



July 31, 2018
RC-18-0080

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Sir / Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS) UNIT 1
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12
FINAL SAFETY ANALYSIS REPORT (FSAR)
UPDATED THROUGH MAY 31, 2018

In accordance with 10CFR50.71(e), South Carolina Electric & Gas Company, acting for itself and as an agent for the South Carolina Public Service Authority, submits an updated Final Safety Analysis Report (FSAR) for the Virgil C. Summer Nuclear Station (CD-ROM). The Updated FSAR contains changes as of May 31, 2018.

The enclosed VCSNS Updated FSAR CD-ROM contains a complete copy in Adobe PDF format generated from the original native master files and scanned hard copy documents.

This FSAR-update includes:

- Changes to the FSAR that were made under the provisions of 10CFR50.59, but not previously submitted to the Commission.
- All affected chapter Table of Contents, List of Tables, List of Figures, and list of Effective Pages updated to reflect the current information contained in the FSAR.

Technical changes are annotated by a vertical revision bar with the Revision Notice number in the right margin. Unaffected vertical revision bars and the amendment number changes from prior updates remain unchanged.

Two changes, outside of six months of this letter date, will not be included in this submittal. This has been documented in the station's corrective action program as CR-18-03093.

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NRR

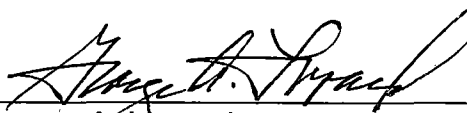
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If there are any questions, please contact Scarlet Lutz at (803) 931-5640 or Alison Fulmer at (803) 941-9844.

I declare under penalty of perjury that the foregoing is true and correct.

7/31/18
Executed On


George A. Lippard

SDL/GAL/rp

Attachment: Approved FSAR Revision Notices Incorporated Since April 2017 Update – Effective May 31, 2018

Enclosure: CD-ROM - Updated Final Safety Analysis Report (FSAR) for the Virgil C. Summer Nuclear Station

c: (Without CD unless noted below)

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**VIRGIL C. SUMMER NUCLEAR STATION (VCSNS)
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12**

ATTACHMENT

**APPROVED FSAR REVISION NOTICES INCORPORATED SINCE
APRIL 2017 UPDATED – EFFECTIVE MAY 31, 2018**

APPROVED FSAR REVISION NOTICES INCORPORATED SINCE APRIL 2017 UPDATE – EFFECTIVE 05/31/2018

RN #	DATE APPROVED	SECTIONS	BRIEF DESCRIPTION
12-030	2017-11	Section 3.9 Table 3.9-8 Table 3.10-3 Section 3.10 Section 9.2 Figure 9.2-2, S1 Section 10.4 Table 10.4-8 Figure 10.4-8 Figure 10.4-16 Section 15.4	<p>ECR 50695 B/C/E/G – Installation of Cured-In-Place Pipe-Liner</p> <p>This change installed a Cured-In-Place Pipe-liner (CIPP) in the Service Water (SW)-to- Emergency Feedwater (EFW) cross connect lines for Train A. This change also installed EFW Cavitating Venturis (XPS5040A/B/C), EFW Automatic Recirculation Control Valves (XVM01072A/B) on the Motor-Driven EFW Pumps, and a new by-pass test line for the Turbine-Driven EFW Pump. Note 13 was added to drawing D-302-101 regarding TRP-13 for Quality Related EFW Recirculation line.</p>
12-035	2018-04	Figure 10.3-2	<p>ECR 71780 – Revision of FSAR Figure 10.3-2, D-302-012</p> <p>This change revised Figure 10.3-2, D-302-012 to correctly show the design configuration of the sensing lines IPT05673 and IPX05673 including valves XVT22818-MS and IPT05673-HR-TB. The sensing line from steam chest to XVT22818-MS was revised from 3/4" to 1". Valves XVT22818-MS and IPT05673-HR-TB were revised from 3/4" to 1". Sensing line IPT05673 was changed from 3/4" to 1". The sensing line to IPX05673 was revised to be 3/4" 902X piping and 3/8" 2505X tubing.</p>
13-012	2018-04	Section 8.2.1 Figure 8.2-2 Figure 8.2-2a Figure 8.2-2b Figure 8.2-2c Figure 8.3-5 Figure 8.3-5a	<p>ECR 50836 and ECR 50867 – Replacement of VCS 230kV Off-site Supply Breaker 8892</p> <p>This change replaced the existing Oil Circuit Breaker XCB8892 with a new Sulfur Hexafluoride (SF6) gas circuit breaker. This change also included an additional bushing current transformer (CT), installed a Capacitance Coupled Voltage Transformer (CCVT) and other supporting hardware. Additionally, 63kA circuit breaker XCB8932 was replaced with a new SF6 gas circuit breaker and supporting hardware.</p>
15-001	2017-08	Figure 10.3-1	<p>ECR 50828 – Revision of Figure 10.3-1</p> <p>This change revised the control logic for manually operating Main Steam Isolation Valves (MSIV) XVM2801A/B/C by interlocking with the Main Steam Isolation Bypass Valves XVM2869A/B/C to ensure the bypass valves are fully open prior to the MSIV valves opening.</p>

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15-006	2018-04	Figure 1.2-3 Figure 9.5-1, S5	<p>ECR 50810A and ECR 50810I – Hazards Protection for NFPA-805 Transition</p> <p>This change addressed the following scope items related to the Hazards Protection for NFPA 805 Transition: 1) Modification of IB 436'. 2) Modification of AB 400' Fire Detection System. 3) Hydraulic Analysis of IB 436' and 412' Control Complex Fire Protection Sprinkler Systems. 4) Installation of overpressure protection for wet pipe sprinkler systems. 5) Replacement of Sprinkler System Heads in Turbine Driven Emergency Feedwater Pump Room.</p>
15-020	2017-07	Figure 1.2-24 Figure 9.2-1	<p>ECR 510038B – FLEX Alternate Emergency Feedwater (EFW) Suction Source</p> <p>This change provided a 4" connection to the Service Water discharge crosstie header ("C" train) at the 24" tee between valves XVB03118D-SW and XVB03118C-SW in the Service Water Pump House above floor elevation 425'-0". This 4" connection will be used as the discharge connection for the FLEX Alternate EFW Suction Pumps (XPP0248A/B) located in the SW pump house.</p>
16-002	2017-06	Figure 1.2-3 Figure 1.2-5 Figure 1.2-6 Figure 1.2-11 Figure 1.2-12 Figure 1.2-15 Figure 1.2-16 Figure 1.2-18 Figure 1.2-19 Figure 1.2-20	<p>ECR 51013 and ECR 51008C – FLEX In-Plant Equipment Storage</p> <p>This change added permanent storage locations for FLEX and B.5.b equipment to plant layout drawings. The equipment is required to support station FLEX strategies. Locations of FLEX and B.5.b equipment storage is required to be placed onto plant layout drawings.</p>

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16-003	2018-02	Figure 1.2-9 Figure 1.2-10 Section 3.2 Table 3.2-1 Table 3.2-3 Section 3.5 Table 3.5-3 Section 3.7 Table 3.7-3 Section 3.8 Section 3.12 Section 3A Section 4.2 Figure 4.2-22 Figure 4.2-23 Index 5-ix Section 5.1 Figure 5.1-1, S1 Section 5.2 Table 5.2-8 Table 5.2-11 Table 5.2-13 Section 5.4 Section 5.5 Table 5.5-13 Table 5.5-14 Table 5.5-15 Section 5.6 Section 6.2 Table 6.2-7 Figure 8G-2 Section 9.1 Section 9.4 Figure 9.4-31 Figure 12.1-8 Figure 12.1-9 Figure 12.1-17 Figure 12.1-18 Section 15.4	<p>ECR 50868 and ECR 50897 – Replacement of Reactor Vessel Head</p> <p>This change incorporates the changes made by ECR 50868 and ECR 50897 that replaced the reactor vessel head and service structure.</p>

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16-011	2017-09	Figure 1.2-6 Figure 1.2-7 Table 6.2-7 Figure 8G-3	ECR 50869 – B Loop Auxiliary Crane This change replaced the existing B Loop Auxiliary Crane (XCR0064) with a new, permanently installed, crane. The new crane was installed on the existing Auxiliary Crane Support Tower (MK-180ST1) in the Reactor Building.
16-027	2017-08	Figure 9.3-10	CR-16-04716 – Revision of Figure 9.3-10 This Revision corrected FSAR Figure 9.3-10 for the proper location of orifices installed as isolation boundaries for the chillers and chilled water pumps.
16-028	2018-04	Section 8.2	ECR 71872 – Updated for Review Transmission Stability Study Updated FSAR to reflect 2017 Transmission Stability Study. No design or operational plant parameters were changed. This ECR also developed a calculation to formalize the review of the Stability Study. Refer to CR-15-04773 and CR-13-03074 for additional information regarding why this ECR was needed
16-031	2017-07	Figure 1.2-20	ECR 72202 – Change to FSAR Figure 1.2-20 As-built Configuration of door DRWT/204 This change corrected a drawing discrepancy related to the location of door DRWT/204.
17-003	2017-08	Section 9.2.7.4	CR-16-03524 Revised FSAR Section 9.2.7.4, "Inspection and Testing Requirements" This change revised FSAR Section 9.2.7.4 to remove the statement specifying 10CFR50.55a requires the Reactor Makeup Water System ANSI N18.2 Safety Class 2b/NNS isolation valves be closure tested under 10CFR50.55a. The valves are passive and do not perform a specific safety function that would require testing under 10CFR50.55a. This change removed the statement that Class 2, Category A valves in this system require periodic closure and Type C leakage tests under 10CFR50.55a. This FSAR change also deleted the statement that periodic tests of the XVD01920A/B-MU valves and Control Isolation Valves are required (CIVs are part of RC System).
17-004	2018-02	Section 6.3	ECR 72012 – RWST Empty Level Alarm Setpoint Change This change revised the Caution prior to Step 1, EOP-2.2 Revision 16, from stopping all pumps taking suction on the RWST on the 6% empty alarm to a 10% control board indication. This was done to provide protection to the critical vortex level of 5% consistent with Tech Report TR09650-001. This change significantly reduced the indicated level available to complete swapover from RWST injection to containment sump recirculation, and the existing operator timeline calculation no longer supports this scenario.
17-006	2017-09	Figure 9.2-2, S1 Figure 9.4-22	ECR 50585U – A-Chiller Replacement This change replaced the A-Chiller with new chiller designed to resolve numerous designed challenges and improve reliability.

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17-010	2018-04	Figure 1.2-28a Figure 8.2-3 Section 9.4 Figure 9.4-25, S1 Figure 9.4-25, S2	ECR 50874 – Reactor Building Cooling Upgrade This change installed new Chiller Loop to act as a new heat sink for Industrial Cooling Water system. To support this new system, four (4) 400-ton chillers, two (2) chilled water pumps, and frame heat exchangers were installed in parallel with the existing Industrial Cooling Towers.
17-011	2017-07	Section 3.11.1.1 Section 9.3.3.1 Section 9.4.6.1 Figure 9.4-14	ECR 50585 – Adds Steam Propagation Barriers to the FSAR This change corrected the design functions of the steam propagation barrier equipment and floor drain system.
17-013	2017-09	Figure 8.2-4	ECR 50915 – Modification to Allow Emergency Diesel Generator to Parallel with Alternate AC This change allowed the station to transfer the 7.2 kV ESF Buses XSW1DA and XSW1DB from the normal or alternate feed to Alternate AC (AAC) source using XTF5052.
17-014	2017-09	Section 5.5 Figure 9.3-5 Figure 9.3-16, S1C	ECR 50799H – RCP #3 Seal Leakoff Overflow Piping Installation This change added a description of Reactor Coolant Pump seal leakoff alternate overflow path to Section 5.5.1.3.12, and updated the station drainage flow diagram and administrative change to Chemical Volume Control System Flow diagram.
17-015	2017-10	Section 8.3 Figure 8.3-0 Figure 8.3-0d Figure 8.3-0e Figure 8.3-0f Figure 8.3-0g	ECR 50919 and ECR 50919A – Cable Bus Conductor Replacement This change replaced cables in cable duct for the normal feed from XTF31 to XSW1DB U16. During RF23, corona damage was witnessed in several locations on several of the cables for the normal feed from XTF31 to XSW1DB U16. This cable replacement required several drawing changes related to cable run.
17-016	2017-11	Figure 9.3-16, S4	ECR 72275 – Thermal Regeneration Demineralizer Drawing Correction This change corrected drawing E-302-676 for the Chemical Volume Control System piping associated with the Thermal Regeneration Demineralizers. There was an erroneous connection point depicted on the drawing.

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17-019	2017-08	Figure 1.2-5	<p>ECR 50614 – Reactor Building Safety Modification</p> <p>This change upgraded personnel safety features associated with the Reactor Building. Existing ladders have been modified with the addition of ladder extensions, safety gates, cages and vertical ladder cage bars to the top of adjacent handrail. Existing platforms have been modified with the addition/modification of handrails, toeplate, chains and grab bars. The Loop B platform at elevation 435'-11¼" has been modified by adding additional walking surfaces to facilitate access around existing piping and supports.</p>
17-021	2018-05	Figure 5.5-4	<p>ECR 50914 – Revise FSAR Figure 5.5-4 – RHR Vent Quick Connects</p> <p>This change revised an error in a safety-class marker at vent RH-10.</p>
17-023	2018-04	Figure 9.3-14	<p>ECR 71365 – Correct error in Figure 9.4-14</p> <p>This change corrected an administrative error on FSAR Figure 9.3-14 drawing D-302-352. In section E-9, a line appeared to show a connection coming off of a 6" header which implied it goes to drawing D-302-207 at location D-4. This error was introduced during a CADD enhancement of the drawing per ECR 50239.</p>
17-025	2017-12	Section 13.4	<p>CR-16-02179 – FSAR CHAPTER 13, SECTION 13.4.2.1</p> <p>This change removed the word "audit" based on guidance in ANSI N18.7-1976 Section 4.4 describing the review activities of the Onsite Operating Organization.</p>
17-030	2018-05	Section 12.1 Section 12.3 Table 12.3-2 Table 12.3-3 Table 12.3-4	<p>CR-17-02776 and CR-17-04650 – Correct Errors in Chapter 12.1 and Chapter 12.3</p> <p>This change corrected a typo in FSAR Chapter 12.1 and implemented changes in FSAR Chapter 12.3 as a result of the 2017 Calibration Lab self-assessment. FSAR Chapter 12.3 added additional clarification to contamination monitoring practices and oversight structure.</p>
17-033	2018-05	Section 8.3 Table 8.3-3	<p>ECR 50752 – Project, Security 10 CFR 73.55 Upgraded</p> <p>This change revised FSAR Chapter 8, Table 8.3-3 to incorporate a new redundant Protected Area (PA) Intrusion detection and video surveillance and assessment system called the Integrated Video Management System (IVMS).</p>
17-034	2018-03	Figure 9.2-9b	<p>ECR 72323, CR-17-05919 – Typo Correction for Figure 9.2-9b</p> <p>This change corrected a typographical error on FSAR Figure 9.2-9b, D-302-164, R24. At location H-8 on the figure, XA3-29-DW was corrected to read XAJ-29-DW.</p>
18-001	2018-04	Figure 10.3-2	<p>ECR 72324, CR-17-04302 – Revised Figure 10.3-2, Drawing D-302-012, R36</p> <p>This change modified Drawing D-302-012 at G3. A section of the reheat steam drain line, was changed from a 1" pipe to a 2" pipe to reflect the as-built configuration.</p>

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18-005	2018-04	Figure 9.5-1, S1	<p>ECR 72329 – Revised Section 9, Figure 9.5-1, S1, D-302-231, R38</p> <p>This change revised valve symbols on Section 9 Figure 9.5-1 Sheet 1, Drawing D-302-231 Sheet 1, Revision 38 for XVT04115-FS and XVT14000-FS. These valve symbols were changed from gate vales to the standard globe valve symbol.</p>
18-006	2018-04	Section 2.3	<p>ECR 50518 – Section 2.3.3.2 Page # 2.3-26</p> <p>This change revised FSAR section 2.3.3.2 to delete “TSC” from the IPCS Control Building location description.</p>
18-009	2018-04	Section 3A	<p>License Amendment 183 Alternate Source Term updated FSAR 3A Section 1.13</p> <p>This change revised the spent fuel pool ventilation requirements in FSAR 3A Section 1.13 to align with License Amendment Request 183- Alternate Source Term.</p>
18-010	2018-05	Figure 10.4-9	<p>ECR 50065 – Section 10 Figure 10.4-9, Drawing D-302-102, Revision 28.</p> <p>This change moved design flags on the system flow diagram drawing for the Condensate inlet and outlet of the Blowdown Heat Exchangers back to their correct location.</p>
18-013	2018-05	Figure 6.2-50, S4	<p>ECR 50897 – Replacement Reactor Service Structure-Integrated Head Assembly (IHA)</p> <p>This change revised FSAR Section 6, Figure 6.2-50, Drawing E-922-104, Revision 7 to include the addition of the Integrated Head Assembly (IHA) and instrumentation added by ECR 50897.</p>
18-016	2018-05	Section 12.2 Section 12.3 Table 12.3-3 Index 13-iv Section 13.1 Figure 13.1-4 Section 13.2 Section 13.4 Section 13.5 Section 13.6	<p>CMP-17-04632 – Organizational Changes required due to the closure of Units 2 and 3.</p> <p>This change was performed due to the closure of the Unit 2/3 project requiring a new organizational structure. Changes to programs owned by department was needed due to the Emergency Response Unit assuming responsibility for non-radiological respiratory program while Radiological Protection retained ownership of radiological respiratory program.</p>
18-019	2018-05	Section 3A Section 7.1 Section 7.4 Section 8.3 Section 13.5 Section 18.2 Section 18.4	<p>CR-18-00530 – FPER Removal</p> <p>This change removed references to the Fire Protection Evaluation Report (FPER). FPER is labeled Historical and is no longer a reference source to the FSAR.</p>