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L-PI-06-053
10 CFR 50.46

U S Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Prairie Island Nuclear Generating Plant Unit 1
Docket 50-282
License No. DPR-42

Corrections to Emergency Core Cooling System (ECCS) Evaluation Models

Reference: 1) Letter L-PI-06-010 from Nuclear Management Company, LLC to Nuclear Regulatory Commission, "Revised Commitment to Submit Best-Estimate Loss of Coolant Accident (LOCA) Analysis," dated February 2, 2006.

Enclosed is a report of changes to the Prairie Island Nuclear Generating Plant (PINGP) Unit 1 Emergency Core Cooling System (ECCS) Evaluation Models. This report is being submitted in accordance with the provisions of 10 CFR 50, Section 50.46, as a 30-day report.

The report includes Large Break Loss of Coolant Accident (LBLOCA) changes reported by Westinghouse. There were no changes to the Small Break Loss of Coolant Accident (SBLOCA) analysis.

The Unit 1 LBLOCA Peak Clad Temperature (PCT) changes (Enclosure 1) are due to the following two changes:

- Unit 1 reactor vessel head replacement included a head assembly upgrade package (HAUP) designated as "HAUP LOCA Evaluation" (+3 degree penalty)
- Reconstitution of one fuel assembly with two natural uranium rods (+1 degree penalty)

The PCT (2043 °F, see Enclosure) for LBLOCA analysis continues to remain below the 10 CFR 50.46 PCT acceptance criterion. The accumulated absolute value of the PCT changes and errors since the original 1995 baseline Analysis of Record is 799 °F. NMC has committed by letter (see Reference 1) to provide a new LBLOCA analysis for PINGP by July 31, 2006. The limiting LOCA analysis for Prairie Island Unit 1, with consideration of all 10 CFR 50.46 assessments, remains the LBLOCA analysis.

The enclosure to this letter need not be withheld from public disclosure.

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.



Thomas J. Palmisano
Site Vice President, Prairie Island Nuclear Generating Plant
Nuclear Management Company, LLC

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Prairie Island, USNRC
Resident Inspector, Prairie Island, USNRC

ENCLOSURE

**NUCLEAR MANAGEMENT COMPANY, LLC
PRAIRIE ISLAND NUCLEAR GENERATING PLANT
DOCKET NO 50-282**

Unit 1 LBLOCA Peak Clad Temperature Summaries

(includes plant specific changes and non-zero non-plant specific changes)

3 pages follow

Westinghouse LOCA Peak Clad Temperature Summary for Appendix K Large Break

Plant Name: Prairie Island Unit 1
Utility Name: Nuclear Management Company, LLC
Revision Date: 5 /12/06

Analysis Information

EM: SECY UPI **Analysis Date:** 3/1/95 **Limiting Break Size:** Cd = 0.4
FQ: 2.4 **FdH:** 1.77
Fuel: OFA **SGTP (%):** 15
Notes: Zirlo™, OSG SGTP Evaluated up to 24.64% (see also Note e); Fq increased to 2.5 (Item A.10); RSG Study at 10% SGTP.

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	2180	1,2	(a)
PCT ASSESSMENTS (Delta PCT)			
A. PRIOR ECCS MODEL ASSESSMENTS			
1 . Fixed Heat Transfer Node Assignment Error/Accumulator Water Injection Error (1995 Report)	-175	3	
2 . I-D Transition Boiling Heat Transfer Error (1997 Report)	59	5	
3 . Vessel Channel DX Error (1997 Report)	-14	5	
4 . Input Consistency (1997 Report)	-66	5	
5 . No Items for 1996 & 1998 Reports	0	4,6	
6 . Accumulator Line/Pressurizer Surge Line Data / Plant Specific Accumulator Level & Line Volume / Plant Specific Restart Error: Reanalysis (1999 Report)	113	7	(b)
7 . Modeling Updates and Unheated Conductor Input Corrections (Plant Specific, 2000 Report)	-147	8,10	(c)
8 . Accumulator Pressure +/- 30 psi Range (Plant Specific, 2001 Report)	8	11,12	(d)
9 . LHSI Error Evaluation (Plant Specific, 2002 Report)	30	13,14	(g)
10 . Sensitivity Study for FQ=2.5, LHSI Correction, etc. (as listed in note (f)) (Plant Specific, 2003 Report)	-47	16,18,19	(f,h)
11 . Broken Loop Nozzle Loss Coefficient (Plant Specific)	-19	18,19,21, 25	(h)
12 . SECY Cold Leg Nozzle Expansion	13	25	
B. PLANNED PLANT MODIFICATION EVALUATIONS			
1 . Sensitivity Study for Steam Generator Tube Plugging Increase to 25%	52	8	
2 . Accumulator Water Volume +/- 25 ft3 Range	12	11	
3 . Accumulator Pressure Extended to +/- 55 psi Range	21	11	
4 . 2 Reconstituted Rods Evaluation	1	9	
5 . SATP Core Average Burnup	17	20,22	
6 . Sensitivity Study for Framatome Replacement Steam Generators	32	23	
7 . HAUP LOCA Evaluation	3	24	
C. 2006 ECCS MODEL ASSESSMENTS			

Westinghouse LOCA Peak Clad Temperature Summary for Appendix K Large Break

Plant Name: Prairie Island Unit 1
Utility Name: Nuclear Management Company, LLC
Revision Date: 5/12/06

1 . None 0

D. OTHER*

1 . Removal of Reference 14 LHSI Error Evaluation -30 16 (g)

LICENSING BASIS PCT + PCT ASSESSMENTS PCT = 2043

* It is recommended that the licensee determine if these PCT allocations be considered with respect to 10 CFR 50.46 reporting requirements.

References:

- 1 . 95NS-G-0021, "Updated UPI LBLOCA," March 24, 1995.
- 2 . WCAP-13919, Addendum 1, "Prairie Island Units 1 and 2 WCOBRA/TRAC Best Estimate UPI Large Break LOCA Analysis Engineering Report Addendum 1: Updated Results," December 1996.
- 3 . NSP-96-202, "Northern States Power Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting," February 20, 1996.
- 4 . NSP-97-201, "Northern States Power Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting," April 17, 1997.
- 5 . NSP-98-012, "Northern States Power Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 1997," February 27, 1998.
- 6 . NSP-99-010, "Northern States Power Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 1998," April 29, 1999.
- 7 . NSP-00-005, "Northern States Power Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 1999," February 2000.
- 8 . NSP-00-057, "Northern States Power Company Prairie Island Units 1 and 2 LOCA Evaluation of 25% SGTP with Other Modeling Updates," December 11, 2000.
- 9 . LTR-LIS-06-277, "Reconstitution Evaluation, 10 CFR 50.46 Reporting Plant Specific Text, and Updated Rackup Sheets for Prairie Island Unit 1, Cycle 24," 5/2006.
- 10 . NSP-01-006, "Northern States Power Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2000," March 6, 2001.
- 11 . NSP-02-9, "Nuclear Management Company Prairie Island Units 1 and 2 LBLOCA Accumulator Pressure and Volume Ranges Evaluation," February 15, 2002.
- 12 . NSP-02-5, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2001," March 2002.
- 13 . NSP-02-59/LTR-ESI-02-194, "Final Evaluation of Large Break LOCA Error," December 2002.
- 14 . NSP-03-19, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2002," March 2003.
- 15 . MP92-TAH-0394 / ET-NSL-OPL-1-93-518, "NSPC Prairie Island Units 1 and 2, SG Tube Flow Area Reduction under LOCA / SSE - Final Report", October 21, 1992.
- 16 . NSP-04-10 "Safety Analysis Transition Program Transmittal of Engineering Report," February 20, 2004.
- 17 . NSP-93-513, Rev 1/ET-NSL-OPL-1-93-313, Rev. 1, Letter from T. A. Hawley (W) to K. E. Higar (NSP), "Final Transmittal of Assumptions to be used for the Large and Small Break LOCA Analyses, Rev. 1", July 7, 1993. Confirmed by : Letter from K. E. Higar (NSP) to Mr. T. Hawley (W), "Acceptance of NSP- 93- 513, Rev. 1", July 30, 1993.
- 18 . NSP-04-38, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2003," March 2004.
- 19 . WCAP-16206-P, "SATP Engineering Report for Prairie Island," February 2004.

- 20 . NF-NMC-04-49, "Nuclear Management Company Prairie Island Unit 1 Cycle 22 Final RSE," April 2004.
- 21 . NSP-04-65, "Nuclear Management Company Prairie Island Units 1 & 2 Safety Analysis Transition Program Response to 10 CFR 50.46 Inquiry," April 21, 2004.
- 22 . NF-NMC-04-129, "Nuclear Management Company Prairie Island Unit 1, Cycle 23 Final RSE," August 2004.
- 23 . NSP-04-114, "Nuclear Management Company Prairie Island Units 1 & 2, Safety Analysis Transition Program, Transmittal of LBLOCA Replacement Steam Generator (RSG) Engineering Report Addendum," (WCAP-16206-P-Addendum 1), June
- 24 . NSP-05-155, "Nuclear Management Company, Reactor Vessel Head Replacement Project, Prairie Island Units 1 & 2," May 18, 2005.
- 25 . NSP-05-191, "Miscellaneous LBLOCA SECY EM Error Notification," August 2005.

Notes:

- (a) P-bar-HA increased from 1.57 to 1.59
- (b) Reanalysis for all listed issues
- (c) Reanalysis for both issues
- (d) Related JCO in existence (NSP-01-030). NMC cognizant of uncertainty application and PCT sheet categorization.
- (e) It is assumed that NMC is applying the 0.36% SGTP allowance factor branch of the SG LOCA / SSE issue (Reference 15). Thus the 25% SGTP Study (Item B.1) supports a net SGTP limit of 24.64%.
- (f) Sensitivity Study for: FQ=2.50, PAD 4.0 Implementation, Restoration of LHSI to Reference 17 values, SG/Loop ΔP Retuning, Core Power Restoration.
- (g) The note (f) sensitivity study allows for the removal of the Reference 13 engineering assessment.
- (h) Items A.10 and A.11 presented as aggregate -66 °F entry prior to Reference 21 decomposition.