AUG 5 2004

L-PI-04-097
10 CFR 50.46

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

Prairie Island Nuclear Generating Plant Units 1 and 2
Dockets 50-282 and 50-306
License Nos. DPR-42 and DPR-60

CORRECTIONS TO ECCS EVALUATION MODELS

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

The report includes Large Break Loss of Coolant Accident (LBLOCA) and Small Break Loss of Coolant Accident (SBLOCA) changes reported by Westinghouse that are applicable from the beginning of Fuel Cycle 22, thus valid for the 2003 reporting year. The non-plant specific changes are presented in Enclosure 1. All non-zero changes are summarized in Enclosure 2 and are LBLOCA Item A.11 (-19 °F for Broken Loop Nozzle Correction) and SBLOCA Item C.1 (35 °F for NOTRUMP Bubble Rise/Drift Flux Model Inconsistency Corrections). We consider these changes to constitute the 2003 annual report.

In addition, Enclosure 2 includes plant specific LBLOCA changes initiated as a result of PINGP's safety analysis transition from in-house analyses to Westinghouse analyses. This transition was authorized by a license amendment issued by the Nuclear Regulatory Commission by letter dated April 28, 2004 and the transition was made effective July 6, 2004. These changes are summarized in Enclosure 2 and are Item A.10. (-47 °F for Sensitivity Study for FQ=2.5, Low Head Safety Injection Correction, PAD 4.0 Implementation, Steam Generator/Loop ΔP Re-tuning, and Core Power Restoration), and Item B.5. (+17 °F for Cycle 22 Safety Analysis Transition Program Core Average Burnup). These changes exceed 50 °F and, therefore, the 30-day reporting criterion is applicable for the LBLOCA analyses.

The analysis vendor has recently assessed the applicable LBLOCA changes and corrections noted in Enclosure 2. The assessment has concluded that all corrections are realistic estimates of the impacts on peak cladding temperature (PCT) and are independent of each other. Based on this, the LBLOCA analysis level of conservatism remains essentially the same. In addition, the resultant LBLOCA PCT has decreased from 2180 °F to 1994 °F. Since the analysis remains in compliance with 10 CFR 50.46,

A001

Nuclear Management Company, LLC (NMC) has concluded that no additional analysis is necessary at this time.

The summary sheets attached 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.

Please contact Jack Leveille (651-388-1121, Ext 4142) if you have any questions related to this letter.

Joseph M. Solymossy
Site Vice President, Prairie Island Nuclear Generating Plant

CC Regional Administrator, USNRC, Region III
Project Manager, Prairie Island Nuclear Generating Plant, USNRC, NRR
NRC Resident Inspector – Prairie Island Nuclear Generating Plant

Enclosures (2)

ENCLOSURE 2

LOCA Peak Clad Temperature Summary
Prairie Island Nuclear Generating Plant

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

8 Pages Follow

(Prairie Island Unit 1 LBLOCA – 3 pages)
(Prairie Island Unit 2 LBLOCA – 3 pages)
(Prairie Island Unit 1 SBLOCA – 1 page)
(Prairie Island Unit 2 SBLOCA – 1 page)

Westinghouse LOCA Peak Clad Temperature Summary for SECY UPI Large Break

Plant Name:	Prairie Island Unit 1
Utility Name:	Nuclear Management Company, LLC
Revision Date:	7/12/04

Analysis Information

EM:	SECY UPI WCFT	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 f); Fq increased to 2.5 (Item A.10)

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	2180	1,2	(a)
MARGIN ALLOCATIONS (Delta PCT)			
A. PRIOR PERMANENT ECCS MODEL ASSESSMENTS			
1. Fixed Heat Transfer Node Assignment Error/Accumulator Water Injection Error (1995 Report)	-175	3	
2. 1-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	12, 13	(d)
9. LHSI Error Evaluation (Plant Specific, 2002 Report)	30	14, 15	(h)
10. Sensitivity Study for FQ=2.5, LHSI Correction, etc. (as listed in note (g)) (Plant Specific, 2003 Report)	-47	17,19,20	(g,i)
11. Broken Loop Nozzle Correction (Plant Specific) (2003 Report)	-19	20,22	(i)
B. PLANNED PLANT CHANGE EVALUATIONS			
1. Sensitivity Study for Steam Generator Tube Plugging Increase to 25%	52	8	
2. Accumulator Water Volume +/- 25 ft3 Range	12	12	
3. Accumulator Pressure Extended to +/- 55 psi Range	21	12	
4. 5 Reconstituted Rods Evaluation	0	9,11	(e)
5. Cycle 22 SATP Core Average Burnup	17	21	
C. 2004 PERMANENT ECCS MODEL ASSESSMENTS			
1. None	0		
D. TEMPORARY ECCS MODEL ISSUES*			
1. None	0		
E. OTHER			

Westinghouse LOCA Peak Clad Temperature Summary for SECY UPI Large Break

Plant Name:	Prairie Island Unit 1
Utility Name:	Nuclear Management Company, LLC
Revision Date:	7/12/04

1.	Removal of Reference 14 LHSI Error Evaluation	-30	17	(h)

LICENSING BASIS PCT + MARGIN ALLOCATIONS	PCT =	1994

* It is recommended that these temporary PCT allocations which address current LOCA model issues not 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. 00NS-G-0076/CAB-00-390, "Prairie Island Unit 1 Cycle 21 LOCA Reload Confirmation and FCEP Checklist," December 15, 2000.
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. Rothrock (NMC) to Swigat (W), "Prairie Island Unit 1 LOCA PCT," May 30, 2001.
12. NSP-02-9, "Nuclear Management Company Prairie Island Units 1 and 2 LBLOCA Accumulator Pressure and Volume Ranges Evaluation," February 15, 2002.
13. NSP-02-5, "Nuclear Management Company Praine Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2001," March 2002.
14. NSP-02-59/LTR-ESI-02-194, "Final Evaluation of Large Break LOCA Error," December 2002.
15. NSP-03-19, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2002," March 2003.
16. MP92-TAH-0394 / ET-NSL-OPL-1-92-518, "NSPC Prairie Island Units 1 and 2, SG Tube Flow Area Reduction under LOCA / SSE - Final Report", October 21, 1992.
17. NSP-04-10 "Safety Analysis Transition Program Transmittal of Engineering Report," February 20, 2004.
18. 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.
19. NSP-04-38, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2003," March 2004.
20. WCAP-16200-P, "SATP Engineering Report for Prairie Island," February 2004.
21. NF-NMC-04-49, "Nuclear Management Company Prairie Island Unit 1 Cycle 22 Final RSE," April 2004
22. NSP-04-65, "Nuclear Management Company Prairie Island Units 1 & 2 Safety Analysis Transition Program Repsonse to 10 CFR 50.46 Inquiry," April 21, 2004.

Westinghouse LOCA Peak Clad Temperature Summary for SECY UPI Large Break

Plant Name:	Prairie Island Unit 1
Utility Name:	Nuclear Management Company, LLC
Revision Date:	7/15/04

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) Reconstitution for Cycle 21 recanted per Reference 11.

(f) It is assumed that NMC is applying the 0.36% SGTP allowance factor branch of the SG LOCA / SSE issue (Reference 16). Thus the 25% SGTP Study (Item B.1) supports a net SGTP limit of 24.64%.

(g) Sensitivity Study for: FQ=2.50, PAD 4.0 Implementation, Restoration of LHSI to Reference 18 values, SG/Loop ΔP Re-tuning, Core Power Restoration.

(h) The note (g) sensitivity study allows for the removal of the Reference 14 engineering assessment.

(i) Items A.10 and A.11 presented as aggregate -66 °F entry prior to Reference 22 decomposition.

Westinghouse LOCA Peak Clad Temperature Summary for SECY UPI Large Break

Plant Name:	Prairie Island Unit 2
Utility Name:	Nuclear Management Company, LLC
Revision Date:	7/12/04

Analysis Information

EM:	SECY UPI WC/T	Analysis Date:	3/1/95	Limiting Break Size:	Cd = 0.4
FQ:	2.4	FdH:	1.77		
Fuel:	OFA	SGTP (%):	15		

Notes: Zirlo™, SGTP Evaluated up to 24.64% (see also Note e); Fq increased to 2.5 (Item A.10)

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	2180	1,2	(a)
MARGIN ALLOCATIONS (Delta PCT)			
A. PRIOR PERMANENT ECCS MODEL ASSESSMENTS			
1 . Fixed Heat Transfer Node Assignment Error/Accumulator Water Injection Error (1995 Report)	-175	3	
2 . 1-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	8,9	(c)
8 . Accumulator Pressure +/- 30 psi Range (Plant Specific) (2001 Report)	8	10,11	(d)
9 . LHSI Error Evaluation (Plant Specific) (2002 Report)	30	12,13	(g)
10 . Sensitivity Study for FQ=2.5, LHSI Correction, etc. (as listed in note (f)) (Plant Specific) (2003 Report)	-47	15,17,18	(f,h)
11 . Broken Loop Nozzle Correction (Plant Specific) (2003 Report)	-19	20,18	(h)
B. PLANNED PLANT CHANGE EVALUATIONS			
1 . Sensitivity Study for Steam Generator Tube Plugging Increase to 25%	52	8	
2 . Accumulator Water Volume +/- 25 ft3 Range	12	10	
3 . Accumulator Pressure Extended to +/- 55 psi Range	21	10	
4 . Cycle 22 SATP Core Average Burnup	17	19	
C. 2004 PERMANENT ECCS MODEL ASSESSMENTS			
1 . None	0		
D. TEMPORARY ECCS MODEL ISSUES*			
1 . None	0		
E. OTHER			
1 . Removal of Reference 12 LHSI Error Evaluation	-30	15	(g)

Westinghouse LOCA Peak Clad Temperature Summary for SECY UPI Large Break

Plant Name:	Prairie Island Unit 2
Utility Name:	Nuclear Management Company, LLC
Revision Date:	7/12/04

LICENSING BASIS PCT + MARGIN ALLOCATIONS	PCT =	1994

* It is recommended that these temporary PCT allocations which address current LOCA model issues not 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. 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.
10. NSP-02-9, "Nuclear Management Company Prairie Island Units 1 and 2 LBLOCA Accumulator Pressure and Volume Ranges Evaluation," February 15, 2002.
11. NSP-02-5, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2001," March 2002.
12. NSP-02-59/LTR-ESI-02-194, "Final Evaluation of Large Break LOCA Error," December 2002.
13. NSP-03-19, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2002," March 2003.
14. MP92-TAH-0394 / ET-NSL-OPL-I-92-518, "NSPC Prairie Island Units 1 and 2, SG Tube Flow Area Reduction under LOCA / SSE - Final Report", October 21, 1992.
15. NSP-04-10 "Safety Analysis Transition Program Transmittal of Engineering Report," February 20, 2004
16. NSP-93-513, Rev 1/ET-NSL-OPL-I-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.
17. NSP-04-38, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2003," March 2004.
18. WCAP-16206-P, "SATP Engineering Report for Prairie Island," February 2004.
19. NF-NMC-04-50, "Nuclear Management Company Prairie Island Unit 2 Cycle 22 Final RSE," April 2004
20. NSP-04-65, "Nuclear Management Company Prairie Island Units 1 & 2 Safety Analysis Transition Program Repsonse to 10 CFR 50.46 Inquiry," April 21, 2004.

Notes:

(a) P-bar-HA increased from 1.57 to 1.59

(b) Reanalysis for all listed issues

(c) Reanalysis for both issues

Westinghouse LOCA Peak Clad Temperature Summary for SECY UPI Large Break

Plant Name:	Prairie Island Unit 2
Utility Name:	Nuclear Management Company, LLC
Revision Date:	7/12/04

(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 14). 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 16 values, SG/Loop ΔP Re-tuning, Core Power Restoration.

(g) The note (f) sensitivity study allows for the removal of the Reference 12 engineering assessment.

(h) Items A.10 and A.11 presented as aggregate -66 °F entry prior to Reference 20 decomposition.

Westinghouse LOCA Peak Clad Temperature Summary for Small Break

Plant Name: Prairie Island Unit 1
Utility Name: Nuclear Management Company, LLC
Revision Date: 3 /3 /04

Analysis Information

EM:	NOTRUMP	**Analysis Date:**	9/1/00	**Limiting Break Size:**	3 inch
FQ:	2.8	**FdH:**	2		
Fuel:	OFA	**SGTP (%):**	25		
Notes:	Zirlo™ (14X14)				

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	1142	1	(a)
MARGIN ALLOCATIONS (Delta PCT)			
A. PRIOR PERMANENT ECCS MODEL ASSESSMENTS			
1 . No Items for 2000, 2001 & 2002 Reports	0	2,6,7	
B. PLANNED PLANT CHANGE EVALUATIONS			
1 . 5 Reconstituted Rods Evaluation N/A	0	3,4	(b)
C. 2003 PERMANENT ECCS MODEL ASSESSMENTS			
1 . NOTRUMP Bubble Rise / Drift Flux Model Inconsistency Corrections	35	8	
D. TEMPORARY ECCS MODEL ISSUES*			
1 . None	0		
E. OTHER			
1 . Evaluation for Reduced Auxilary Feedwater Flow Rate	0	5	
LICENSING BASIS PCT + MARGIN ALLOCATIONS	**PCT =** 1177		

* It is recommended that these temporary PCT allocations which address current LOCA model issues not be considered with respect to 10 CFR 50.46 reporting requirements.

References:

1 . NSP-00-045, "SBLOCA Re-analysis with Revised NOTRUMP Code," October 2, 2000.

2 . 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.

3 . 00NS-G-0076/CAB-00-390, "Prairie Island Unit 1 Cycle 21 LOCA Reload Confirmation and FCEP Checklist," December 15, 2000.

4 . Rothrock (NMC) to Swigat (W), "Prairie Island Unit 1 LOCA PCT," May 30, 2001.

5 . NSP-02-36, "SBLOCA Limited FSAR Update and Evaluation for Revised Auxilary Feedwater Flow Rate," October 2002.

6 . NSP-02-5, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2001," March 2002.

7 . NSP-03-19, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2002," March 2003.

8 . NSP-03-68, "10 CFR 50.46 Mid-Year Notification and Reporting for 2003," November 2003.

Notes:

(a) Accumulator water volume sensitivity of +/- 30 cubic feet included.

(b) Reconstitution for Cycle 21, recanted per Reference 4.

Westinghouse LOCA Peak Clad Temperature Summary for Small Break

Plant Name: Prairie Island Unit 2
Utility Name: Nuclear Management Company, LLC
Revision Date: 3 /3 /04

Analysis Information

EM:	NOTRUMP	**Analysis Date:**	9/1/00	**Limiting Break Size:**	3 inch
FQ:	2.8	**FdH:**	2		
Fuel:	OFA	**SGTP (%):**	25		
Notes:	Zirlo™ (14X14)				

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	1142	1	(a)
MARGIN ALLOCATIONS (Delta PCT)			
A. PRIOR PERMANENT ECCS MODEL ASSESSMENTS			
1 . No Items for 2000, 2001 & 2002 Reports	0	2,4,5	
B. PLANNED PLANT CHANGE EVALUATIONS			
1 . None	0		
C. 2003 PERMANENT ECCS MODEL ASSESSMENTS			
1 . NOTRUMP Bubble Rise / Drift Flux Model Inconsistency Corrections	35	6	
D. TEMPORARY ECCS MODEL ISSUES*			
1 . None	0		
E. OTHER			
1 . Evaluation for Reduced Auxilary Feedwater Flow Rate	0	3	
LICENSING BASIS PCT + MARGIN ALLOCATIONS	**PCT =** 1177		

* It is recommended that these temporary PCT allocations which address current LOCA model issues not be considered with respect to 10 CFR 50.46 reporting requirements.

References:

1 . NSP-00-045, "SBLOCA Re-analysis with Revised NOTRUMP Code," October 2, 2000.

2 . 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.

3 . NSP-02-36, "SBLOCA Limited FSAR Update and Evaluation for Revised Auxilary Feedwater Flow Rate," October 2002.

4 . NSP-02-5, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2001," March 2002.

5 . NSP-03-19, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2002," March 2003.

6 . NSP-03-68, "10 CFR 50.46 Mid-Year Notification and Reporting for 2003," November 2003.

Notes:

(a) Accumulator water volume sensitivity of +/- 30 cubic feet included.