



Presentation to the Commission

Summer Units 2 and 3 COL Application Review Safety Evaluation Report Panel 1

October 12, 2011

Summer COL FSER Chapter 1

- Final Safety Evaluation Report Chapter 1 Content
 - Overview of the parts of the application and how they were reviewed
 - Listing of departures and exemptions and how they were reviewed
 - Overview of the design-centered review approach and how it was applied to the Summer COL review
 - Documents the staff review of the Summer COL Final Safety Analysis Report Chapter 1

Summer COL FSER Chapter 1

- Final Safety Evaluation Report Chapter 1 Content (continued)
 - Safety evaluations for other regulatory considerations
 - Financial Qualifications
 - Nuclear Waste Policy Act
 - Required Notifications
 - Evaluations of 3 Exemptions
 - FSAR Numbering
 - Exemption criteria
 - Special Nuclear Material Control and Accounting Program
 - Evaluation to support issuance of 10 CFR Part 30, 40, and 70 licenses

Summer COL FSER Chapter 1

Exemptions

Description	Regulation	Location of Evaluation in FSER
COL application organization and numbering	10 CFR Part 52, Appendix D, Section IV.A.2.a	Sections 1.5.4 and 2.0.4
Exemption criteria	10 CFR 52.93(a)(1)	Sections 1.5.4 and 2.0.4
Special nuclear material control and accounting (MC&A) program description	10 CFR 70.22(b), 70.32(c), 74.31, 74.41, 74.51	Section 1.5.4
Maximum safety wet bulb (noncoincident) air temperature	10 CFR Part 52, Appendix D, Section IV.A.2.d	Section 2.0.4

Summer COL FSER Chapter 1

Departures

Description	Location of Evaluation in FSER
STD DEP 1.1-1. Organization and numbering for FSAR sections	Section 1.5.4
VCS DEP 2.0-1. Organization and numbering for FSAR Chapter 2	Section 2.0
VCS DEP 2.0-2. Maximum safety wet bulb (noncoincident) air temperature	Sections 2.0, 2.3.1, 5.4, 6.2, 6.4, 9.1.3, 9.2.2, and 9.2.7
STD DEP 8.3-1. Class 1E voltage regulating transformer current limiting features	Section 8.3.2
VCS DEP 18.8-1. Emergency response facility locations	Section 13.3

Overview of Summer COL FSAR Chapter 1

FSAR Section	Summary of Departures/Supplements
1.1 Introduction	Incorporated By Reference (IBR) with standard and site-specific supplements
1.2 General Plant Description	IBR with site-specific supplements
1.3 Comparisons with Similar Facility designs	Completely IBR
1.4 Identification of Agents and Contactors	IBR with site-specific supplements
1.5 Requirements for Further Technical Information	Completely IBR
1.6 Material Referenced	IBR with standard and site-specific supplements
1.7 Drawings and Other Detailed Information	IBR with site-specific supplements
1.8 Interface for Standard Designs	IBR with site-specific supplements
1.9 Compliance with Regulatory Criteria	IBR with standard and site-specific supplements
1.10 Nuclear Power Plants to be Operated on Multi-Units Sites	Standard and site-specific supplemental information

Summer COL FSER Chapter 1

Technical and Financial Qualifications Review

- Technical Qualification
 - FSAR Sections 1.4 and 13.1 and Chapter 17 provide information regarding applicant's experience with Summer Unit 1, its operating organization, and its Quality Assurance program, respectively
 - Staff concludes that SCE&G is technically qualified to hold licenses for VCSNS Units 2 and 3 under 10 CFR 52 in accordance with 10 CFR 52.97(a)(1)(iv) --- (Section 1.4.4 of the FSER)

Summer COL FSER Chapter 1

Technical and Financial Qualifications Review (continued)

- Financial Qualification
 - Part 1 of the application provides information regarding total construction cost of VCSNS Units 2 and 3; among other things, financing cost; funding sources for each of the VCSNS Owners, decommissioning funding assurance; foreign ownership; and nuclear insurance and indemnity.
 - Staff's review considered applicable regulations and guidance (10 CFR Part 140, 10 CFR 50.33, 10 CFR 50.75, 10 CFR 52.97(a)(1)(iv), Appendix C to 10 CFR 50, NUREG-1577, and)
 - Staff concludes that SCE&G provided reasonable assurance that it is financially qualified to construct, operate, and provide decommissioning funding assurance for Summer Units 2 and 3 and engage in the activities authorized by the licenses--(Section 1.5.1 of the FSER).

Summer COL Application

- Chapter 2 review
 - Site parameters are identified and evaluated in the Design Control Document and the associated FSER, respectively
 - Site parameters according to Westinghouse envelope most potential sites in the United States
 - Values for air temperature, wind speed, seismic, soils, tornado born missile parameters, flood level, ground water level, plant grade elevation, precipitation, atmospheric dispersion values and exclusion area size are provided
 - Many of these values are captured in Tier 1 of the DCD
 - The V.C. Summer site characteristics are identified and evaluated in the Summer FSAR and FSER, respectively

Definitions

Dry-Bulb Temperature – Temperature of the ambient air.

Wet-Bulb Temperature – The lowest dry-bulb temperature that can be obtained by evaporating water into the air at constant pressure.

Coincident Wet-Bulb Temperature – Wet-bulb temperature that is recorded at the same time as a dry-bulb temperature.

Non-Coincident Wet-Bulb Temperature – Recorded wet-bulb temperature, regardless of dry-bulb temperature.

Regulatory Basis

- Applicant Submittal (Part 7 of COLA)
 - Requested an exemption from 10 CFR 52, Appendix D, Section IV.A.2.d, which requires compliance with site parameters
 - Stated the application departs from the DCD site parameter value for maximum safety noncoincident wet bulb temperature (DCD Tier 1, Table 5.0-1 and DCD Tier 2, Table 2-1)
- Regulations for approval of exemption
 - 10 CFR 52, Appendix D, Section VIII.A.4
 - 10 CFR 52.63(b)(1), 52.7, “Specific Exemptions”, and 50.12, “Specific Exemptions”
- Regulations applicable to departure
 - 10 CFR 52, Appendix D, Section VIII.B.5.a

Criteria for Evaluating an Exemption Request

1. The change will not result in a significant decrease in the level of safety otherwise provided by the design (10 CFR Part 52, Appendix D, Section VIII.A.4).
2. The exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security (10 CFR 50.12(a)(1)).
3. Special circumstances are present (10 CFR 50.12(a)(2)).
4. The special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption (10 CFR 52.63(b)(1)).

Summer Site Characteristics

- Summer FSAR specifies the maximum safety noncoincident wet bulb temperature is 87.3°F
 - 1.2°F above the AP1000 DCD site parameter
 - Based on 100 year return value
- AP1000 DCD bounds Summer site characteristics for
 - Maximum safety dry bulb temperature and coincident wet bulb temperature
 - Maximum normal dry bulb and normal coincident and normal noncoincident wet bulb temperatures

Staff Review of Site Characteristics

- The staff requested additional information and reviewed the responses.
- The staff performed independent confirmatory analysis on maximum safety noncoincident wet bulb temperature using 32 years of data from the Columbia, South Carolina, National Weather Service Station.

Affected Systems

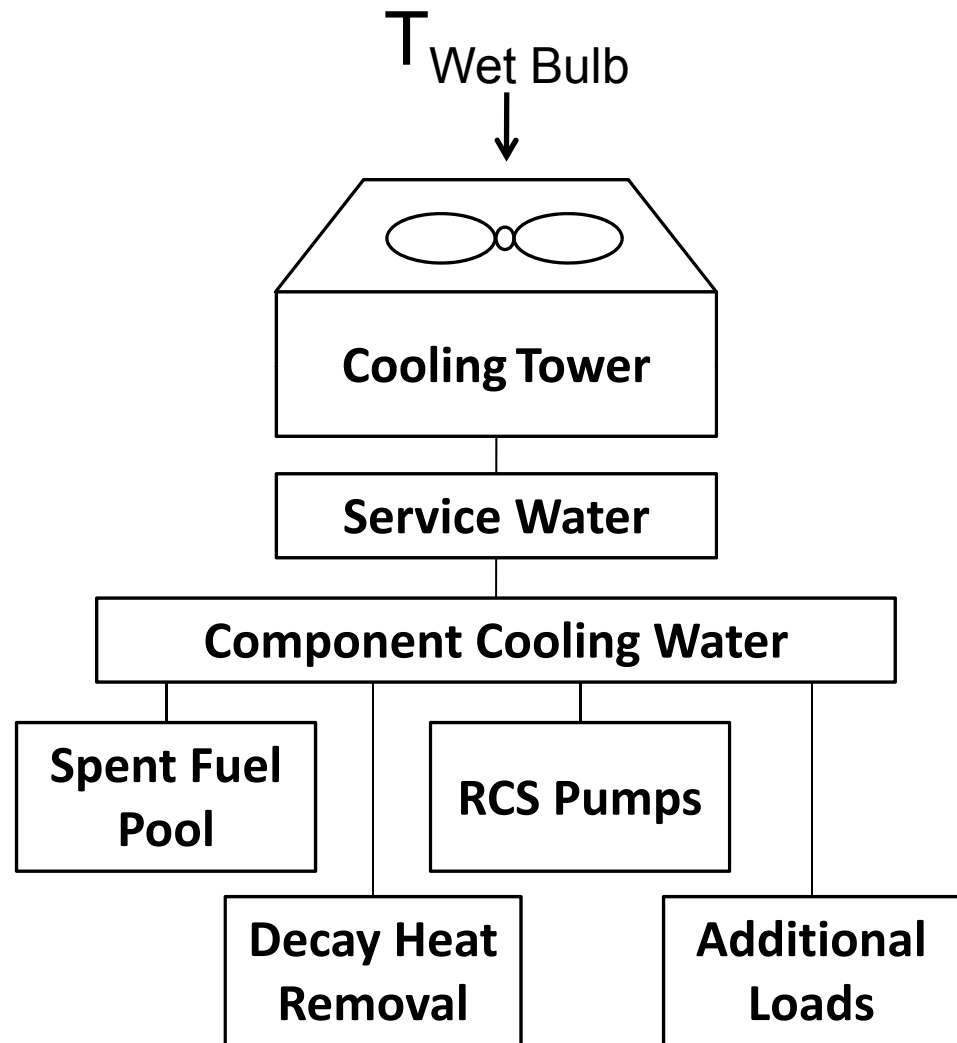
- Passive Containment Cooling System
- Service Water System
- Nuclear Island Non-radioactive Ventilation System

Passive Containment Cooling System

- Application
 - No change to maximum containment pressure value reported in DCD
 - Based on a thermo-hydraulic analysis performed at the higher safety noncoincident wet bulb temperature.
- Staff review:
 - Requested additional information
 - Audit of calculation package
 - Independent staff analysis using a different containment model

Service Water System

- Application
 - Existing design capacity can accommodate the slightly higher water temperatures
- Staff review
 - Requested additional information
 - Audit of calculation packages



Nuclear Island Non-Radioactive Ventilation

- Application
 - Slightly higher loads due to higher maximum safety noncoincident wet bulb temperature
 - Existing chillers are adequately sized to accommodate the slightly higher loads
- Staff review
 - Audit of calculation package

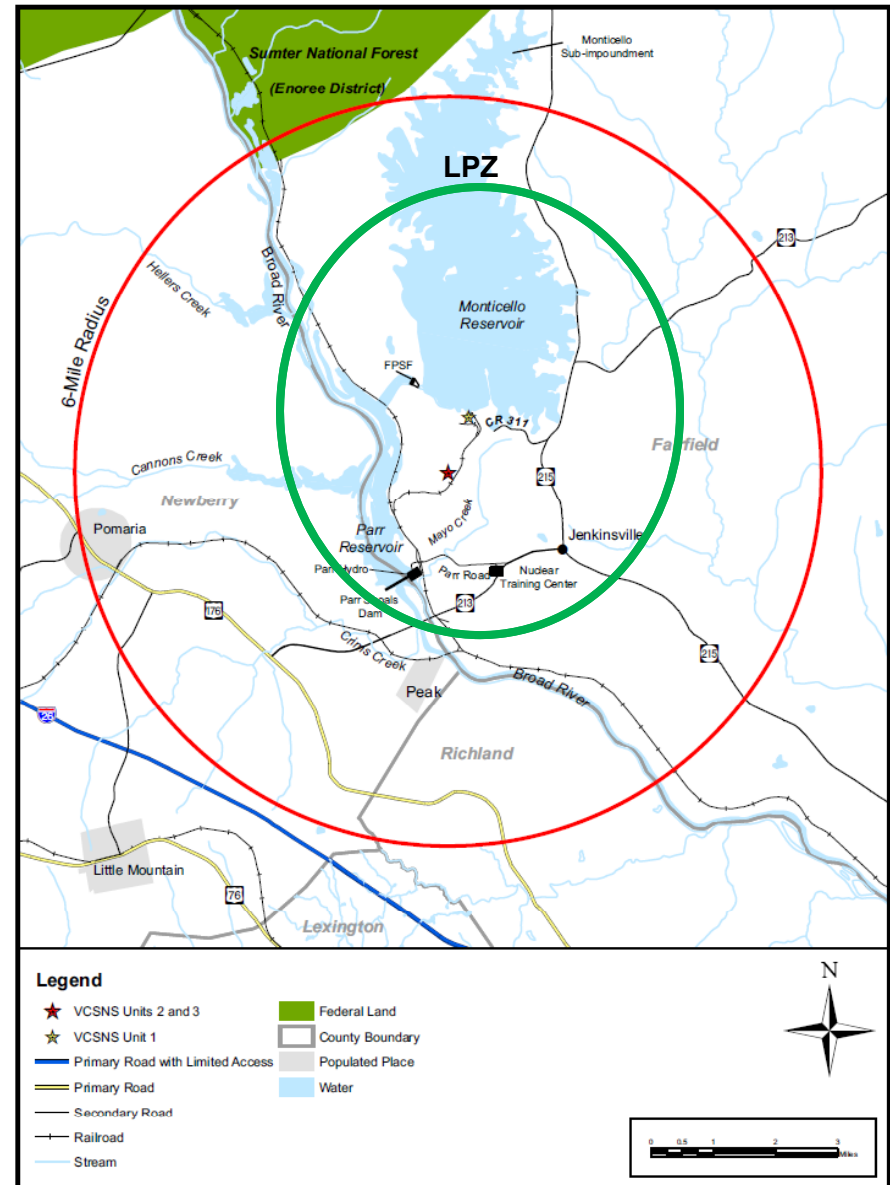
Staff Conclusions

- The 1.2°F increase in maximum safety noncoincident wet bulb temperature did not adversely affect the functional capabilities of safety-related or defense-in-depth structures, systems or components.
- Findings on Exemption Request
 1. There is no decrease in the level of safety otherwise provided by the design.
 2. The exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security.
 3. The special circumstances are that application of the regulation is not needed to achieve the underlying purpose of the rule.
 4. The special circumstances outweigh any decrease in safety that may result from the reduction in standardization.

FSER Section 2.1 and 2.2

Section 2.1, “Geography and Demography”

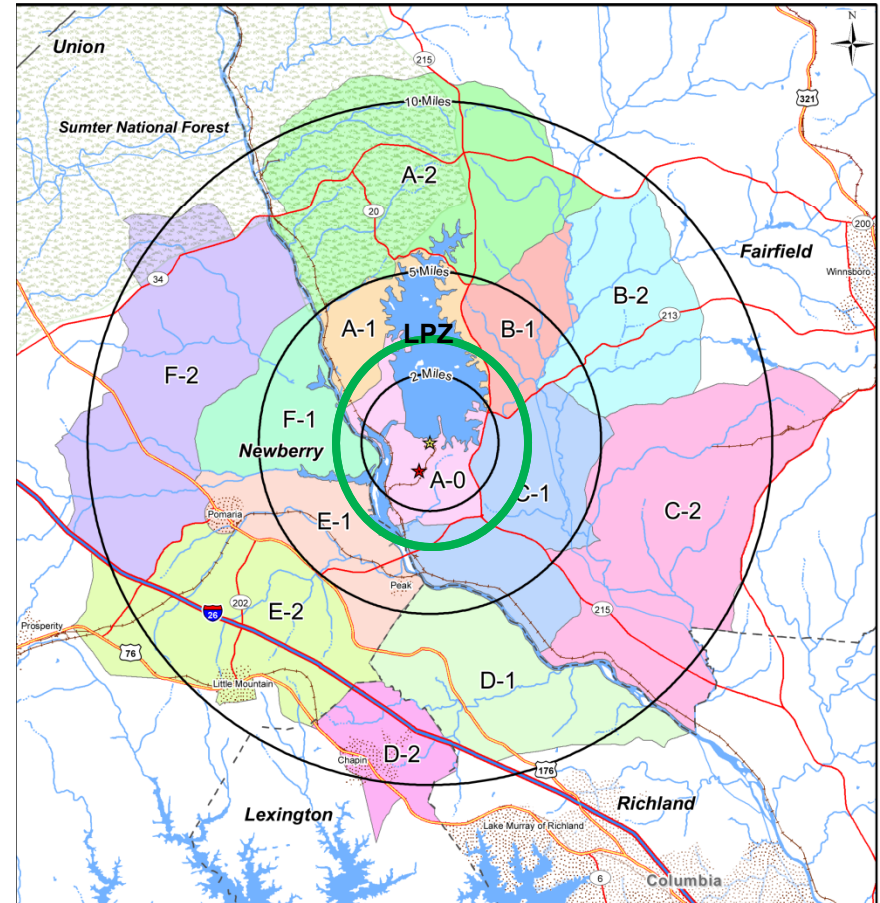
- VCSNS Units 2 and 3 to be co-located approximately 1 mile south of existing VCSNS Unit 1 site in rural Fairfield County, South Carolina
- The LPZ is within a 3-mile radius circle of Unit 1



FSER Section 2.1 and 2.2

Section 2.1, “Geography and Demography”

- Largest nearby population center is Columbia, SC, about 14 miles southeast.
- Appropriate protective measures can be taken in the event of an accident for individuals in the low population zone.
- The distance to the nearest boundary of the closest population center containing 25,000 or more residents meets NRC requirements
- The population density around the site does not exceed NRC guidelines



FSER Sections 2.1 and 2.2

FSER Section 2.2 Nearby Industrial, Transportation and Military Facilities

- Aircraft and Airway Hazards

- Based on an independent review of airways passing near VCSNS, the NRC confirmed that Airway V53 passes approximately 2.25 miles from VCSNS Units 2 and 3.
 - Staff performed independent probability calculations
 - Conservative analysis using Federal Aviation Administration data
 - Based on analysis staff determined the total aircraft accident probability meets the acceptance criteria in the SRP

FSEER Sections 2.1 and 2.2

FSEER Section 2.2 Nearby Industrial, Transportation and Military Facilities (continued)

- Chemical Hazards Evaluation – staff performed independent review of the following explosion and toxic gas hazards
 - AP1000 standard chemicals and site specific additions
 - VCSNS Unit 1 onsite chemicals
 - Chemicals transported on nearby rail line
 - Natural gas and fuel oil used by nearby utility
- All chemical hazards are at a safe distance and the control room would remain habitable