



June 27, 2007

NRC 2007-0017  
10 CFR 50.46

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

Point Beach Nuclear Plant, Units 1 and 2  
Dockets 50-266 and 50-301  
Renewed License Nos. DPR-24 and DPR-27

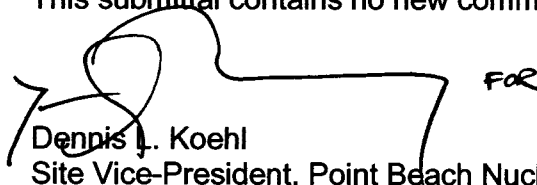
ECCS Evaluation Model Changes

As required by 10 CFR 50.46(a)(3)(ii), Nuclear Management Company, LLC (NMC), is submitting this annual report of changes to, and errors discovered in, emergency core cooling system (ECCS) evaluation models for Point Beach Nuclear Plant (PBNP), Units 1 and 2. This letter provides a summary of ECCS evaluation model changes and errors identified since the previous annual report NRC 2006-0047 dated May 5, 2006.

For PBNP Units 1 and 2 in 2006 there were two non-discretionary changes and one discretionary change to the peak cladding temperature (PCT) assessment for the best estimate large break loss-of-coolant (BELBLOCA) analysis, and one discretionary change for the small break LOCA analysis. These changes are summarized in Enclosures 1 and 2, respectively. PCT margin utilization data is provided in Enclosure 3. PCT rackup sheets for the large break and small break LOCA analyses are provided in Enclosure 4. This issue has been entered into the site Corrective Action Program.

On August 4, 2006, NMC submitted a 30-day report (NRC 2006-0068), documenting an error that Westinghouse discovered in the downcomer gap inputs. The error in the gap inputs resulted in a PCT change of -59°F. Since this error increased margin to the PCT limit relative to the analysis of record, and demonstrated that the PCT limit continued to be met, no schedule for re-analysis was submitted.

This submittal contains no new commitments or revisions to existing commitments.

 FOR  
Dennis J. Koehl  
Site Vice-President, Point Beach Nuclear Plant  
Nuclear Management Company, LLC

Enclosures (4)

cc: Regional Administrator, Region III, USNRC  
Project Manager, Point Beach Nuclear Plant, USNRC  
Resident Inspector, Point Beach Nuclear Plant, USNRC

## ENCLOSURE 1

### LBLOCA ECCS EVALUATION MODEL CHANGES AND ERRORS

#### **Inconsistent Vertical Levels in Vessel** **(Non-Discretionary Change)**

##### Background

A discrepancy was identified during the course of a Best Estimate Large Break LOCA (BELBLOCA) Analysis whereby the number of vertical levels in the vessel are modeled inconsistent with the analysis input guidelines. An assessment was performed to estimate the impact of these differences on the BELBLOCA results for the affected plants. These changes represent a closely-related group of Non-Discretionary changes in accordance with Section 4.1.2 of WCAP-13451.

##### Affected Evaluation Model

1999 Westinghouse BELBLOCA Evaluation Model, Application to PWRs with Upper Plenum Injection.

##### Estimated Effect

An assessment was performed with consideration of all the affected plants. This assessment concluded that there is no significant impact on the BELBLOCA analysis results due to the inconsistent modeling of the vessel vertical levels, leading to an estimated zero degree PCT impact.

#### **Revised Downcomer Gap Inputs** **(Non-Discretionary Change)**

##### Background

An error was identified during the course of a BELBLOCA analysis. A factor of ½ had been missed from the downcomer nominal gap width (GAPN) calculations from the Point Beach Nuclear Plant (PBNP) Units 1 and 2 analyses, resulting in downcomer GAPN values twice as big as they should be. The error has been corrected and the effect on PCT was evaluated. This change represents a Non-Discretionary Change in accordance with Section 4.1.2 of WCAP-13451.

##### Affected Evaluation Model(s):

1999 Westinghouse BELBLOCA Evaluation Model, Application to PWRs with Upper Plenum Injection.

### Estimated Effect:

A representative reference transient was rerun using WCOBRA/TRAC to establish an estimated effect on the PCT. The estimated effect is -3°F for Reflood 1 for PBNP Units 1 and 2.

### **General Code Maintenance** **(Discretionary Change – No PCT Impact)**

#### Background

A number of coding changes were made as part of normal code maintenance. Examples include additional information in code outputs, improved automation in the ASTRUM codes, increased WCOBRA/TRAC code dimensions, and general code cleanup. All of these changes are considered to be Discretionary Changes in accordance with Section 4.1.1 of WCAP-13451.

#### Affected Evaluation Models

- 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
- 2004 Westinghouse Realistic Large Break LOCA Evaluation Model Using ASTRUM

#### Estimated Effect

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

## ENCLOSURE 2

### SBLOCA ECCS EVALUATION MODEL CHANGES AND ERRORS

#### General Code Maintenance (Enhancements/Forward-Fit Discretionary Change)

##### 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 updates were made to eliminate inactive coding, improve active coding, and enhance commenting, both for enhanced usability and to facilitate code debugging when necessary. These changes 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.

### ENCLOSURE 3

#### LARGE BREAK PEAK CLADDING TEMPERATURE MARGIN UTILIZATION FOR BELBLOCA

##### Point Beach Nuclear Plant Units 1 and 2:

A.	Analysis of Record (11/2000)	PCT =	2128°F
B.	Prior Permanent ECCS Model Assessments		
	1. MONTECF Decay Heat Uncertainty Factor	$\Delta$ PCT =	4°F
	2. Revised Blowdown Heatup Uncertainty Distribution	$\Delta$ PCT =	5°F
C.	Planned Plant Change Evaluations		
	1. Measurement Uncertainty Recapture Power Uprate	$\Delta$ PCT =	8°F
D.	2006 10 CFR 50.46 Model Assessments	$\Delta$ PCT =	0°F
	1. Inconsistent Vessel Vertical Level Modeling	$\Delta$ PCT =	0°F
	2. Revised Downcomer Gap Inputs	$\Delta$ PCT =	-59°F
E.	Temporary ECCS Model Issues (none)	$\Delta$ PCT =	0°F
F.	Other Margin Allocations (none)	$\Delta$ PCT =	0°F
	<b>Licensing Basis PCT + Margin Allocations</b>	<b>PCT =</b>	<b>2086°F</b>

#### SMALL BREAK PEAK CLADDING TEMPERATURE MARGIN UTILIZATION (Three Inch Cold Leg)

##### Unit 1 / Unit 2

A.	Analysis of Record (11/2000)	PCT =	1157°F / 1046°F
B.	Prior Permanent ECCS Model Assessments		
	1. NOTRUMP Mixture Level Tracking/Region Depletion	$\Delta$ PCT =	13°F
	2. NOTRUMP Bubble Rise/Drift Flux Model Inconsistency	$\Delta$ PCT =	35°F
C.	10 CFR 50.59 Safety Evaluations (none)	$\Delta$ PCT =	0°F
D.	2005 10 CFR 50.46 Model Assessments (none)	$\Delta$ PCT =	0°F
E.	Temporary ECCS Model Issues (none)	$\Delta$ PCT =	0°F
F.	Other Margin Allocations (none)	$\Delta$ PCT =	0°F
	<b>Licensing Basis PCT + Margin Allocations</b>	<b>PCT =</b>	<b>1205°F / 1094°F</b>

**ENCLOSURE 4**

**PCT RACKUP SHEETS FOR LBLOCA AND SBLOCA**

**4 Pages Follow**

**Westinghouse LOCA Peak Clad Temperature Summary for Best Estimate Large Break**

**Plant Name:** Point Beach Unit 1  
**Utility Name:** Nuclear Management Company, LLC

**Revision Date:** 7/10/06

**Composite**

**Analysis Information**

**EM:** UPI (1999)                      **Analysis Date:** 9/1/97                      **Limiting Break Size:** Split  
**FQ:** 2.6                                      **FdH:** 1.8  
**Fuel:** 422 Vantage +                      **SGTP (%):** 25  
**Notes:** Uprate

	Clad Temp (°F)	Ref.	Notes
<b>LICENSING BASIS</b>			
<b>Analysis-Of-Record PCT</b>	2128	1	
<b>PCT ASSESSMENTS (Delta PCT)</b>			
<b>A. PRIOR ECCS MODEL ASSESSMENTS</b>			
1 . MONTECF Decay Heat Uncertainty Error	4	2	
2 . Revised Blowdown Heatup Uncertainty Distribution	5	4	
<b>B. PLANNED PLANT MODIFICATION EVALUATIONS</b>			
1 . 1.4% Uprate Evaluation	8	3	
<b>C. 2006 ECCS MODEL ASSESSMENTS</b>			
1 . Inconsistent Vessel Vertical Level Modeling	0	5	
2 . Revised Downcomer Gap Inputs	-59	6	
<b>D. OTHER*</b>			
1 . None	0		

**LICENSING BASIS PCT + PCT ASSESSMENTS**                      **PCT =** 2086

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

**References:**

- 1 . 99WE-G-0034, "Wisconsin Electric Power Company, Point Beach Units 1 and 2, Final BE UPI LBLOCA Engineering Report (WCAP-15220) for Point Beach Units 1 and 2 (WEP/WIS)," June 24, 1999.
- 2 . WEP-01-008, "10 CFR 50.46 Annual Notification and Reporting for 2000," March 2001.
- 3 . OC-WES-B1-29-2003-006, "Point Beach Unit 1, Cycle 29; Final Reload Safety & Licensing Checklist," November 2003.
- 4 . WEP-05-84, "10 CFR 50.46 Annual Notification and Reporting for 2004," April 2005.
- 5 . LTR-LIS-06-209, "Plant Specific Reporting Text for Various Errors for IR-04-337-M012.08," April 2006.
- 6 . LTR-LIS-06-334, "Updates to the Best Estimate Large Break LOCA PCT Rackup Sheets for Kewaunee (WPS) and Point Beach Units 1 (WEP) and 2 (WIS)," July 2006.

**Notes:**

None

**Westinghouse LOCA Peak Clad Temperature Summary for Best Estimate Large Break**

**Plant Name:** Point Beach Unit 2  
**Utility Name:** Nuclear Management Company, LLC

**Revision Date:** 7/10/06

**Composite**

**Analysis Information**

**EM:** UPI (1999)                      **Analysis Date:** 9/1/97                      **Limiting Break Size:** Split  
**FQ:** 2.6                                      **FdH:** 1.8  
**Fuel:** 422 Vantage +                      **SGTP (%):** 25  
**Notes:** Uprate

	<b>Clad Temp (°F)</b>	<b>Ref.</b>	<b>Notes</b>
<b>LICENSING BASIS</b>			
<b>Analysis-Of-Record PCT</b>	2128	1	
<b>PCT ASSESSMENTS (Delta PCT)</b>			
<b>A. PRIOR ECCS MODEL ASSESSMENTS</b>			
1 . MONTECF Decay Heat Uncertainty Error	4	2	
2 . Revised Blowdown Heatup Uncertainty Distribution	5	4	
<b>B. PLANNED PLANT MODIFICATION EVALUATIONS</b>			
1 . 1.4% Uprate Evaluation	8	3	
<b>C. 2006 ECCS MODEL ASSESSMENTS</b>			
1 . Inconsistent Vessel Vertical Level Modeling	0	5	
2 . Revised Downcomer Gap Inputs	-59	6	
<b>D. OTHER*</b>			
1 . None	0		

**LICENSING BASIS PCT + PCT ASSESSMENTS**                      **PCT =** 2086

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

**References:**

- 1 . 99WE-G-0034, "Wisconsin Electric Power Company, Point Beach Units 1 and 2, Final BE UPI LBLOCA Engineering Report (WCAP-15220) for Point Beach Units 1 and 2 (WEP/WIS)," June 24, 1999.
- 2 . WEP-01-008, "10 CFR 50.46 Annual Notification and Reporting for 2000," March 2001.
- 3 . NPL 2003-0071, "Final RS&LC Point Beach Nuclear Plant, Unit 2 Cycle 27", February 2003
- 4 . WEP-05-84, "10 CFR 50.46 Annual Notification and Reporting for 2004," April 2005.
- 5 . LTR-LIS-06-209, "Plant Specific Reporting Text for Various Errors for IR-04-337-M012.08," April 2006.
- 6 . LTR-LIS-06-334, "Updates to the Best Estimate Large Break LOCA PCT Rackup Sheets for Kewaunee (WPS) and Point Beach Units 1 (WEP) and 2 (WIS)," July 2006.

**Notes:**

None



**Westinghouse LOCA Peak Clad Temperature Summary for Appendix K Small Break**

**Plant Name:** Point Beach Unit 1  
**Utility Name:** Nuclear Management Company, LLC  
**Revision Date:** 2/23/2006

**Analysis Information**

**EM:** NOTRUMP                      **Analysis Date:** 6/1/1999                      **Limiting Break Size:** 3 inch CL Hi Tavg  
**FQ:** 2.6                              **FdH:** 1.8  
**Fuel:** Vantage +                      **SGTP (%):** 25  
**Notes:** 422 Vantage +

	<b>Clad Temp (°F)</b>	<b>Ref.</b>	<b>Notes</b>
<b>LICENSING BASIS</b>			
<b>Analysis-Of-Record PCT</b>	1157	1	
<b>PCT ASSESSMENTS (Delta PCT)</b>			
<b>A. PRIOR ECCS MODEL ASSESSMENTS</b>			
1 . NOTRUMP Mixture Level Tracking / Region Depletion Errors	13	3	
2 . NOTRUMP Bubble Rise / Drift Flux Model Inconsistency Corrections	35	4	
<b>B. PLANNED PLANT MODIFICATION EVALUATIONS</b>			
1 . None	0		
<b>C. 2007 ECCS MODEL ASSESSMENTS</b>			
1 . None	0		
<b>D. OTHER*</b>			
1 . None	0		
<b>LICENSING BASIS PCT + PCT ASSESSMENTS</b>	<b>PCT =</b>	<b>1205</b>	

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

**References:**

- 1 . CAB-99-226, Rev. 1, "Fuel Upgrade / Power Upgrading Reload Transition Safety Report for Point Beach Units 1 and 2 Revision 1," July 13, 1999.
- 2 . WEP-00-009, "Wisconsin Electric Power Company, Point Beach Units 1 and 2, 10 CFR 50.46 Annual Notification and Reporting for 1999," February 23, 2000.
- 3 . WEP-00-027, "Wisconsin Electric Power Company, Point Beach Units 1 and 2, 10 CFR 50.46 Appendix K (BART/BASH/NOTRUMP) Evaluation Model Mid-Year Notification and Reporting for 2000," June 30, 2000.
- 4 . WEP-05-84, "10 CFR 50.46 Annual Notification and Reporting for 2004," April 2005.

**Notes:**

None

**Westinghouse LOCA Peak Clad Temperature Summary for Appendix K Small Break**

**Plant Name:** Point Beach Unit 2  
**Utility Name:** Nuclear Management Company, LLC  
**Revision Date:** 2/23/2006

**Analysis Information**

**EM:** NOTRUMP                      **Analysis Date:** 6/1/1999                      **Limiting Break Size:** 3 inch CL Lo Tavg  
**FQ:** 2.6                              **FdH:** 1.8  
**Fuel:** Vantage +                      **SGTP (%):** 25  
**Notes:** 422 Vantage +

	<b>Clad Temp (°F)</b>	<b>Ref.</b>	<b>Notes</b>
<b>LICENSING BASIS</b>			
<b>Analysis-Of-Record PCT</b>	<b>1046</b>	<b>1</b>	
<b>PCT ASSESSMENTS (Delta PCT)</b>			
<b>A. PRIOR ECCS MODEL ASSESSMENTS</b>			
1 . NOTRUMP Mixture Level Tracking / Region Depletion Errors	13	3	
2 . NOTRUMP Bubble Rise / Drift Flux Model Inconsistency Corrections	35	4	
<b>B. PLANNED PLANT MODIFICATION EVALUATIONS</b>			
1 . None	0		
<b>C. 2007 ECCS MODEL ASSESSMENTS</b>			
1 . None	0		
<b>D. OTHER*</b>			
1 . None	0		
<b>LICENSING BASIS PCT + PCT ASSESSMENTS</b>	<b>PCT = 1094</b>		

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

**References:**

- 1 . CAB-99-226, Rev. 1, "Fuel Upgrade / Power Uprating Reload Transition Safety Report for Point Beach Units 1 and 2 Revision 1," July 13, 1999.
- 2 . WEP-00-009, "Wisconsin Electric Power Company, Point Beach Units 1 and 2, 10 CFR 50.46 Annual Notification and Reporting for 1999," February 23, 2000.
- 3 . WEP-00-027, "Wisconsin Electric Power Company, Point Beach Units 1 and 2, 10 CFR 50.46 Appendix K (BART/BASH/NOTRUMP) Evaluation Model Mid-Year Notification and Reporting for 2000," June 30, 2000.
- 4 . WEP-03-142, "10 CFR 50.46 Mid-Year Notification and Reporting for 2003," November 2003.

**Notes:**

None