational testing.</p>			
19.59.10-1	As-Built SSC HCLPF Comparison to Seismic Margin Evaluation	19.59.10.5	Prior to initial fuel load
<p>The Combined License holder referencing the AP1000 certified design will review differences between the as-built plant and the design used as the basis for the AP1000 seismic margins analysis prior to fuel load. A verification walkdown will be performed with the purpose of identifying differences between the as-built plant and the design. Any differences will be evaluated to determine if there is a significant adverse effect on the seismic margins analysis results. Special interactions are addressed by COL information item 3.7-3. Details of the process will be developed by the Combined License holder.</p> <p>The Combined License holder referencing the AP1000 certified design should compare the as-built SSC HCLPFs to those assumed in the AP1000 seismic margin evaluation prior to fuel load. Deviations from the HCLPF values or assumptions in the seismic margin evaluation due to the as-built configuration and final analysis should be evaluated to determine if vulnerabilities have been introduced. The requirements to which the equipment is to be purchased are included in the equipment specifications. Specifically, the equipment specifications include:</p> <ol style="list-style-type: none"> 1. Specific minimum seismic requirements consistent with those used to define the Table 19.55-1 HCLPF values. <p style="padding-left: 40px;">This includes the known frequency range used to define the HCLPF by comparing the required response spectrum (RRS) and test response spectrum (TRS). The range of frequency response that is required for the equipment with its structural support is defined.</p> <ol style="list-style-type: none"> 2. Hardware enhancements that were determined in previous test programs and/or analysis programs will be implemented. 			
19.59.10-2	Evaluation of As-Built Plant Versus Design in AP1000 PRA and Site-Specific PRA External Events	19.59.10.5	Prior to initial fuel load
<p>The Combined License holder referencing the AP1000 certified design will review differences between the as-built plant and the design used as the basis for the AP1000 PRA and Table 19.59-18 prior to fuel load. If the effects of the differences are shown, by a screening analysis, to potentially result in a significant increase in core damage frequency or large release frequency, the PRA will be updated to reflect these differences.</p>			

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SUMMARY OF COMBINED LICENSE INFORMATION HOLDER ITEMS			
COL Item No.	Subject	From DCD Tier 2 Subsection	Implementation Milestone
19.59.10-3	Internal Fire and Internal Flood Analyses	19.59.10.5	Prior to initial fuel load
The Combined License holder referencing the AP1000 certified design will review differences between the as-built plant and the design used as the basis for the AP1000 internal fire and internal flood analysis prior to fuel load. Differences will be evaluated to determine if there is significant adverse effect on the internal fire and internal flood analysis results.			
19.59.10-4	Develop and Implement Severe Accident Management Guidance	19.59.10.5	Prior to startup testing
NOTE — addressed by proposed License Condition #6.			
19.59.10-5	Equipment Survivability	19.59.10.5	Prior to initial fuel load
The Combined License holder referencing the AP1000 certified design will perform a thermal lag assessment of the as-built equipment listed in Tables 6b and 6c in Attachment A of APP-GW-GLR-069 to provide additional assurance that this equipment can perform its severe accident functions during environmental conditions resulting from hydrogen burns associated with severe accidents. This assessment is performed prior to fuel load and is required only for equipment used for severe accident mitigation that has not been tested at severe accident conditions. The Combined License holder will assess the ability of the as-built equipment to perform during severe accident hydrogen burns using the Environment Enveloping method or the Test Based Thermal Analysis method discussed in EPRI NP-4354.			

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3. OPERATIONAL PROGRAM IMPLEMENTATION:

The provisions of the regulations address implementation milestones for some operational programs. The NRC will use license conditions to ensure implementation for those operational programs whose implementation is not addressed in the regulations. COL application FSAR Subsection 13.4, Table 13.4-201, identifies several programs required by regulations that must be implemented by a milestone to be identified in a license condition.

PROPOSED LICENSE CONDITION:

The licensee shall implement the programs or portions of programs identified in Table 13.4-201 on or before the associated milestones in Table 13.4-201.

A. Construction Initiation

The licensee shall implement each operational program identified below prior to initiating construction of nuclear safety or security related structures, systems, or components.

A.1 — Fitness for Duty (Construction)

B. 18 Months Prior to Fuel Load

The licensee shall implement each operational program identified below at least 18 months prior to scheduled date of initial fuel load.

B.1 — Reactor Operator Training

C. Receipt of Materials

The licensee shall implement each operational program identified below prior to initial receipt of byproduct, source, or special nuclear materials onsite (excluding Exempt Quantities as described in 10 CFR 30.18).

C.1— Radiation Protection (applicable portions)

D. Fuel Receipt

The licensee shall implement each operational program identified below prior to initial receipt of fuel onsite.

D.1 — Fire Protection (applicable portions)

D.2 — Radiation Protection (applicable portions)

D.3 — Security Program (applicable portions)

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E. Construction Testing

The licensee shall implement each operational program identified below prior to initial construction testing.

E.1— Initial Test Program — Construction Testing

F. Preoperational Testing

The licensee shall implement each operational program identified below prior to initial preoperational testing.

F.1— Initial Test Program — Preoperational Testing

G. Fuel Loading

The licensee shall implement each operational program identified below prior to initial fuel load.

- G.1 — Environmental Qualification
- G.2 — Pre-Service Testing
- G.3 — Process and Effluent Monitoring and Sampling
- G.4 — Radiation Protection (applicable portions)
- G.5 — Motor-Operated Valve Testing
- G.6 — Fire Protection
- G.7 — Fitness for Duty (Operations)
- G.8 — Containment Leakage Rate Testing Program
- G.9 — Physical Security Program
- G.10 — Cyber Security

H. Startup Testing

The licensee shall implement each operational program identified below prior to initial fuel load.

H.1 — Initial Test Program - Startup Testing

I. MODE 4 — Not used.

J. Initial Criticality

The licensee shall implement each operational program identified below prior to initial criticality.

J.1 — Reactor Vessel Material Surveillance

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K. Waste Shipment

The licensee shall implement each operational program identified below prior to initial radioactive waste shipment.

K.1— Radiation Protection

4. Not used.

5. SECURITY PROGRAM REVISIONS:

An implementation license condition approved in the SRM regarding SECY-05-0197 applies to the security program.

PROPOSED LICENSE CONDITION:

The licensee shall maintain in effect the provisions of the physical security plan, security personnel training and qualification plan, and safeguards contingency plan, and all amendments made pursuant to the authority of 10 CFR 50.90, 50.54(p), 52.97, and Section VIII of Appendix D to Part 52 when nuclear fuel is onsite, and continuing until all nuclear fuel is permanently removed from the site.

6. OPERATIONAL PROGRAM READINESS:

The NRC inspection of operational programs will be the subject of the following license condition in accordance with SECY-05-0197.

PROPOSED LICENSE CONDITION:

The licensee shall submit to the appropriate Director of the NRC, a schedule, no later than 12 months after issuance of the COL, that supports planning for and conduct of NRC inspections of operational programs listed in the operational program FSAR Table 13.4-201. The schedule shall be updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until either the operational programs in the FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first.

- a. This schedule shall include a submittal schedule for the emergency planning implementation procedures to the NRC consistent with 10 CFR Part 50, Appendix E, Section V.
- b. This schedule shall include a schedule for the development of a site specific Severe Accident Management Guidance.
- c. This schedule shall include a submittal schedule for the reactor vessel pressurized thermal shock evaluation at least 18 months prior to initial fuel load.

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d. This schedule shall include a submittal schedule for approved preoperational and startup test procedures in accordance with FSAR Section 14.2.3.

7. Not used.

8. STARTUP TESTING:

COL application FSAR Section 14.2 specifies certain startup tests that must be completed after fuel load. Operating licenses typically have included the following condition related to startup testing.

PROPOSED LICENSE CONDITION:

Any changes to the Initial Startup Test Program described in Chapter 14 of the FSAR made in accordance with the provisions of 10 CFR 50.59 or Section VIII of Appendix D to 10 CFR Part 52 shall be reported in accordance with 50.59(d) within one month of such change.

9. Not used.

10. ENVIRONMENTAL PROTECTION PLAN:

Operating licenses typically have included the following condition related to environmental protection.

PROPOSED LICENSE CONDITION:

The issuance of this COL, subject to the Environmental Protection Plan and the conditions for the protection of the environment set forth herein, is in accordance with the National Environmental Policy Act of 1969, as amended, and with applicable sections of 10 CFR 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," as referenced by Subpart C of 10 CFR 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants," and all applicable requirements therein have been satisfied.

11. EMERGENCY PLAN EMERGENCY CLASSIFICATION SYSTEM
(EMERGENCY ACTION LEVELS)

The licensee shall submit a fully developed set of plant-specific Emergency Action Levels (EALs) for VCSNS Units 2 and 3 in accordance with NEI-07-01 Revision 0, or the most current NRC endorsed version available at the time of EAL submittal. These fully developed EALs shall be submitted to the NRC for confirmation at least 180 days prior to initial fuel load. The submitted EALs will be written with no deviations.

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Appendix A. Environmental Protection Plan (Nonradiological)

1.0 OBJECTIVES OF THE ENVIRONMENTAL PROTECTION PLAN

The purpose of the Environmental Protection Plan (EPP) is to provide for protection of nonradiological environmental resources during construction and operation of the nuclear facility. The principal objectives of the EPP are as follows:

1. Verify that the facility is constructed and operated in an environmentally acceptable manner, as established by the Final Environmental Impact Statement (FEIS) and other NRC environmental impact assessments.
2. Coordinate NRC requirements and maintain consistency with other Federal, State and local requirements for environmental protection.
3. Keep NRC informed of the adverse environmental effects of facility construction and operation and of actions taken to control those adverse effects.

Environmental issues identified in the FEIS which relate to water quality matters are regulated by the licensee's National Pollutant Discharge Elimination System (NPDES) permit.

2.0 ENVIRONMENTAL PROTECTION ISSUES

In the FEIS dated **[Insert Date]** (NUREG-**[XXXX]**), the staff considered the environmental impacts associated with construction and operation of the VCSNS Units 2 and 3. The environmental impacts associated with the construction activities authorized by 10 CFR 52.25 and impacts associated with operations in accordance with the facility Combined License (COL) are expected to be less than or equal to the impacts assessed in the FEIS.

3.0 CONSISTENCY REQUIREMENTS

3.1 CONSTRUCTION ACTIVITIES

The licensee shall take the necessary actions identified in NUREG-**[XXXX]** to avoid unnecessary environmental impacts from construction activities. These actions include conducting construction activities in accordance with various environmental permit requirements.

The Licensee shall maintain records of construction activities. These records shall include an assessment of whether the environmental impact of construction activities is consistent with that evaluated in the EIS.

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3.2 OPERATIONS

The licensee shall take the necessary actions identified in NUREG-[XXXX] to avoid unnecessary environmental impacts. These actions include operating the facility in accordance with various environmental permit requirements.

3.3 REPORTING RELATED TO THE CLEAN WATER ACT

The certifications and permits required under the Clean Water Act provide mechanisms for protecting water quality and aquatic biota. The NRC will rely on the decisions made by the U.S. Environmental Protection Agency and the State of South Carolina under the authority of the Clean Water Act for any requirements for water quality and aquatic monitoring.

The licensee shall provide the NRC with a copy of the NPDES permit issued by the South Carolina Department of Health and Environmental Control (DHEC) Title 48 South Carolina Code of Laws within 60 days of approval.

3.4 PLANT DESIGN AND OPERATION

The licensee may make changes in plant design or operation or perform tests or experiments affecting the environment provided such activities do not involve an unreviewed environmental question and do not involve a change in the EPP (this provision does not relieve the licensee of the requirements of 10 CFR 50.59 or Appendix D to 10 CFR Part 52). Changes in plant design or operation or performance of tests or experiments which do not affect the environment are not subject to the requirements of this EPP. Activities governed by Section 3.5 are not subject to the requirements of this Section.

Before engaging in additional construction or operational activities which may significantly affect the environment, the licensee shall prepare and record an environmental evaluation of such activity. Activities are excluded from this requirement if all measurable nonradiological environmental effects are confined to the onsite areas previously disturbed during plant construction. When the evaluation indicates that such activity involves an unreviewed environmental question, the licensee shall provide a written evaluation of such activity and obtain prior NRC approval. When such activity involves a change in the EPP, such activity and change to the EPP may be implemented only in accordance with an appropriate license amendment as set forth in Section 5.3 of this EPP.

A proposed change, test, or experiment shall be deemed to involve an unreviewed environmental question if it concerns:

1. A matter which may result in a significant increase in any adverse environmental impact previously evaluated in the FEIS, environmental impact appraisals, or in any decisions of the Atomic Safety and Licensing Board;

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2. A significant change in effluents or power level; or
3. A matter not previously reviewed and evaluated in the FEIS, environmental impact appraisals, or in any decisions of the Atomic Safety and Licensing Board, which may have a significant adverse environmental impact.

The licensee shall maintain records of changes in plant design or operation and of tests and experiments carried out pursuant to this subsection. These records shall include written evaluations which provide bases for determination that the change, test, or experiment does not involve an unreviewed environmental question or constitute a decrease in the effectiveness of this EPP to meet the objectives specified in Section 1.0. The licensee shall include, as part of the Annual Environmental Operating Report (in accordance with Subsection 5.4.1), brief descriptions, analyses, interpretations, and evaluations of such changes, tests, and experiments.

3.5 CHANGES REQUIRED FOR COMPLIANCE WITH OTHER ENVIRONMENTAL REGULATIONS

Changes in plant design or operation and performance of tests or experiments which are required to achieve compliance with other Federal, State, and local environmental regulations are not subject to the requirements of Section 3.4.

4.0 ENVIRONMENTAL CONDITIONS

4.1 UNUSUAL OR IMPORTANT ENVIRONMENTAL EVENTS

The licensee shall evaluate and report to the NRC Operation Center within 24 hours (followed by a written report in accordance with Subsection 5.4.2) any occurrence of an unusual or important event that indicates or could result in significant environmental impact causally related to construction or operation. The following are examples: excessive bird impaction events; unusual onsite plant or animal disease outbreaks; mortality or unusual occurrence of any species protected by the Endangered Species Act of 1973; unusual fish kills; unusual increase in nuisance organisms or conditions; and unanticipated or emergency discharge of waste water or chemical substances that impact waters of the State.

Routine monitoring programs are not required to implement this condition.

5.0 ADMINISTRATIVE PROCEDURES

5.1 REVIEW AND AUDIT

The licensee shall provide for review and audit of compliance with the EPP. The audits shall be conducted independently and shall not be conducted by the individual or groups responsible for performing the specific activity. A description of the organization structure utilized to achieve the independent review and audit

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function and results of the audit activities shall be maintained and made available for inspection.

5.2 RECORDS RETENTION

The licensee shall make and retain records associated with this EPP in a manner convenient for review and inspection and shall make them available to the NRC on request.

The licensee shall retain records of construction and operation activities determined to potentially effect the continued protection of the environment until the date of termination of the license. Records of modifications to station structures, systems, and components determined to potentially affect the continued protection of the environment shall be retained for the life of the station. All other records, data, and logs relating to this EPP shall be retained for five years or, where applicable, in accordance with the requirements of other agencies.

5.3 CHANGES IN ENVIRONMENTAL PROTECTION PLAN

Requests for changes in the EPP shall include an assessment of the environmental impact of the proposed change and a supporting justification. Implementation of such changes in the EPP shall not commence prior to the NRC approval of the proposed changes in the form of a license amendment incorporating the appropriate revisions to the EPP.

5.4 REPORTING REQUIREMENTS

5.4.1 Routine Reports

An Annual Environmental Operating Report describing implementation of this EPP for the previous year shall be submitted to the NRC prior to May 15 of each year. The period for the first report shall begin with the date of issuance of the Combined Licenses for Units 2 and 3, and the initial report shall be submitted prior to May 15 of the year following issuance of the Combined Licenses for Units 2 and 3. At the discretion of the licensee, the Annual Environmental Operating Report for Units 2 and 3 may be combined with the Annual Operating Report submitted for VCSNS Unit 1.

The report shall include summaries and analyses of the results of the environmental protection activities required by EPP for the report period, including a comparison with related preoperational studies, operational controls (as appropriate), and previous nonradiological environmental monitoring reports, and an assessment of the observed impacts of the plant operation on the environment. If unexpected harmful effects or evidence of trends toward irreversible damage to the environment are observed, the licensee shall provide a detailed analysis of the data and a proposed course of mitigating action.

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The Annual Environmental Operating Report shall include:

1. A list of EPP noncompliances and the corrective actions taken to remedy them.
2. A list of changes in station design or operation, tests, and experiments made in accordance with Subsection 3.4 which involved potentially significant unreviewed environmental questions.
3. A list of nonroutine reports submitted in accordance with Subsection 5.4.2.

In the event that some results are not available by the report due date, the report shall be submitted noting and explaining the missing results. The missing results shall be submitted as soon as possible in a supplementary report.

5.4.2 Nonroutine Reports

A written report shall be submitted to the NRC within 60 days of occurrence of a nonroutine event that has a significant impact on the environment. The report shall:

1. Describe, analyze, and evaluate the event, including extent and magnitude of the impact, and plant operating characteristics.
2. Describe the probable cause of the event.
3. Indicate the action taken to correct reported event.
4. Indicate the corrective action taken to preclude repetition of the event and to prevent similar occurrences involving similar components or systems.
5. Indicate the agencies notified and their preliminary responses.

Events reportable under this subsection which also require reports to other Federal, State or local agencies shall be reported in accordance with those reporting requirements in lieu of the requirements of this subsection. The NRC shall be provided with a copy of such report at the same time it is submitted to the other agency.

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Appendix B. Inspections, Tests, Analysis and Acceptance Criteria

AP1000 DCD Tier 1 ITAAC

The Tier 1 information (including the ITAAC) of the referenced DCD is incorporated by reference with the following departures and/or supplements.

Physical Security ITAAC

The physical security ITAAC that are in the scope of the Westinghouse AP1000 standard design are included in the referenced DCD Tier 1 Subsection 2.6.9 as incorporated by reference above. Site-specific physical security ITAAC that are outside the scope of the Westinghouse AP1000 standard design in DCD Tier 1 Subsection 2.6.9 are provided in the attached Table 2.6.9-2. Include these ITAAC after the DCD Tier 1 Table 2.6.9-1 ITAAC.

Plant-Specific ITAAC

Add the following information to the information provided in the referenced DCD Tier 1 following Section 2.3.29:

2.3.30 Storm Drain System
No entry for this system.

2.3.31 Raw Water System
No entry for this system.

2.3.32 Yard Fire Water System
No entry for this system.

Add the following information to the information provided in the referenced DCD Tier 1 following Section 2.5.10:

2.5.11 Meteorological and Environmental Monitoring System
No entry for this system.

2.5.12 Closed Circuit TV System
No entry for this system.

Add the following information to the information provided in the referenced DCD Tier 1 following Section 2.6.11:

2.6.12 Transmission Switchyard and Offsite Power System
No entry for this system.

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Emergency Planning ITAAC

The emergency planning ITAAC are included in the attached Table 3.8-1. Include these ITAAC after DCD Tier 1 Section 3.7. |

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**TABLE 2.6.9-2 – SITE-SPECIFIC PHYSICAL SECURITY INSPECTIONS,
TESTS, ANALYSES AND ACCEPTANCE CRITERIA (SHEET 1 OF 2)**

Design Commitment	Inspections, Tests, and Analyses	Acceptance Criteria
1. The external walls, doors, ceiling, and floors in the location within which the last access control function for access to the protected area is performed are bullet resistant.	Type test, analysis, or a combination of type test and analysis will be performed for the walls, doors, ceilings, and floors in the location within which the last access control function for access to the protected area is performed.	A report exists and concludes that the walls, doors, ceilings, and floors in the location within which the last access control function for access to the protected area is performed are bullet-resistant.
2. Physical barriers for the protected area perimeter are not part of vital area barriers.	An inspection of the protected area perimeter barrier will be performed to verify that physical barriers at the perimeter of the protected area are separated from any other barrier designated as a vital area barrier.	A report exists and concludes that physical barriers at the perimeter of the protected area are separated from any other barrier designated as a vital area barrier.
3. Isolation zones exist in outdoor areas adjacent to the physical barrier at the perimeter of the protected area that allow 20 feet of observation on either side of the barrier. Where permanent buildings do not allow a 20 foot observation distance on the inside of the protected area, the building walls are immediately adjacent to, or an integral part of, the protected area barrier.	An inspection of the isolation zone will be performed to verify that the isolation zones exist in outdoor areas adjacent to the physical barrier at the perimeter of the protected area which allows 20 feet of observation of the activities of people on either side of the barrier. Where permanent buildings do not allow a 20 foot observation distance on the inside of the protected area barrier, the inspection will confirm that the building walls are immediately adjacent to, or an integral part of, the protected area barrier.	A report exists and concludes that isolation zones exist in outdoor areas adjacent to the physical barrier at the perimeter of the protected area and allow 20 feet of observation of the activities of people on either side of the barrier. Where permanent buildings do not allow a 20 foot observation distance on the inside of the protected area, the building walls are immediately adjacent to, or an integral part of, the protected area barrier and the 20 foot observation distance does not apply
4. Intrusion detection system can detect penetration or attempted penetration of the protected area barrier.	Tests, inspections or a combination of tests and inspections of the intrusion detection system will be performed to verify the system can detect penetration or attempted penetration of the protected area barrier and that subsequent alarms annunciate in both the Central Alarm Station and Secondary Alarm Station.	A report exists and concludes that the intrusion detection system can detect penetration or attempted penetration of the protected area barrier and subsequent alarms annunciate in the Central Alarm Station and Secondary Alarm Station.

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**TABLE 2.6.9-2 – SITE-SPECIFIC PHYSICAL SECURITY INSPECTIONS,
TESTS, ANALYSES AND ACCEPTANCE CRITERIA (SHEET 2 OF 2)**

Design Commitment	Inspections, Tests, and Analyses	Acceptance Criteria
<p>5. Access control points are established to:</p> <p>(a) Control personnel and vehicle access into the protected area.</p> <p>(b) Detect firearms, explosives, and incendiary devices at the protected area personnel access points.</p>	<p>A test, inspection, or combination of tests and inspections of installed systems and equipment will be performed to verify that access control points to the protected area exist and that:</p> <p>(a) Personnel and vehicle access into the protected area is controlled.</p> <p>(b) Detection equipment is capable of detecting explosives, incendiary devices, and firearms at the protected area personnel access points.</p>	<p>A report exists and concludes that:</p> <p>(a) Access points for the protected area are configured to control access.</p> <p>(b) Detection equipment is capable of detecting firearms, incendiary devices, and explosives at the protected area personnel access points.</p>
<p>6. An access control system with numbered picture badges is installed for use by individuals who are authorized access to protected areas without escort.</p>	<p>A test of the access control system with numbered picture badges will be performed to verify that unescorted access to protected areas is granted only to authorized personnel.</p>	<p>A report exists and concludes that the access authorization system with numbered picture badges can identify and authorize protected area access only to those personnel with unescorted access authorization.</p>

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Table 3.8-1 Inspections, Tests, Analysis, and Acceptance Criteria (Sheet 1 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
1.0 Emergency Classification System			
10 CFR 50.47(b)(4) — A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.	1.1 A standard emergency classification and emergency action level (EAL) scheme exists, and identifies facility system and effluent parameters constituting the bases for the classification scheme. [D.1**] [**D.1 corresponds to NUREG-0654/FEMA-REP-1 evaluation criteria.]	1.1 An inspection of the Control Rooms, Technical Support Center (TSC), and Emergency Operations Facility (EOF) will be performed to verify that they have displays for retrieving facility system and effluent parameters that are specified in the Emergency Classification and EAL scheme and the displays are functional.	1.1 The specified parameters are retrievable in the Control Rooms, TSC and EOF, and the ranges of the displays encompass the values specified in the Emergency Classification and EAL Technical Basis Document.
2.0 Notification Methods and Procedures			
10 CFR 50.47(b)(5) — Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow-up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.	2.1 The means exists to notify responsible State and local organizations within 15 minutes after the licensee declares an emergency. [E.1]	2.1. A test of the ESSX line will be performed to demonstrate the capabilities for providing initial notification to the offsite authorities after a simulated emergency classification.	2.1 Using the ESSX line the State of South Carolina and the counties of Fairfield, Lexington, Newberry and Richland received notification within 15 minutes after the declaration of an emergency from the Control Room and the EOF. A test of each facility ESSX line was successful using the standard South Carolina notification form.

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Table 3.8-1 Inspections, Tests, Analysis, and Acceptance Criteria (Sheet 2 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
2.0 Notification Methods and Procedures (continued)			
	2.2 The means exists to notify emergency response personnel. [E.2]	2.2 A test of the primary and back-up ERO notification systems will be performed.	2.2 Emergency response personnel received the notification message and mobilization communication was validated by personnel response to the notification system and by telephone during off-hours. Also demonstrated work hours electronic notification and plant page system during working hours.
	2.3 The means exists to notify and provide instructions to the populace within the plume exposure EPZ. [E.6]	2.3 The full test of the ANS capabilities will be conducted.	2.3 The ANS was demonstrated to notify and provide instructions to the public and was demonstrated to meet the design objectives, as stated in the emergency plan.
3.0 Emergency Communications			
10 CFR 50.47(b)(6) — Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.	3.1 The means exists for communications among the Control Rooms, TSC, EOF, principal State and local emergency operations centers (EOCs), and radiological field assessment teams. [F.1.d]	3.1 A test will be performed of the capabilities. The test for the contact with the principal EOCs and the radiological field assessment teams will be from the Control Room and the EOF. See also ITA 5.1.1.	3.1 Communications (both primary and secondary methods/systems) were established among the Control Rooms and the EOF with the South Carolina Emergency Management Division (SCEMD) warning point and EOC; Fairfield County Warning Point and EOC; Richland County Warning Point and EOC; Newberry County Warning Point and EOC; and Lexington County Warning Point and EOC. Communications were established between the Control Rooms and the EOF with the VCSNS radiological field monitoring teams. See also AC 5.1.4.

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Table 3.8-1 Inspections, Tests, Analysis, and Acceptance Criteria (Sheet 3 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
3.0 Emergency Communications (continued)			
	3.2 The means exists for communications from the Control Rooms, TSC, and EOF to the NRC headquarters and regional office EOCs (including establishment of the Emergency Response Data System (ERDS) [or its successor system] between the onsite computer system and the NRC Operations Center.) [F.1.f]	3.2 A test is performed of the capabilities to communicate using ENS from each operating Control Room, TSC and EOF to the NRC headquarters and regional office EOCs. HPN is tested to ensure communications between the TSC and EOF with the NRC Operations Center. ERDS is established [or its successor system] between the onsite computer systems and the NRC Operations Center.	3.2 Communication was established from the Control Rooms, TSC and EOF to the NRC headquarters and regional office EOCs utilizing the ENS. The TSC and EOF demonstrated communications with the NRC Operations Center using HPN. The access port for ERDS [or its successor system] successfully completed a transfer of data to the NRC Operations Center.
4.0 Public Education and Information			
10 CFR 50.47(b)(7) — Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.	4.1 The licensee has provided space which may be used for a limited number of the news media. [G.3.b]	4.1 An inspection of the facility/area provided for the news media will be performed in the Joint Information Center (JIC). The space provides adequate equipment to support JIC operation, including communications with the site and with the Emergency Operation Centers in the state and counties as well as a limited number of news media.	4.1 The licensee has provided space which may be used for a limited number of the news media in the Joint Information Center. This space provides the needed equipment per approved administrative procedures.

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Table 3.8-1 Inspections, Tests, Analysis, and Acceptance Criteria (Sheet 4 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
5.0 Emergency Facilities and Equipment			
10 CFR 50.47(b)(8) — Adequate emergency facilities and equipment to support the emergency response are provided and maintained.	5.1 The licensee has established a TSC and onsite OSC. [H.1, H.9]	5.1.1 An inspection of the TSC and OSCs will be performed, including a test of the capabilities. These facilities will meet the criteria of NUREG-0696 with exceptions.	<p>5.1.1 See DCD Table 3.1-1 Item 1</p> <p>5.1.2 The TSC is located outside the Protected Area and advanced communication capabilities are available and utilized to ensure communications between the emergency response facilities. Procedures are in place to enhance passage through security checkpoints expeditiously.</p> <p>5.1.3 The TSC ventilation system includes a high efficiency particulate air (HEPA) and charcoal filter and radiation monitors are installed.</p> <p>5.1.4 TSC communications equipment is installed per specifications and is operable. Communications have been initiated and found to be acceptable in giving and receiving voice communications with the Control Rooms, the OSC and the EOF.</p>

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Table 3.8-1 Inspections, Tests, Analysis, and Acceptance Criteria (Sheet 5 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
5.0 Emergency Facilities and Equipment (continued)			
	5.2 The licensee has established an EOF. [H.2]	5.2 An inspection of the EOF will be performed, including a test of the capabilities. The EOF is located outside of the 10 mile Emergency Planning Zone.	<p>5.1.5 The TSC has the means to receive, store, process, and display plant and environmental information, and to initiate emergency measures and conduct emergency assessment.</p> <p>5.1.6 There is an OSC located inside each Unit. It is separate from the Control Room and within the Protected Area.</p> <p>5.1.7 OSC communications equipment is installed, and voice transmission and reception have been demonstrated between the OSC, OSC Teams, the TSC, and Control Room.</p> <p>5.2.1 The EOF working space size is consistent with NUREG-0696 (75 ft²/ person), and is large enough for required systems, equipment, records and storage.</p>

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
5.0 Emergency Facilities and Equipment (continued)			
			<p>5.2.2 The EOF habitability is consistent with Table 2 of NUREG-0696.</p> <ul style="list-style-type: none"> • Distance at or beyond 10 mi of the TSC • Built to meet the criteria of the County Building Code <p>5.2.3 EOF communications equipment is installed, and voice transmission and reception are accomplished with the Control Rooms, TSC, radiological monitoring teams, NRC, state and county agencies using typical data generated during facility activation.</p> <p>5.2.4 Radiological data identified in the EP Unit Annex, meteorological data, and plant system data pertinent to determining offsite protective measures are available and displayed when activated in the EOF.</p>
6.0 Accident Assessment			
10 CFR 50.47(b)(9) — Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.	6.1 The means exists to provide initial and continuing radiological assessment throughout the course of an accident. [1.2]	6.1 A test will be performed to demonstrate that the means exist to provide initial and continuing radiological assessment throughout the course of an accident through the plant computer or communications with the Control Room.	6.1 The means exist to provide initial and continuing radiological assessment through displays of instrumentation indicators in the Control Room, TSC and EOF during the course of drills and/or exercises.

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Table 3.8-1 Inspections, Tests, Analysis, and Acceptance Criteria (Sheet 7 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
6.0 Accident Assessment (continued)			
	<p>6.2 The means exists to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. [I.3]</p> <p>6.3 The means exists to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions. [I.4]</p> <p>6.4 The means exists to acquire and evaluate meteorological information. [I.5]</p>	<p>6.2 A test will be performed to demonstrate that the means exist to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors.</p> <p>6.3 A test will be performed to demonstrate that the impact of a radiological release to the environment is able to be assessed by utilizing the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions.</p> <p>6.4 A test will be performed to acquire and evaluate meteorological data/ information.</p>	<p>6.2 Emergency Planning Implementing Procedures, through use in training and a drill, provided direction to accurately calculate the source terms and the magnitude of the release of postulated accident scenario releases.</p> <p>6.3 Response personnel demonstrated that the means exist to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions under drill conditions.</p> <p>6.4 Meteorological data was available at the EOF, TSC, Control Room, offsite NRC Operations Center, and the state of South Carolina. This data was in the format needed for the appropriate emergency planning implementing procedures.</p>

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
6.0 Accident Assessment (continued)			
	<p>6.5 The means exists to make rapid assessments of actual or potential magnitude and locations of radiological hazards through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times. [I.8]</p>	<p>6.5 A test will be performed of the capabilities to make rapid assessments of actual or potential magnitude and locations of radiological hazards through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times.</p>	<p>6.5 The field monitoring team(s) was activated and evaluated. They demonstrated an ability to make rapid assessment of actual or potential magnitude and locations of any radiological hazards through simulated liquid or gaseous release pathways. A qualified field team was notified, activated, briefed and dispatched from the EOF during a radiological release scenario. The team demonstrated the procedural guidance in team composition, use of monitoring equipment, communication from the field, and locating specific sampling locations.</p>
	<p>6.6 The capability exists to detect and measure radioiodine concentrations in air in the plume exposure EPZ, as low as 10^{-7} $\mu\text{Ci/cc}$ (microcuries per cubic centimeter) under field conditions. [I.9]</p>	<p>6.6 A test will be performed of the capabilities to detect and measure radioiodine concentrations in air in the plume exposure EPZ, as low as 10^{-7} $\mu\text{Ci/cc}$ (microcuries per cubic centimeter) under field conditions.</p>	<p>6.6 A field monitoring team was dispatched during a radiological release scenario and demonstrated the use of sampling and detection equipment for air concentrations in the plume exposure EPZ, as low as 10^{-7} $\mu\text{Ci/cc}$.</p>
	<p>6.7 The means exists to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA protective action guides (PAGs). [I.10]</p>	<p>6.7 A test will be performed of the capabilities to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA protective action guides.</p>	<p>6.7 The means were demonstrated to estimate integrated dose from the dose assessment program and the field monitoring team reading during a radioactive release scenario. The results were compared with the EPA PAGs.</p>

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Table 3.8-1 Inspections, Tests, Analysis, and Acceptance Criteria (Sheet 9 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
7.0 Protective Response			
<p>10 CFR 50.47(b)(10) — A range of protective actions has been developed for the plume exposure EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure EPZ appropriate to the locale have been developed.</p>	<p>7.1 The means exists to warn and advise onsite individuals of an emergency, including those in areas controlled by the operator, including: [J.1]</p> <ol style="list-style-type: none"> 1. employees not having emergency assignments; 2. visitors; 3. contractor and construction personnel; and 4. other persons who may be in the public access areas, on or passing through the site, or within the owner controlled area. 	<p>7.1 A test will be performed of the capabilities to warn and advise onsite individuals of an emergency, including those in areas controlled by the operator.</p>	<p>7.1 The means exist and was successfully demonstrated to warn and advise onsite individuals including:</p> <ol style="list-style-type: none"> 1. non-essential employees; 2. visitors; 3. contractor and construction personnel; and 4. other personnel within the owner controlled area.

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Table 3.8-1 Inspections, Tests, Analysis, and Acceptance Criteria (Sheet 10 of 11)

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
8.0 Exercises and Drills			
10 CFR 50.47(b)(14) – Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.	8.1 Licensee conducts a full participation exercise to evaluate major portions of emergency response capabilities, which includes participation by each state and local agency within the plume exposure EPZ, and each state within the ingestion control EPZ. [N.1]	8.1 A full participation exercise (test) will be conducted within the specified time periods of Appendix E to 10 CFR Part 50.	8.1.1 The exercise was completed within the specified time periods of Appendix E to 10 CFR Part 50, onsite exercise objectives were met, including: <ol style="list-style-type: none"> 1. Recognition and correct classification of the event; 2. Notification of onsite and offsite personnel; 3. Performance of offsite dose assessment 4. Issuance of protective actions for onsite personnel; 5. Activation of the on-call ERO; 6. Timely activation of the emergency response facilities; 7. Turnover of command and control of the emergency response onsite; 8. Communication between the emergency response facilities; 9. Dispatch of field teams from the OSC and the EOF; 10. Authorization of emergency exposure controls 11. Performance of reentry and recovery 12. There are no uncorrected onsite exercise deficiencies

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Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
8.0 Exercises and Drills (continued)			
			<p>8.1.2 Onsite emergency response personnel were mobilized in sufficient numbers to fill emergency response positions, and they successfully performed their assigned responsibilities.</p> <p>8.1.3 The exercise was completed within the specified time periods of Appendix E to 10 CFR Part 50, offsite exercise objectives were met, and there were no uncorrected offsite exercise deficiencies.</p>
9.0 Implementing Procedures			
10 CFR Part 50, App. E.V – No less than 180 days prior to the scheduled issuance of an operating license for a nuclear power reactor or a license to possess nuclear material, the applicant’s detailed implementing procedures for its emergency plan shall be submitted to the Commission.	9.1 The licensee has submitted detailed implementing procedures for its emergency plan no less than 180 days prior to fuel load.	9.1 An inspection of the submittal letter will be performed.	9.1 The licensee submitted detailed implementing procedures for the onsite emergency plan no less than 180 days prior to fuel load.

List of Acronyms for Table 3.8-1 :

ANS–Alert and Notification System
EAL–Emergency Action Level
EAS–Emergency Alerting System
ENS–Emergency Notification System
EOC–Emergency Operations Center
EOF–Emergency Operations Facility
EPA–Environmental Protection Agency
EP–Emergency Plan

EPZ–Emergency Planning Zone
ERDS–Emergency Response Data System
ERO–Emergency Response Organization
ESSX–Electric Switch System Exchange
FEMA–Federal Emergency Management Agency
HEPA–High Efficiency Particulate Air
HPN–Health Physics Network
JIC–Joint Information Center

KI–Potassium Iodide
OSC–Operations Support Center
PAG–Protective Action Guide
SCEMD–South Carolina Emergency Management Division
TSC–Technical Support Center
VCSNS–V. C. Summer Nuclear Station