

DEC 30 2003

L-PI-03-105
10CFR50.46

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

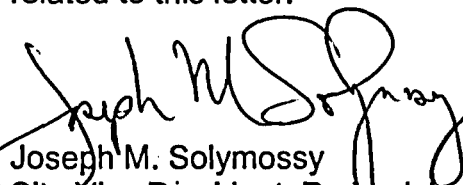
**PRAIRIE ISLAND NUCLEAR GENERATING PLANT
DOCKET NOS. 50-282 AND 50-306
LICENSE NOS. DPR-42 AND DPR-60
CORRECTIONS TO ECCS EVALUATION MODELS**

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

The applicable corrections noted in the Attachment 1 have been applied to Prairie Island's current ECCS analyses of record (except the Small Break Loss of Coolant Accident as discussed below), and all analyses were found to be in compliance with the applicable acceptance criteria (Attachment 2). Since all analyses remain in compliance, no reanalysis is required or planned.

As of September 2003, Nuclear Management Company has adopted a new Small Break Loss of Coolant Accident analysis for PINGP. Any corrections that may result from the use of this analysis that would require reporting will be included in the next summary report.

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

Attachments:

1. Westinghouse Loss of Coolant Accident (LOCA) Evaluation Model Changes
2. LOCA Peak Clad Temperature Rackup Summary Sheets

ATTACHMENT 1

**NUCLEAR MANAGEMENT COMPANY, LLC
PRAIRIE ISLAND NUCLEAR GENERATING PLANT
DOCKET NOS 50-282 AND 50-306**

Westinghouse LOCA Evaluation Model Changes

**7 Pages Follow
(3 of 9 through 9 of 9)**

1-D MINIMUM FILM BOILING TEMPERATURE MODEL SELECTION ERROR

Background

Section 6-3-6 of WCAP-12945-P-A indicates that the minimum film boiling temperature calculation for 1-D components is calculated as the maximum of the homogeneous nucleation temperature and that predicted by the Iloeje correlation. The comparison of these two correlations is made if a flag (ITMIN) is set greater than zero. Otherwise, the homogeneous nucleation temperature is used. It was found that ITMIN was not initialized, resulting in the Iloeje correlation not being considered. This error has the potential to affect the heat transfer calculations in the steam generator tubes of the STGEN component. The coding was corrected to be consistent with the description in Section 6-3-6. This coding change was determined to be a Non-Discretionary change in accordance with Section 4.1.2 of WCAP-13451.

Affected Evaluation Models

SECY UPI WCOBRA/TRAC Large Break LOCA Evaluation Model

1996 Westinghouse Best Estimate Large Break LOCA Evaluation Model

1999 Westinghouse Best Estimate Large Break LOCA Evaluation Model, Application to PWRs with Upper Plenum Injection

Estimated Effect

The homogeneous nucleation temperature exceeds the minimum film boiling temperature predicted by the Iloeje correlation for pressures less than about 100 psia. Therefore, this error could only potentially have an effect until the system pressure drops below about 100 psia, which typically occurs within 20-30 seconds. Examination of a typical PWR transient indicated that the transition boiling regime occurs in the steam generator tubes for only a few seconds during blowdown. Given the short period of time in the transition boiling regime, and relatively small difference between the homogeneous nucleation temperature and the Iloeje correlation results during this time period, it is concluded that the effect of the error is small enough to be considered negligible. Therefore, the estimated effect of this error correction is 0°F.

CLADDING AXIAL THERMAL EXPANSION ERROR

Background

The cladding axial thermal expansion enters into the calculation of the fuel rod internal pressure, via the time-dependent gas plenum volume (Equation 7-46 of WCAP-12945-P-A). Equation 7-39 shows how the cladding axial thermal expansion over the length of the rod is calculated. Table 7-1 shows that the cladding axial thermal expansion is based on a linear interpolation scheme over a temperature range of 1073-1273°K. The CALL statement for the interpolation subroutine had a typographical error in one of the arguments, such that the axial thermal expansion was evaluated incorrectly. The error was corrected. This coding change was determined to be a Non-Discretionary change in accordance with Section 4.1.2 of WCAP-13451.

Affected Evaluation Models

SECY UPI WCOBRA/TRAC Large Break LOCA Evaluation Model

1996 Westinghouse Best Estimate Large Break LOCA Evaluation Model

1999 Westinghouse Best Estimate Large Break LOCA Evaluation Model, Application to PWRs with Upper Plenum Injection

Estimated Effect

Rod internal pressures vary on the order of several hundred psi prior to burst, primarily as a result of changes in the temperatures of the various gas volumes (plenum, pellet-clad gap, effective porosity, etc.). Correction of the cladding axial thermal expansion error affects the rod internal pressure transient by only a few psi. This change is considered negligible, and the estimated effect on plant calculations is 0°F.

ERROR IN TIME AFTER SHUTDOWN FOR NEUTRON CAPTURE TERM

Background

Equation 8-45 of WCAP-12945-P-A shows the neutron capture correction factor specified by the ANSI/ANS 5.1-1979 standard. The time after shutdown term, t , was incorrectly programmed to use the total calculation time, including the steady state calculation. The coding has been corrected so that it is defined as the time after initiation of the break. This coding change was determined to be a Non-Discretionary change in accordance with Section 4.1.2 of WCAP-13451. (Note that for the SECY UPI WCOBRA/TRAC Large Break LOCA Evaluation Model, this change affects only the superbounded analysis. The Appendix K analysis is unaffected.)

Affected Evaluation Models

SECY UPI WCOBRA/TRAC Large Break LOCA Evaluation Model

1996 Westinghouse Best Estimate Large Break LOCA Evaluation Model

1999 Westinghouse Best Estimate Large Break LOCA Evaluation Model, Application to PWRs with Upper Plenum Injection

Estimated Effect

The neutron capture correction factor is a multiplier slightly larger than unity, which increases with time after shutdown. The error resulted in a longer time after shutdown, which is slightly conservative. The effect of the error correction was estimated by evaluating Equation 8-45 of WCAP-12945-P-A, using typical analysis values. The results indicated that the G multiplier is reduced by about 0.4% with the correction, which would cause the total decay heat energy to be reduced by about 0.4%. This change is considered negligible, and the estimated effect on plant calculations is 0°F.

SBLOCTA TIME STEP SELECTION LOGIC

Background

SBLOCTA was updated to resolve some inconsistencies in the time step selection logic, pertaining to the use of the fluid vs. fuel rod time step. This represents a closely-related group of Non-Discretionary Changes in accordance with Section 4.1.2 of WCAP-13451.

Affected Evaluation Models

1985 Westinghouse Small Break LOCA Evaluation Model with NOTRUMP

Estimated Effect

Representative plant calculations using the SBLOCTA code demonstrated that this change produces a small PCT benefit for cases modeling Zircaloy-4 cladding that are predicted to burst, and a negligible effect on results for other cases. Accordingly, this change will be treated as a 0°F PCT effect for 10 CFR 50.46 reporting purposes.

SBLOCTA ZIRLO™ CLADDING SPECIFIC HEAT MODEL

Background

For consistency with the change made to LOCBART (as described previously), the ZIRLO™ cladding specific heat model in SBLOCTA has been revised to reflect data collected at the Thermophysical Properties Research Laboratory. This represents a Non-Discretionary Change in accordance with Section 4.1.2 of WCAP-13451.

Affected Evaluation Models

1985 Westinghouse Small Break LOCA Evaluation Model with NOTRUMP

Estimated Effect

Sensitivity calculations using the SBLOCTA code demonstrated that this change produces a negligible effect on results that will be treated as a 0°F PCT effect for 10 CFR 50.46 reporting purposes.

SIMPLIFIED ISOTHERMAL SOLUTION FOR SBLOCTA SUBROUTINE RATE

Background

As discussed in Reference 1, LOCBART was revised in 1999 to correct a logic error that caused the Baker-Just metal-water reaction calculations to be performed three times per time step. During the review of the corresponding code logic, it was determined that the complicated solution technique described in Section 3.3.2 of Reference 2 could be replaced with a simplified isothermal solution, with only a minimal effect on results. This change was made in LOCBART per Reference 3, and has also been implemented in SBLOCTA which uses similar logic. This represents a Discretionary Change that will be implemented on a forward-fit basis, in accordance with Section 4.1.1 of WCAP-13451.

Affected Evaluation Models

1985 Westinghouse Small Break LOCA Evaluation Model with NOTRUMP

Estimated Effect

Representative plant calculations using the SBLOCTA code demonstrated that this change produces a negligible effect on results that will be treated as a 0°F PCT effect for 10 CFR 50.46 reporting purposes.

References

1. Westinghouse Letter NSBU-NRC-00-5970, "1999 Annual Notification of Changes to the Westinghouse Small Break LOCA and Large Break LOCA ECCS Evaluation Models, Pursuant to 10 CFR 50.46 (a)(3)(ii)", May 12, 2000.
2. WCAP-8301, "LOCTA-IV Program: Loss-of-Coolant Transient Analysis", June 1974.
3. Westinghouse Letter LTR-NRC-01-6, "U. S. Nuclear Regulatory Commission, 10 CFR 50.46 Annual Notification and Reporting for 2000", March 13, 2001.

GENERAL CODE MAINTENANCE

Background

Various changes in code input and output format have been made to enhance usability and help preclude errors in analyses. This includes both input changes (e.g., more relevant input variables defined and more common input values used as defaults) and input diagnostics designed to preclude unreasonable values from being used, as well as various changes to code output which have no effect on calculated results. In addition, various blocks of coding were rewritten to eliminate inactive coding, optimize the active coding, and improve commenting, both for enhanced usability and to facilitate code debugging when necessary. These represent Discretionary Changes that will be implemented on a forward-fit basis, in accordance with Section 4.1.1 of WCAP-13451.

Affected Evaluation Models

1981 Westinghouse Large Break LOCA Evaluation Model with BASH

1985 Westinghouse Small Break LOCA Evaluation Model with NOTRUMP

Estimated Effect

The nature of these changes leads to an estimated PCT impact of 0°F.

ATTACHMENT 2

**NUCLEAR MANAGEMENT COMPANY, LLC
PRAIRIE ISLAND NUCLEAR GENERATING PLANT
DOCKET NOS 50-282 AND 50-306**

LOCA Peak Clad Temperature Rackup Summary Sheets

**7 Pages Follow
(2 of 9 through 8 of 9)**

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: 3/7/03

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 25%

	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 & 2002 Reports	0	4,6,15	
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)
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)
C. 2002 PERMANENT ECCS MODEL ASSESSMENTS			
1 . LHSI Error Evaluation (Plant Specific)	30	14	
D. TEMPORARY ECCS MODEL ISSUES*			
1 . None	0		
E. OTHER			
1 . None	0		

LICENSING BASIS PCT + MARGIN ALLOCATIONS PCT = 2073

* 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.

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: 3/ 7/03

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 Prairie 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.

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.

Westinghouse LOCA Peak Clad Temperature Summary for Small Break

Plant Name: Prairie Island Unit 1
Utility Name: Nuclear Management Company, LLC
Revision Date: 3/ 7/03

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. 2002 PERMANENT ECCS MODEL ASSESSMENTS			
1 . None	0		
D. TEMPORARY ECCS MODEL ISSUES*			
1 . None	0		
E. OTHER			
1 . Evaluation for Reduced Auxiliary Feedwater Flow Rate	0	5	

LICENSING BASIS PCT + MARGIN ALLOCATIONS PCT = 1142

* 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 Auxiliary 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.

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 SECY UPI Large Break

Plant Name: Prairie Island Unit 2
Utility Name: Nuclear Management Company, LLC
Revision Date: 3/ 7/03

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 25%

	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 & 2002 Reports	0	4,6,13	
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)
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	
C. 2002 PERMANENT ECCS MODEL ASSESSMENTS			
1 . LHSI Error Evaluation (Plant Specific)	30	12	
D. TEMPORARY ECCS MODEL ISSUES*			
1 . None	0		
E. OTHER			
1 . None	0		

LICENSING BASIS PCT + MARGIN ALLOCATIONS PCT = 2073

* 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.

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: 3/7/03

- 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.

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.

Westinghouse LOCA Peak Clad Temperature Summary for Small Break

Plant Name: Prairie Island Unit 2
Utility Name: Nuclear Management Company, LLC
Revision Date: 3/ 7/03

Analysis Information

EM: NOTRUMP **Analysis Date:** 7/1/93 **Limiting Break Size:** 6 inch
FQ: 2.8 **FdH:** 2
Fuel: OFA **SGTP (%):** 25
Notes: Zirlo™ (14X14)

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	1195	1	(a)
MARGIN ALLOCATIONS (Delta PCT)			
A. PRIOR PERMANENT ECCS MODEL ASSESSMENTS			
1 . Effect of SI in Broken Loop (Plant Specific)	21	4	(b,c)
2 . Effect of Improved Condensation Model (Plant Specific)	4	4	(b)
3 . Plant-Specific Assessment to Rebaseline Limiting Case	218	4,6	(d,e,f)
4 . Annular Pellets Misapplication (1998 Report)	39	1,6	
5 . All Other Items in Reference 2 Except A.1 & A.2	0	6	(f)
6 . No Items for 1999, 2001 & 2002 Reports	0	7,12,13	
7 . Small Break LOCA Accumulator Water Level (plant specific misapplication) (2000 Report)	25	8, 10	
8 . NOTRUMP Mixture Level Tracking / Region Depletion Errors (2000 Report)	13	9, 10	
B. PLANNED PLANT CHANGE EVALUATIONS			
1 . MFW Temperature	3	3	
2 . AFW Flow Reduction to 180 gpm	0	5	
3 . Accumulator Minimum Pressure 699.7 psia	50	11	
C. 2002 PERMANENT ECCS MODEL ASSESSMENTS			
1 . None	0		
D. TEMPORARY ECCS MODEL ISSUES*			
1 . None	0		
E. OTHER			
1 . None	0		

LICENSING BASIS PCT + MARGIN ALLOCATIONS PCT = 1568

* 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 . WCAP-13920, "Small Break Loss-of-Coolant Accident Engineering Report for the Prairie Island ZIRLO™ Fuel Upgrade," November 1993 (Includes Update NSD-SAE-ESI-97-522).

Westinghouse LOCA Peak Clad Temperature Summary for Small Break

Plant Name: Prairie Island Unit 2
Utility Name: Nuclear Management Company, LLC
Revision Date: 3/7/03

- 2 . Annual Reports for 1993 through 1997 (NSP-94-204, NSP-95-202, NSP-96-202, NSP-97-201, NSP-98-012).
- 3 . NSP-97-504, "Northern States Power Company Prairie Island Units 1 and 2, Feedwater Temperature Increase/Net RCS Heat Input Addition Program, Transmittal of Final Safety Evaluation," September 23, 1997.
- 4 . NSP-98-031, "SBLOCA Evaluation for Elimination of AFW Flow for Prairie Island Units 1 and 2," September 8, 1998.
- 5 . NSP-98-046, "SBLOCA Evaluation for AFW Flow Reduction for Prairie Island Units 1 and 2 - Final," November 3, 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 . 00NS-G-0019/CAB-00-126, "Northern States Power Company Prairie Island Units 1 and 2, Prairie Island Unit 2 Cycle 20 LOCA Reload Confirmation & Final Fuel Rod Design Report", March 28, 2000.
- 9 . NSP-00-025, "Northern States Power Company Prairie Island Units 1 and 2 10 CFR 50.46 Appendix K (BART/BASH/NOTRUMP) EM Mid-Year Notification and Reporting for 2000," July 5, 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 . NF-NS-02-4/CAD-02-35, "NMC Prairie Island Unit 2, Cycle 21, Revised LOCA Reload Confirmation and FCEP Checklist," January 25, 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-03-19, "Nuclear Management Company Prairie Island Units 1 and 2 10 CFR 50.46 Annual Notification and Reporting for 2002," March 2003.

Notes:

- (a) Annular pellet sensitivity study result.
- (b) Plant-specific assessments for the effects that were originally estimated for these two items in NSP-93-222.
- (c) Also includes the effect of relocation of the break location to the midplane of the cold leg (see WCAP-10054-P-A, Addendum 2, Revision 1). The original estimate (NSP-93-222) did not include this effect.
- (d) Value requested by customer pending completion of Westinghouse investigation. Rebaseline study includes newer code versions, COSI condensation model and select input changes (e.g. more conservative power shape, solid fuel pellets).
- (e) At the request of NSP, this line item was included in the 1998 50.46 section of the PCT Sheet and has been subsequently rolled into the Prior Permanent Section, consistent with the original request. This represents a deviation from Westinghouse's normal approach.
- (f) The estimated effects of previous code changes (through the -19 °F accumulated as of 1997 Annual Report NSP-98-012) are superseded by the Items A.1, A.2 & A.3 plant-specific calculations performed to rebaseline the limiting case (1438 - 1195 = 21 + 4 + 218), originally summarized in the 1998 Report (NSP-99-010).