



March 23, 2011

NRC 2011-0035  
TS 5.6.4

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

Point Beach Nuclear Plant Unit 2  
Docket No. 50-301  
Renewed License No. DPR-27

Unit 2 Cycle 32 (U2C32) Core Operating Limits Report

In accordance with the requirements of Point Beach Nuclear Plant (PBNP) Technical Specification 5.6.4, "Core Operating Limits Report (COLR)," NextEra Energy Point Beach, LLC (NextEra) is submitting the COLR for PBNP Unit 2 Cycle 32 (U2C32) this COLR is applicable for MODES 5 and 6 only.

The enclosure contains the PBNP U2C32 COLR that was issued on March 21, 2011.

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

Very truly yours,

NextEra Energy Point Beach, LLC

  
James Costedio  
Licensing Manager

Enclosure

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

**ENCLOSURE**

**NEXTERA ENERGY POINT BEACH, LLC  
POINT BEACH NUCLEAR PLANT, UNIT 2**

**CORE OPERATING LIMITS REPORT (COLR)  
UNIT 2 CYCLE 32 (U2C32)**

TRM 2.1

CORE OPERATING LIMITS REPORT  
(COLR)

UNIT 2 CYCLE 32

REVISION 13

CORE OPERATING LIMITS REPORT (COLR)  
UNIT 2 CYCLE 32

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## 1.0 CORE OPERATING LIMITS REPORT

This Core Operating Limits Report (COLR) for Point Beach Nuclear Plant has been prepared in accordance with the requirements of Technical Specification (TS) 5.6.4.

A cross-reference between the COLR sections and the PBNP Technical Specifications affected by this report is given below:

<u>COLR</u> <u>Section</u>	<u>PBNP</u> <u>TS</u>	<u>Description</u>
2.1	2.1.1	Reactor Core Safety Limits
2.2	3.1.1	Shutdown Margin
	3.1.4	Rod Group Alignment Limits
	3.1.5	Shutdown Bank Insertion Limits
	3.1.6	Control Bank Insertion Limits
	3.1.8	Physics Test Exceptions
2.3	3.1.3	Moderator Temperature Coefficient
2.4	3.1.5	Shutdown Bank Insertion Limit
2.5	3.1.6	Control Bank Insertion Limits
2.6	3.2.1	Nuclear Heat Flux Hot Channel Factor ( $F_Q(Z)$ )
2.7	3.2.2	Nuclear Enthalpy Rise Hot Channel Factor ( $F_{\Delta H}^N$ )
2.8	3.2.3	Axial Flux Difference (AFD)
2.9	3.3.1	Overtemperature $\Delta T$ Setpoint
2.10	3.3.1	Overpower $\Delta T$ Setpoint
2.11	3.4.1	RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits
2.12	3.9.1	Refueling Boron Concentration
Figure 1	2.1.1	Reactor Core Safety Limits Curve
Figure 2	3.1.1	Required Shutdown Margin
Figure 3	3.1.6	Control Bank Insertion Limits
Figure 4	3.2.1	Hot Channel Factor Normalized Operating Envelope ( $K(Z)$ ) for 422V+ Fuel
Figure 5	3.2.1	Summary of $W(Z)$ as a Function of Core Height
Figure 5A	3.2.1	BOC Part-Power Summary of $W(Z)$ as a Function of Core Height
Figure 6	3.2.3	Flux Difference Operating Envelope

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2.0 OPERATING LIMITS

**EC262993 allows entering Cycle 32 Mode 6 and Mode 5 only under the current licensing basis. This core reload EC also allows entering Mode 6 and Mode 5 under the EPU conditions. However, Mode 4 cannot be entered prior to the NRC approval and PBNP implementation of LARs 241 (AST) and 261 (EPU). Operation in all Modes is allowed subsequent to the NRC approval and PBNP implementation of LAR 241 (AST) and 261 (EPU).**

The cycle-specific parameter limits for the specifications listed in Section 1.0 are presented in the following subsections. These limits have been developed using the NRC approved methodologies specified in Technical Specification 5.6.4.

2.1 Reactor Core Safety Limits (TS 2.1.1)

Data not available. Pending NRC approval.

Applicability: N/A

2.2 Shutdown Margin (TS 3.1.1 and referenced in TS 3.1.4, 3.1.5, 3.1.6, and 3.1.8)

2.2.1 Data not available. Pending NRC approval.

Applicability: N/A

2.2.2 SDM shall be  $\geq 1\% \Delta k/k$ .

Applicability: MODES 4 and 5

2.3 Moderator Temperature Coefficient (TS 3.1.3)

2.3.1 Data not available. Pending NRC approval.

2.3.2 Data not available. Pending NRC approval.

Applicability: N/A

2.4 Shutdown Bank Insertion Limit (TS 3.1.5)

**NOTE: This limit is not applicable while performing SR 3.1.4.2.**

2.4.1 Data not available. Pending NRC approval.

2.4.2 Data not available. Pending NRC approval.

Applicability: N/A

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2.5 Control Bank Insertion Limits (TS 3.1.6)

**NOTE: This limit is not applicable while performing SR 3.1.4.2.**

Data not available. Pending NRC approval.

Applicability: N/A

2.6 Nuclear Heat Flux Hot Channel Factor ( $F_o(Z)$ ) (TS 3.2.1)

Data not available. Pending NRC approval.

Applicability: N/A

2.7 Nuclear Enthalpy Rise Hot Channel Factor ( $F_{\Delta H}^N$ ) (TS 3.2.2)

The Nuclear Enthalpy Rise Hot Channel Factor shall be within the following limit:

2.7.1 Data not available. Pending NRC approval.

Applicability: N/A

2.8 Axial Flux Difference (AFD) (TS 3.2.3)

**NOTE: The AFD shall be considered outside limits when two or more OPERABLE excore channels indicate AFD to be outside limits.**

Data not available. Pending NRC approval.

Applicability: N/A

2.9 Overtemperature  $\Delta T$  Setpoint (TS 3.3.1, Table 3.3.1-1 note 1)

Data not available. Pending NRC approval.

2.9.1 Data not available. Pending NRC approval.

2.9.2 Data not available. Pending NRC approval.

2.9.3 Data not available. Pending NRC approval.

Applicability: N/A

2.10 Overpower  $\Delta T$  Setpoint (TS 3.3.1, Table 3.3.1-1 note 2)

Data not available. Pending NRC approval.

Applicability: N/A

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2.11 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits (TS 3.4.1)

2.11.1 Data not available. Pending NRC approval.

2.11.2 Data not available. Pending NRC approval.

2.11.3 Data not available. Pending NRC approval.

Applicability: N/A

2.12 Refueling Boron Concentration (TS 3.9.1)

Boron concentrations of the Reactor Coolant System, the refueling canal, and the refueling cavity shall be maintained  $\geq 2300$  ppm.

Applicability: MODE 6

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FIGURE 1  
REACTOR CORE SAFETY LIMITS CURVE  
(Cores containing 422V+ fuel)

| Data not available. Pending NRC approval.



FIGURE 2  
REQUIRED SHUTDOWN MARGIN

Data not available. Pending NRC approval.

FIGURE 3  
CONTROL BANK INSERTION LIMITS

| Data not available. Pending NRC approval.

**NOTE:** The "fully withdrawn" parking position range  $\geq 225$  steps can be used without violating this Figure.

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FIGURE 4  
HOT CHANNEL FACTOR NORMALIZED OPERATING ENVELOPE (K(Z))  
FOR 422V+ FUEL

| Data not available. Pending NRC approval.

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FIGURE 5

Summary of  $W(Z)$  as a Function of Core Height  
(Top 15% and Bottom 12% Excluded)

Data not available. Pending NRC approval.

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FIGURE 5 (con't)  
Summary of  $W(Z)$  as a Function of Core Height  
(Top 15% and Bottom 12% Excluded)

Data not available. Pending NRC approval.

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FIGURE 5A  
BOC Part-Power Summary of  $W(Z)$  as a Function of Core Height  
(Top 15% and Bottom 12% Excluded)

Data not available. Pending NRC approval.

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FIGURE 5A (con't)  
BOC Part-Power Summary of W(Z) as a Function of Core Height  
(Top 15% and Bottom 12% Excluded)

Data not available. Pending NRC approval.

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FIGURE 6  
FLUX DIFFERENCE OPERATING ENVELOPE

| Data not available. Pending NRC approval.

| **NOTE: Data not available. Pending NRC approval.**



CORE OPERATING LIMITS REPORT (COLR)  
UNIT 2 CYCLE 32

TABLE 1  
NRC APPROVED METHODOLOGIES FOR COLR PARAMETERS

COLR Section	Parameter	NRC Approved Methodology
2.1	Reactor Core Safety Limits	WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985
2.2	Shutdown Margin	WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985
2.3	Moderator Temperature Coefficient	WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985
2.4	Shutdown Bank Insertion Limit	WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985
2.5	Control Bank Insertion Limits	WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985
2.6	Nuclear Heat Flux Hot Channel Factor ( $F_Q(Z)$ )	<p>WCAP-10216-P-A, Revision 1A, "Relaxation of Constant Axial Offset Control," February 1994</p> <p>WCAP-14449-P-A, "Application of Best Estimate Large Break LOCA Methodology to Westinghouse PWRs with Upper Plenum Injection," Revision 1, October 1999 (cores containing 422V + fuel)</p> <p>WCAP-10924-P-A, "Large Break LOCA Best Estimate Methodology, Volume 2: Application to Two-Loop PWRs Equipped with Upper Plenum Injection," and Addenda, December 1988 (cores not containing 422V + fuel)</p> <p>WCAP-16009-P-A, "Realistic Large-Break LOCA Evaluation Methodology Using the Automated Statistical Treatment of Uncertainty Method (ASTRUM)," January 2005.</p> <p>WCAP-10924-P-A, "LBLOCA Best Estimate Methodology: Model Description and Validation: Model Revisions," Volume 1, Addendum 4, August 1990 (cores not containing 422V + fuel)</p> <p>WCAP-10054-P-A, "Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code," August 1985</p> <p>WCAP-10054-P-A, "Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model," Addendum 2, Revision 1, July 1997</p>

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TABLE 1  
NRC APPROVED METHODOLOGIES FOR COLR PARAMETERS

COLR Section	Parameter	NRC Approved Methodology
2.7	Nuclear Enthalpy Rise Hot Channel Factor ( $F_{\Delta H}^N$ )	WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985
2.8	Axial Flux Difference (AFD)	WCAP-10216-P-A, Revision 1A, "Relaxation of Constant Axial Offset Control," February 1994
2.9	Overtemperature $\Delta T$ Setpoint	WCAP-8745-P-A, "Design Bases for the Thermal Overpower $\Delta T$ and Thermal Overtemperature $\Delta T$ Trip Functions," September 1986
2.10	Overpower $\Delta T$ Setpoint	WCAP-8745-P-A, "Design Bases for the Thermal Overpower $\Delta T$ and Thermal Overtemperature $\Delta T$ Trip Functions," September 1986
2.11	RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits	<p>WCAP-11397-P-A, "Revised Thermal Design Procedure," April 1989, for those events analyzed using RTDP</p> <p>WCAP-14787-P, Rev. 2, "Westinghouse Revised Thermal Design Procedure Instrument Uncertainty Methodology for Wisconsin Electric Power Company Point Beach Units 1 &amp; 2 (Fuel Upgrade &amp; Uprate to 1656 MWt-NSSS Power with Feedwater Venturis, or 1679 MWt-NSSS Power with LEFM on Feedwater Header)", October 2002.</p> <p>WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 for those events not utilizing RTDP</p>
2.12	Refueling Boron Concentration	WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985