

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

February 24, 2022

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D. C. 20555

Serial No.: NA3-22-001  
NRA/SS R0  
Docket No.: 52-017  
License No.: NPF-103

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**NORTH ANNA UNIT 3**  
**REPORT OF 10 CFR 50.46 EMERGENCY CORE COOLING SYSTEM**  
**(ECCS) MODEL CHANGES**

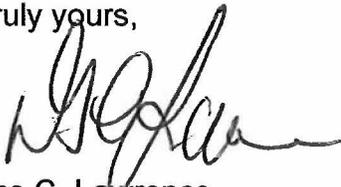
General Electric Hitachi Nuclear Energy (GEH) submitted one error notification to the ECCS model for the Certified Economic Simplified Boiling Water Reactor (ESBWR) Design in letter M210098 from Michelle P. Catts (GEH) to U. S. Nuclear Regulatory Commission, "ESBWR Design Certification Annual 10 CFR 50.46 Report for 2021," dated September 1, 2021. The evaluation model error was corrected, but because the notification was a zero-degree effect on the PCT calculation, there was no change to any reported analysis results.

The ECCS evaluation model change conclusion provided by GEH is applicable to the North Anna Unit 3 (NA3) Combined Operating License. Therefore, in accordance with 10 CFR 50.46 (a)(3)(ii), this report is being submitted on the NA3 docket.

Attachment 1 provides the Report of Changes in the GEH ECCS Evaluation Model. Attachment 2 provides the 2021 Annual Reporting of 10 CFR 50.46 Margin Utilization for North Anna Unit 3.

If you have any questions regarding this submittal, please contact Mr. Shayan Sinha at (804) 273-4687.

Very truly yours,



Douglas C. Lawrence  
Vice President – Nuclear Engineering and Fleet Support

Commitments made in this letter: None

Attachments:

1. Report of Changes in GEH ECCS Evaluation Model
2. 2021 Annual Reporting of 10 CFR 50.46 Margin Utilization – North Anna Unit 3

cc: (electronic distribution, except where noted)

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**Attachment 1**

**2021 ANNUAL REPORT OF EMERGENCY CORE COOLING SYSTEM (ECCS)  
MODEL CHANGES PURSUANT TO THE REQUIREMENTS OF 10 CFR 50.46**

**REPORT OF CHANGES IN GEH ECCS EVALUATION MODEL**

**VIRGINIA ELECTRIC AND POWER COMPANY  
NORTH ANNA UNIT 3**

**REPORT OF CHANGES IN  
GEH ECCS EVALUATION MODEL**

**North Anna Unit 3**

1. General Electric Hitachi Nuclear Energy (GEH) identified the following change and error applicable to the ECCS Loss of Coolant Accident (LOCA) TRACG Evaluation Model for North Anna Unit 3 during 2021:
  - **2021-04: NON-CONDENSABLE GAS ERROR IN ZERO CELL SIDE BRANCH.**  
A coding error was identified in TRACG04P which, under certain circumstances, miscalculates the amount of noncondensable gas flowing through a side branch of a component resulting in a mass error accumulation over time in the analysis. An error impact evaluation showed negligible effect on calculated PCT. Therefore, the 50.46 impact estimate is 0°F.

**Attachment 2**

**2021 ANNUAL REPORT OF EMERGENCY CORE COOLING SYSTEM (ECCS)  
MODEL CHANGES PURSUANT TO THE REQUIREMENTS OF 10 CFR 50.46**

**2021 ANNUAL REPORTING OF 10 CFR 50.46 MARGIN UTILIZATION**

**VIRGINIA ELECTRIC AND POWER COMPANY  
NORTH ANNA UNIT 3**

**Report of Changes in GEH ECCS Evaluation Model**

|                         |  |                                     |                |                     |
|-------------------------|--|-------------------------------------|----------------|---------------------|
| Plant Name              |  | North Anna Unit 3 (Docket 52-017)   |                |                     |
| Utility Name            |  | Virginia Electric and Power Company |                |                     |
| Reporting Year: 2021    |  |                                     |                |                     |
| Evaluation Model: TRACG |  |                                     |                |                     |
| Vendor: GE Hitachi      |  |                                     |                |                     |
|                         |  | LBPCT                               | Net PCT Effect | Absolute PCT Effect |
|                         | Analysis of Record Licensing Basis PCT (LBPCT), with prior updates | 600°F                               |                |                     |
| I.                      | Prior 10 CFR 50.46 Changes or Error Corrections                    |                                     |                |                     |
|                         | 2019-01 - TRACG Channel Inlet Subcooling Calculation               | $\Delta PCT =$                      | + 0°F          | + 0°F               |
|                         | 2019-02 - TRACG Radiation Heat Transfer Calculation                | $\Delta PCT =$                      | + 0°F          | + 0°F               |
|                         | 2017-02 - Fuel Rod Plenum Temperature Update                       | $\Delta PCT =$                      | + 0°F          | + 0°F               |
| II.                     | 10 CFR 50.46 Changes or Error Corrections for 2021                 |                                     |                |                     |
|                         | 2021-04 - Non-condensable Gas Error in Zero Cell Side Branch       | $\Delta PCT =$                      | + 0°F          | + 0°F               |
|                         | Sum of 10 CFR 50.46 Changes  | $\Delta PCT =$                      | + 0°F          | + 0°F               |
|                         | Projected LBPCT based on these changes                             | 600°F                               |                |                     |