



**ENERGY  
NORTHWEST**

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GO2-13-065

10 CFR 50.46(a)(3)(ii)

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

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397  
REPORT OF CHANGES OR ERRORS IN ECCS LOCA ANALYSIS  
MODELS PURSUANT TO 10 CFR 50.46**

Dear Sir or Madam:


This report is provided in accordance with 10 CFR 50.46(a)(3)(ii), which requires, in part, annual reporting of changes to or errors in evaluation models used for calculating emergency core cooling system (ECCS) performance and an estimate of their effect on the limiting ECCS analysis.

The Columbia Generating Station (Columbia) core consists of a mixture of AREVA ATRIUM-10 and Global Nuclear Fuels (GNF) GE14 fuel. The attached report provides the details related to one change affecting the analysis of record related to the GE14 fuel for this reporting period. The impact of the change to the peak cladding temperature (PCT) is estimated to be 0°F. In addition, the attached report provides the details related to one assessment affecting the analysis of record related to the ATRIUM-10 fuel for this reporting period. The impact of the change to the PCT is estimated to be 0°F.

The reported estimated licensing basis PCT remains within the acceptance criteria set forth in 10 CFR 50.46 (i.e.,  $\leq 2200^{\circ}\text{F}$ ). Thus, the current licensing basis PCT remains valid and no further actions are required. This letter meets the annual reporting requirements.

There are no commitments being made to the NRC herein. If you have any questions or require additional information, please contact Ms. L. L. Williams at (509) 377-8148.

Respectfully,

  
A. L. Javorik  
Vice President, Engineering

A002  
NRK

**REPORT OF CHANGES OR ERRORS IN ECCS LOCA ANALYSIS MODELS  
PURSUANT TO 10 CFR 50.46**

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Attachment: Report of Changes or Errors in ECCS LOCA Analysis Models Pursuant to  
10 CFR 50.46

cc: NRC Region IV Administrator  
NRC NRR Project Manager  
NRC Senior Resident Inspector/988C  
AJ Rapacz – BPA/1399  
WA Horin – Winston & Strawn

# **REPORT OF CHANGES OR ERRORS IN ECCS LOCA ANALYSIS MODELS PURSUANT TO 10 CFR 50.46**

Attachment

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The changes and errors in emergency core cooling system (ECCS) performance models since the last annual report are provided pursuant to 10 CFR 50.46(a)(3)(ii).

General Electric Hitachi Nuclear Energy, LLC (GEH) has performed core analysis calculations to demonstrate the Columbia Generating Station (Columbia) ECCS performance meets the requirements of 10 CFR 50.46 (Reference 1). The SAFER/GESTR-LOCA analysis methodology for GE14 fuel was approved by the NRC for use at Columbia with the approval of License Amendment 211 (Reference 2). One change was reported in 2012 for the GNF ECCS Loss of Coolant Accident (LOCA) analysis model. The change (Reference 3) involves use of the PRIME fuel rod thermal-mechanical (T-M) properties instead of those in GESTR. Applying this estimated change in Licensing Basis PCT constitutes interim implementation of the PRIME fuel properties as it pertains to the analysis basis Evaluation Model for the plant, pending a plant ECCS-LOCA re-analysis explicitly using PRIME. This change addresses Information Notice (IN) 2011-21 regarding inaccuracies in fuel pellet thermal conductivity as a function of exposure. The impact on the analysis of record was assessed to be 0°F.

AREVA (formerly Framatome ANP) has performed core analysis calculations to demonstrate the Columbia ECCS performance conforms to 10 CFR 50.46. The NRC accepted Energy Northwest's use of AREVA's analytical method for ATRIUM-10 fuel in License Amendment 185 (Reference 4). One change (Reference 5) was reported in 2012 regarding an assessment of thermal conductivity degradation with burnup. Since the limiting ATRIUM-10 PCT for Columbia occurs at the beginning of life, there is no exposure-dependent thermal conductivity degradation. The impact on the analysis of record was assessed to be 0°F.

## **References:**

1. 0000-0090-6853-R0 Rev. 0, "Columbia Generating Station GE14 ECCS-LOCA Evaluation," February 2009
2. Letter GI2-09-065, dated May 5, 2009, NRC to Energy Northwest, "Columbia Generating Station – Issuance of Amendment Re: Core Operating Limits Report and Scram Time Testing (TAC No. MD9247)"
3. GEH 2012-01, dated November 29, 2012, "10 CFR 50.46 Notification Letter"
4. Letter GI2-03-072, dated May 12, 2003, NRC to Energy Northwest, "Columbia Generating Station – Issuance of Amendment Re: The Addition of Depleted Uranium to the Fuel Assembly Composition Described in Technical Specifications 4.2.1 and 5.6.5.b (TAC NO. MB6319)"
5. AREVA NP Letter AEN-12-002, dated June 8, 2012, "10 CFR 50.46 PCT Reporting for Columbia Generating Station – Thermal Conductivity Degradation"