

WOLF CREEK NUCLEAR OPERATING CORPORATION

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MAR 31 2000

ET 00-0017

U. S. Nuclear Regulatory Commission
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- Reference:
- 1) Westinghouse Letter SAP-99-148, dated September 22, 1999, from P. J. McDonough, Westinghouse, to WCNOC
 - 2) Letter ET 99-0045, dated October 25, 1999, from R. A. Muench, WCNOC, to NRC
 - 3) Westinghouse Letter SAP-00-104, dated February 23, 2000, from P. J. McDonough, Westinghouse, to WCNOC

Subject: Docket No. 50-482: 10 CFR 50.46 Annual Report of Emergency Core Cooling System Model Changes During 1999 for Wolf Creek Generating Station

Gentlemen:

In Reference 1, Westinghouse Electric Company submitted to Wolf Creek Nuclear Operating Corporation (WCNOC) a mid-year notification of 10 CFR 50.46 reporting information pertaining to the Westinghouse BART/BASH Evaluation Model for Large Break Loss of Coolant Accident (LOCA) analyses. WCNOC reviewed Reference 1 information concerning changes to, and errors discovered in, the Large Break LOCA evaluation model used for the Wolf Creek Generating Station (WCGS). WCNOC concluded that the cumulative effect of changes to, or errors in, the evaluation model on the limiting Large Break LOCA Peak Cladding Temperature (PCT), was significant, as defined in 10 CFR 50.46. WCNOC then submitted Reference 2, according to the reporting requirements set forth in 10 CFR 50.46 (a)(3)(ii), as clarified in Section 5.1 of WCAP-13451, "Westinghouse Methodology for Implementation of 10 CFR 50.46 Reporting."

In Reference 3, Westinghouse Electric Company submitted to WCNOC the 1999 annual notification of 10 CFR 50.46 reporting information pertaining to the Westinghouse Evaluation Models for LOCA analyses. This letter provides the annual report of Emergency Core Cooling System (ECCS) model changes for WCGS for 1999, in accordance with the reporting requirements set forth in 10 CFR 50.46 (a)(3)(ii), as clarified in Section 5.1 of WCAP-13451, "Westinghouse Methodology for Implementation of 10 CFR 50.46 Reporting."

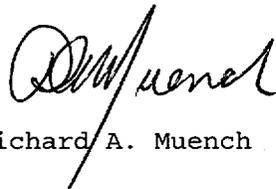
Attachment I provides an update of WCGS PCT margin utilization for both Large Break and Small Break LOCA analyses. Reference 3 information affects only the Small Break LOCA PCT margin utilization. The Large Break LOCA PCT margin utilization has not been changed from that reported in Reference 2, with the

exception that the Cumulative Absolute Magnitude of PCT changes ($\sum|\Delta PCT|$) has been reset to 0°F due to the submission of the last 30-day report (Reference 2). The PCT margin utilization for both Large Break and Small Break LOCA analyses demonstrates that the PCT values remain well below the 10 CFR 50.46 regulatory limit of 2200 degrees Fahrenheit. Therefore, WCGS is in compliance with 10 CFR 50.46 requirements and no reanalysis or any other action is required.

Attachment II provides a summary of actions committed to by WCNOG in this document.

If you have any questions concerning this matter, please call me at (316) 364-4034, or Mr. Michael J. Angus at (316) 364-4077.

Very truly yours,



Richard A. Muench

RAM/rlr

Attachments

cc: J. N. Donohew (NRC), w/a
W. D. Johnson (NRC), w/a
E. W. Merschoff (NRC), w/a
Senior Resident Inspector (NRC), w/a

ATTACHMENT I
ECCS EVALUATION MODEL
PEAK CLADDING TEMPERATURE (PCT)
MARGIN ASSESSMENTS

***** LARGE BREAK LOCA PEAK CLAD TEMPERATURE (PCT) MARGIN UTILIZATION *****

Evaluation Model: 1981 EM with BASH
Fuel: 17X17 V5H w/IFM, non-IFBA, 275 psig
Peaking Factor: FQ=2.50, F_{dH}=1.65
SG Tube Plugging: 10%
Power Level: 3565 MW_{th}
Limiting transient: C_D=0.4, Min. SI, Reduced Tav_g

A. ANALYSIS OF RECORD (Rerating 8/92)

Peak Cladding Temperature (PCT): 1916^oF (1)

B. PRIOR PERMANENT ECCS MODEL ASSESSMENTS Δ PCT = 0^oF (2)

C. 10 CFR 50.59 SAFETY EVALUATIONS

- 1. Loose Parts Δ PCT = 20^oF (3)
- 2. Containment Purge Evaluation Δ PCT = 0^oF (4)
- 3. Cycle 10 Fuel Assembly Design Changes Δ PCT = 95^oF (5)
- 4. Fuel Rod Crud Δ PCT = 0^oF (6)

TOTAL 10 CFR 50.59 LARGE BREAK ASSESSMENTS Δ PCT = 115^oF

D. 1999 10 CFR 50.46 MODEL ASSESSMENTS

(Permanent Assessment of PCT Margin)

- 1. LOCBART Zirc-Water Oxidation Error Δ PCT = 33^oF (9)
- 2. LOCBART Spacer Grid Single-Phase Heat Transfer Error Δ PCT = 15^oF (9)

E. TEMPORARY ECCS MODEL ISSUES Δ PCT = 0^oF

F. OTHER MARGIN ALLOCATIONS

- 1. Transition Core (STD to V5H) Δ PCT = 50^oF (7)
- 2. Cold Leg Streaming Temperature Gradient Δ PCT = 0^oF (8)
- 3. Rebaseline of Limiting AOR Case (12/96) Δ PCT = -63^oF (9)

LICENSING BASIS PCT + MARGIN ALLOCATIONS PCT = 2066^oF

CUMULATIVE ABSOLUTE MAGNITUDE OF PCT CHANGES SINCE LAST 30-DAY REPORT (LETTER ET 99-0045) $\Sigma|\Delta$ PCT| = 0^oF

References:

1. Westinghouse Topical Report WCAP-13456, "Wolf Creek Generating Station NSSS Rerating Licensing Report," October 1992.
2. Westinghouse to WCNOC letter SAP-99-114, "Wolf Creek Nuclear Operating Corporation, Wolf Creek Generating Station, 10 CFR 50.46 Annual Notification and Reporting for 1998," March 5, 1999.
3. Westinghouse to WCNOC letter SAP-90-148, "Wolf Creek Nuclear Operating Corporation, RCS Loose Parts Evaluation," April 18, 1990.
4. Westinghouse to WCNOC letter SAP-94-102, "Containment Mini purge Isolation Valve Stroke Time Increase," January 12, 1994.
5. Westinghouse to WCNOC letter 97SAP-G-0009, "Wolf Creek Nuclear Operating Corporation, Wolf Creek Generating Station, Safety Assessment for the Wolf Creek Generating Station with ZIRLO™ Fuel Assemblies," February 7, 1997.

6. Westinghouse to WCNOC letter 97SAP-G-0075, "Wolf Creek Nuclear Operating Corporation, Wolf Creek Generating Station, Wolf Creek Crud Deposition/Axial Offset Anomaly Safety Evaluation," September 29, 1997. (This penalty will be carried until such time it is determined to no longer apply).
7. Westinghouse to WCNOC letter SAP-93-111, "Wolf Creek Nuclear Operating Corporation, Wolf Creek Generating Station, LOCA PCT Summary Sheets," April 14, 1993. (Transition core penalty applies on a cycle-specific basis for reloads utilizing both V5H (with IFMs) and STD fuel until a full core of V5H is achieved).
8. Westinghouse to WCNOC letter SAP-93-701, "Wolf Creek Nuclear Operating Corporation, Wolf Creek Generating Station, 10 CFR 50.46 Notification and Reporting Information," January 25, 1993. [A PCT benefit of <2.5 degrees Fahrenheit was assessed; however, a benefit of zero (0) degrees Fahrenheit will be tracked for reporting purposes].
9. Westinghouse to WCNOC Letter SAP-99-148, "Wolf Creek Nuclear Operating Corporation, Wolf Creek Generating Station, 10 CFR 50.46 BART/BASH Evaluation Model Mid-Year Notification and Reporting for 1999," September 22, 1999.

***** SMALL BREAK PEAK CLAD TEMPERATURE (PCT) MARGIN UTILIZATION *****

Evaluation Model: 1985 EM with NOTRUMP
Fuel: 17X17 V5H w/IFM, non-IFBA 275 psig
Peaking Factor: FQ=2.50, F_{dH}=1.65
SG Tube Plugging: 10%
Power Level: 3565 MW_{th}
Limiting transient: 3-inch Break

A. ANALYSIS OF RECORD (Rerating 8/92)

Peak Cladding Temperature (PCT): 1510°F (1)

B. PRIOR PERMANENT ECCS MODEL ASSESSMENTS Δ PCT = 31°F (2)

C. 10 CFR 50.59 SAFETY EVALUATIONS

- 1. Loose Parts Δ PCT = 45°F (3)
- 2. Cycle 10 Fuel Assembly Design Changes Δ PCT = 1°F (6)
- 3. Reduced Feedwater Inlet Temperature Δ PCT = 10°F (4)
- 4. Fuel Rod Crud Δ PCT = 4°F (5)
- 5. Auxiliary Feedwater Temperature Increase Δ PCT = 16°F (8)

TOTAL 10 CFR 50.59 SMALL BREAK ASSESSMENTS Δ PCT = 76°F

D. 1999 10 CFR 50.46 MODEL ASSESSMENTS
(Permanent Assessment of PCT Margin)

- 1. None Δ PCT = 0°F

E. TEMPORARY ECCS MODEL ISSUES

- 1. None Δ PCT = 0°F

F. OTHER MARGIN ALLOCATIONS

- 1. Cold Leg Streaming Temperature Gradient Δ PCT = 7°F (7)

LICENSING BASIS PCT + MARGIN ALLOCATIONS PCT = 1624°F

CUMULATIVE ABSOLUTE MAGNITUDE OF PCT CHANGES $\Sigma|\Delta$ PCT| = 22°F
(Reported in last 30-DAY REPORT, LETTER ET 99-0024)

References:

1. Westinghouse Topical Report WCAP-13456, "Wolf Creek Generating Station NSSS Rerating Licensing Report," October 1992.
2. Westinghouse to WCNO letter SAP-99-114, "Wolf Creek Nuclear Operating Corporation, Wolf Creek Generating Station, 10 CFR 50.46 Notification and Reporting for 1997," March 5, 1999.
3. Westinghouse to WCNO letter SAP-90-148, "Wolf Creek Nuclear Operating Corporation, RCS Loose Parts Evaluation," April 18, 1990.
4. Westinghouse to WCNO letter SAP-96-119, "Wolf Creek Nuclear Operating Corporation, Wolf Creek Generating Station, Small Break LOCA Evaluation for Reduced Feedwater Temperature," May 30, 1996.
5. Westinghouse to WCNO letter 97SAP-G-0075, "Wolf Creek Nuclear Operating Corporation, Wolf Creek Generating Station, Wolf Creek Crud Deposition/Axial Offset Anomaly Safety Evaluation," September 29, 1997. (This penalty will be carried until such time it is determined to no longer apply).

6. Westinghouse to WCNOC letter 97SAP-G-0009, "Wolf Creek Nuclear Operating Corporation, Wolf Creek Generating Station, Safety Assessment for the Wolf Creek Generating Station with ZIRLO™ Fuel Assemblies," February 7, 1997.
7. Westinghouse to WCNOC letter SAP-93-701, "Wolf Creek Nuclear Operating Corporation, Wolf Creek Generating Station, 10 CFR 50.46 Notification and Reporting Information," January 25, 1993.
8. Westinghouse to WCNOC letter SAP-98-138, "Wolf Creek Nuclear Operating Corporation, Wolf Creek Generating Station, Assessment of an Increase in Auxiliary Feedwater Temperature," July 23, 1998.

LIST OF COMMITMENTS

The following table identifies those actions committed to by Wolf Creek Nuclear Operating Corporation (WCNOC) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. Michael J. Angus, Manager Licensing and Corrective Action at Wolf Creek Generating Station, (316) 364-4077.

COMMITMENT	Due Date/Event
None	N/A