



Sequoyah Nuclear Plant, Post Office Box 2000, Soddy Daisy, Tennessee 37384

January 10, 2024

10 CFR 21.21(d)(3)(ii)

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Sequoyah Nuclear Plant, Units 1 and 2  
Renewed Facility Operating License Nos. DPR-77 and DPR-79  
NRC Docket Nos. 50-327 and 50-328

**Subject: 10 CFR 21.21 Final Report Regarding Siemens Medium Voltage Circuit Breakers**

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) Part 21, "Reporting of Defects and Noncompliance," the Tennessee Valley Authority is providing the required written notification of a defect in a basic component associated with Siemens Medium Voltage Circuit Breakers supplied by Framatome Inc. The enclosure to this letter provides the information required in 10 CFR 21.21(d)(4).

There are no regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact Mr. Rick Medina, Sequoyah Site Licensing Manager, at (423) 843-8129 or [rmedina4@tva.gov](mailto:rmedina4@tva.gov).

Respectfully,

Marshall, Thomas B.  Digitally signed by Marshall, Thomas B.  
Date: 2024.01.10 14:47:32 -05'00'

Thomas Marshall  
Site Vice President  
Sequoyah Nuclear Plant

Enclosure: Part 21 Notification of Siemens Medium Voltage Circuit Breakers

cc: NRC Regional Administrator – Region II  
NRC Senior Resident Inspector – Sequoyah Nuclear Plant  
NRC Project Manager – Sequoyah Nuclear Plant

## ENCLOSURE

### SEQUOYAH NUCLEAR PLANT (SQN), UNIT 1

#### PART 21 NOTIFICATION OF SIEMENS MEDIUM VOLTAGE CIRCUIT BREAKERS

- (i) Name and address of the individual or individuals informing the Commission.

Mr. Thomas Marshall  
Tennessee Valley Authority  
Vice President, Sequoyah Nuclear Plant Units 1 and 2  
Post Office Box 2000  
Soddy-Daisy, TN 37384

- (ii) Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States which fails to comply or contains a defect.

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Basic Component: Siemens, 6.9KV, 1200A, 125 VDC Vacuum Circuit Breaker Model No. 7-HKR-50-1200-130

- (iii) Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.

Breaker Supplier:  
Framatome Inc.  
100 East Kensing Drive, Suite 100  
Cranberry Township, PA 16066

- (iv) Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply.

TVA's contract technical specification for safety-related breakers, hereafter referred to as Specification, required design and rating in accordance with ANSI Standards and workmanship to be first class. The Specification also requires the interior of all equipment shall be free of foreign materials. Specifically, the Specification required the breakers to conform to ANSI/IEEE C37.20.2, "Metal-Clad and Station -Type cubicle Switchgear." IEEE C37.20.2, Section 7.9, "Insulating material for covering buses and connections," requires for the breaker to have an insulating covering that by itself can withstand the maximum rated line-to-line voltage between the conductor and the outside surface of the insulating covering for a period of 1 minute. Furthermore, the insulation requirement is provided to reduce the possibility of communicating faults and prevent the development of bus faults that would result if foreign objects momentarily contacted bare bus. IEEE C37.20.2, Section 9.3 "Preoperation check," recommends all wiring connection be checked for tightness.

TVA received 9 breakers in April 2022, with a Certificate of Conformance stating the Specification was fulfilled.

During an onsite inspection conducted in August 2023, 3 of the 9 breakers were found with the following issues:

Breaker with serial number R-3009252509F-002 was found with a wire on the electrical Close pushbutton loose and terminated incorrectly on the terminal point.

Breaker with serial number R-3009252509F-003 was found with the Mechanism-Operated Control (MOC) switch clevis pin missing a cotter key.

Breaker with serial number R-3009252509F-004 was found with defective mastic insulating pads on all three lower primaries, by way of separation. An extra clevis pin was found loose and resting in the bottom of the breaker.

The TVA evaluation identified these breakers, as intended for use in safety related Class 1E applications where a loss of the function, would impact mitigation of design basis accidents and transients.

- (v) The date on which the information of such defect or failure to comply was obtained.

Discovery date: TVA determined a defect of the basic component that could create a substantial safety hazard existed on December 11, 2023

- (vi) In the case of a basic component which contains a defect or fails to comply, the number and location of these components in use at, supplied for, being supplied for, or may be supplied for, manufactured, or being manufactured for one or more facilities or activities subject to the regulations in this part.

TVA contracted with Framatome to supply 9 medium voltage vacuum circuit breakers for use in safety related Class 1E applications, such as emergency core cooling system safety injection and residual heat removal pumps. None of these breakers have been installed to date.

- (vii) The corrective action which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.

Breaker with serial number R-3009252509F-002 with loose wire that was also terminated incorrectly was repaired.

Breaker with serial number R-3009252509F-003 had the missing cotter key installed.

Breaker with serial number R-3009252509F-004 had the foreign material removed and the mastic insulating pads repaired.

Breakers with serial number R-3009252509F-001, R-3009252509F-005, R-3009252509F-006, R-3009252509F-007 also had mastic insulation pad repairs.

Breaker with serial number R-3009252509F-006 also found with a loose wire that was corrected.

Breakers with serial numbers R-3009252509F-008 and R-3009252509F-009 have yet to be inspected.

Future action - Framatome is examining medium voltage vacuum circuit breakers that may be purchased under this contract for these issues and correcting as necessary before delivery.

- (viii) Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees.

None.

- (ix) In the case of an early site permit, the entities to whom an early site permit was transferred.

Not applicable.