FPL Energy
Seabrook Station

FPL Energy Seabrook Station
P.O. Box 300
Seabrook, NH 03874
(603) 773-7000

October 28, 2004

Docket No. 50-443
SBK-L-04095

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

References:

1. FPL Energy Seabrook, LLC letter NYN-04016, "LAR 04-03, Application for Stretch Power Uprate," dated March 17, 2004.
2. FPL Energy Seabrook, LLC letter SBK-L-04072, "Response to Request for Additional Information Regarding License Amendment Request 04-03, Application for Stretch Power Uprate, dated October 12, 2004.

Seabrook Station
Revision to Response to Request for Additional Information Regarding
License Amendment Request 04-03, Application for Stretch Power Uprate

By letter dated March 17, 2004 (Reference 1), FPL Energy Seabrook, LLC (FPL Energy Seabrook) requested an amendment to facility operating license NPF-86 and the Technical Specifications for Seabrook Station. By letter dated October 12, 2004 (Reference 2), FPL Energy Seabrook responded to the Nuclear Regulatory Commission (NRC) request for additional information.

As stated in Reference 2, Westinghouse Electric Company identified proprietary information in the responses to RAIs 2, 24, 25, and 36. Due to an editorial error, Enclosure 2 of Reference 2, which contained the proprietary information, was not submitted in accordance with 10 CFR 2.790. The title of Enclosure 2 did not identify the document as Westinghouse proprietary information and all of the pages of Enclosure 2 were not marked as Westinghouse proprietary information.

FPL Energy Seabrook is submitting a revised Enclosure 2 in its entirety. In addition, the corresponding pages of Enclosure 1 containing the non-proprietary information for RAIs 24 and 25 (pages 38–43), 36 (pages 64-66) and Attachment RAI 2-1 (pages 152-172) are being submitted for clarity. The technical information contained in these responses has not been changed.

APO1

The application for withholding from public disclosure including an affidavit in conformance with the provisions of 10 CFR 2.390 for withholding proprietary information is resubmitted in Enclosure 3.

Note that the proprietary information is bracketed and justification is cross-referenced to the application for withholding from public disclosure affidavit by the letters next to the brackets. For consistency in identifying the correct cross-reference, the plus (+) sign has been removed from brackets that previously contained a plus (+) with the cross-reference.

Should you have any questions concerning this information, please contact Mr. Stephen T. Hale, Power Uprate Project Manager, at (603) 773-7561.

Very truly yours,

FPL Energy Seabrook, LLC

Michael Kiley for Mark Warner

Mark E. Warner
Site Vice President

cc: S. J. Collins, NRC Region I Administrator
S. P. Wall, NRC Project Manager, Project Directorate I-2
G. T. Dentel, NRC Resident Inspector

Mr. Bruce Cheney, Director
New Hampshire Bureau of Emergency Management
State Office Park South
107 Pleasant Street
Concord, NH 03301

OATH AND AFFRIMATION

I, Michael W. Kiley, Operations Manager of FPL Energy Seabrook, LLC hereby affirm that the information and statements contained in the responses to the request for additional information to support the review of License Amendment Request 04-03 are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

Sworn and Subscribed
Before me this

28th day of October, 2004

Victoria Susan Robertson
Notary Public

VICTORIA SUSAN ROBERTSON
MY COMMISSION EXPIRES JAN. 15, 2008
NOTARY PUBLIC
NEW HAMPSHIRE

Michael W. Kiley
Operations Manager

Enclosure 1 to Letter No. SBK-L-04095

Responses to NRC
Requests for Additional Information (RAIs)
for Seabrook Station Stretch Power Uprate

(Non-Proprietary)

This enclosure contains:

Attachment RAI 2-1

Responses to RAI #24, #25, and #36

RAI #24

In Section 5.2.7, Structural Evaluation of Reactor Internal Components," FPLE states the following:

> ... the reactor pressure vessel internals were designed to meet the intent of Section III, Subsection NG of the ASME Boiler and Pressure Vessel Code. Plant-specific stress report on the reactor pressure vessel internals was not required. The structural integrity of the Seabrook Station reactor pressure vessel internals design has been ensured by analyses performed on both generic and plant-specific bases.

Provide a comparison of the calculated stresses to the allowed stresses of Subsection NG of the ASME Code.

FPL Energy Seabrook Response:

The following Tables RAI 24-1 and RAI 24-2 give the calculated stresses versus allowable stresses for some critical components of the reactor internals for Seabrook Station. Westinghouse proprietary information is provided in Enclosure 2.

TABLE RAI 24-1
Most Critical Reactor Internal Components Calculated Stresses Allowable Stresses and Fatigue Usage (Most Critical Section)

Component	Max Stress (P_m) [psi]	Code Limit (S_m) [psi]	Max Stress (P_m+P_b) [psi]	Code Limit (1.5S_m) [psi]	Max Stress (P_m+P_b+Q) [psi]	Code Limit (3S_m) [psi]	Fatigue (U)
Lower Support Columns	[ ]^{a,c}	16,100	[ ]^{a,c}	24,150	[ ]^{a,c}	48,300	[ ]^{a,c}
Core Barrel Nozzle	[ ]^{a,c}	16,400	---	---	[ ]^{a,c}	49,200	[ ]^{a,c}

TABLE RAI 24-2
Summary of Results for Core Plates (Most Critical Section)

Component	Category	Maximum Stress Value (psi)	Allowable Stress Value (psi)	Margin of Safety	Cumulative Fatigue Usage
Lower Core Plate	$P_m + P_b + Q$	[ ]^{a,c}	48,600	[ ]^{a,c}	[ ]^{a,c}
Upper Core Plate	$P_m + P_b + Q$	[ ]^{a,c}	48.6	[ ]^{a,c}	[ ]^{a,c}

<u>RAI #25</u>

In Section 5.4.3, "Description of Analyses and Evaluations, FPLE discusses the evaluation of the CRDMs and states the following:

> The only evaluations that were not bounded were those associated with the changes in NSSS design transients that were not enveloped by the current analyses. Ratios of the new transients to the old transients were used (very small change, less than 5%) to multiply the existing stress evaluation results. After this was performed, it was shown that the component stresses were within the allowable limits of the ASME Boiler and Pressure Vessel Code.

However, the application does not provide the new stresses or the margin to allowable of the current stresses. Provide the above information to support the assertion that the new stresses are acceptable.

<u>FPL Energy Seabrook Response:</u>

Results are shown in Table RAI 25-1 for calculated versus allowable stresses for various components of the control rod drive mechanisms. Westinghouse proprietary information is provided in Enclosure 2.

TABLE RAI 25-1

		Design Condition		Normal Condition		Upset Condition		Testing Condition		Faulted Condition		Emergency Cond.	
Component	**Parameters Per ASME Code III**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**
UPPER JOINTS													
Cap	Pm	[ ]^{a,c}	16.100	N/A		Note 1		[ ]^{a,c}	27.000	[ ]^{a,c}	38.640	Note 1	
	Pm + Pb	[ ]^{a,c}	24.150	N/A		Note 1		[ ]^{a,c}	40.500	Note 1		Note 1	
	Pm+Pb+Q	N/A		[ ]^{a,c}	48.300	[ ]^{a,c}	48.300	N/A		N/A		N/A	
	$\sigma_1 + \sigma_2 + \sigma_3$	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	154.560	[ ]^{a,c}	64.400
Rod Travel Housing	Pm	[ ]^{a,c}	16.100	N/A		Note 1		[ ]^{a,c}	27.000	[ ]^{a,c}	38.640	Note 1	
	Pm + Pb	[ ]^{a,c}	24.150	N/A		Note 1		[ ]^{a,c}	40.500	Note 1		Note 1	
	Pm+Pb+Q	N/A		[ ]^{a,c}	48.300	[ ]^{a,c}	48.300	N/A		N/A		N/A	
	$\sigma_1 + \sigma_2 + \sigma_3$	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.000	[ ]^{a,c}	154.560	[ ]^{a,c}	64.400
Canopy	Pm	[ ]^{a,c}	16.900	N/A		Note 1		[ ]^{a,c}	27.000	[ ]^{a,c}	38.640	Note 1	
	Pm + Pb	N/A		N/A		Note 1		N/A		Note 1		Note 1	
	Pm+Pb+Q	N/A		[ ]^{a,c}	48.300	[ ]^{a,c}	48.300	N/A		N/A		N/A	
	$\sigma_1 + \sigma_2 + \sigma_3$	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	154.560	[ ]^{a,c}	64.400
Threaded Area Joints	Pm	[ ]^{a,c}	9.660	[ ]^{a,c}	9.660	[ ]^{a,c}	9.660	[ ]^{a,c}	9.660	[ ]^{a,c}	9.660	[ ]^{a,c}	9.660
	Stress Intensity Due to Bell Mouth	N/A		[ ]^{a,c}	17.900	[ ]^{a,c}	17.900	[ ]^{a,c}	17.900	N/A		N/A	

TABLE RAI 25-1

		Design Condition		Normal Condition		Upset Condition		Testing Condition		Faulted Condition		Emergency Cond.	
Component	**Parameters Per ASME Code III**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**
MIDDLE JOINT													
Rod Travel Housing	Pm	[ ]^{a,c}	16.100	N/A		Note 1		[ ]^{a,c}	27.000	[ ]^{a,c}	38.640	Note 1	
	Pm + Pb	[ ]^{a,c}	24.150	N/A		Note 1		[ ]^{a,c}	40.500	Note 1		Note 1	
	Pm+Pb+Q	N/A		[ ]^{a,c}	48.300	[ ]^{a,c}	48.300	N/A		N/A		N/A	
	$\sigma_1 + \sigma_2 + \sigma_3$	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	N/A		[ ]^{a,c}	154.560	[ ]^{a,c}	64.400
Latch Housing	Pm	[ ]^{a,c}	16.100	N/A		Note 1		[ ]^{a,c}	27.000	[ ]^{a,c}	38.640	Note 1	
	Pm + Pb	[ ]^{a,c}	24.150	N/A		Note 1		[ ]^{a,c}	40.500	Note 1		Note 1	
	Pm+Pb+Q	N/A		[ ]^{a,c}	48.300	[ ]^{a,c}	48.300	N/A		N/A		N/A	
	$\sigma_1 + \sigma_2 + \sigma_3$	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	N/A		[ ]^{a,c}	154.560	[ ]^{a,c}	64.400
Canopy	Pm	[ ]^{a,c}	16.100	N/A		Note 1		[ ]^{a,c}	27.000	[ ]^{a,c}	38.640	Note 1	
	Pm + Pb	N/A		N/A		Note 1		[ ]^{a,c}	40.500	Note 1		Note 1	
	Pm+Pb+Q	N/A		[ ]^{a,c}	48.300	[ ]^{a,c}	48.300	N/A		N/A		N/A	
	$\sigma_1 + \sigma_2 + \sigma_3$	[ ]^{a,c}	80.000	[ ]^{a,c}	80.000	[ ]^{a,c}	80.000	[ ]^{a,c}	80.000	[ ]^{a,c}	154.560	[ ]^{a,c}	64.400
Threaded Area Middle Joints	Pm	[ ]^{a,c}	9.660	[ ]^{a,c}	9.660	[ ]^{a,c}	9.660	[ ]^{a,c}	9.660	N/A		[ ]^{a,c}	9.660
	Stress Intensity Due to Bell Mouth	N/A		[ ]^{a,c}	17.900	[ ]^{a,c}	17.900	[ ]^{a,c}	17.900	N/A		N/A	

TABLE RAI 25-1

		Design Condition		Normal Condition		Upset Condition		Testing Condition		Faulted Condition		Emergency Cond.	
Component	Parameters Per ASME Code III	Calculated (ksi)	Allowed (ksi)	Calculated (ksi)	Allowed (ksi)	Calculated (ksi)	Allowed (ksi)	Calculated (ksi)	Allowed (ksi)	Calculated (ksi)	Allowed (ksi)	Calculated (ksi)	Allowed (ksi)
LOWER JOINTS													
Latch Housing	Pm	[ ]^{a,c}	16.100	N/A		Note 1		[ ]^{a,c}	27.000	[ ]^{a,c}	38.640	Note 1	
	Pm + Pb	[ ]^{a,c}	24.150	N/A		Note 1		[ ]^{a,c}	40.500	Note 1		Note 1	
	Pm+Pb+Q	N/A		[ ]^{a,c}	48.300	[ ]^{a,c}	48.300	N/A		N/A		N/A	
	$\sigma_1 + \sigma_2 + \sigma_3$	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	154.560	[ ]^{a,c}	64.400
Head Adapter	Pm	[ ]^{a,c}	16.100	N/A		Note 1		[ ]^{a,c}	27.000	[ ]^{a,c}	38.640	Note 1	
	Pm + Pb	[ ]^{a,c}	24.150	N/A		Note 1		[ ]^{a,c}	40.500	Note 1		Note 1	
	Pm+Pb+Q	N/A		[ ]^{a,c}	48.300	[ ]^{a,c}	48.300	N/A		N/A		N/A	
	$\sigma_1 + \sigma_2 + \sigma_3$	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	154.560	[ ]^{a,c}	64.400
Canopy	Pm	[ ]^{a,c}	16.100	N/A		Note 1		[ ]^{a,c}	27.000	[ ]^{a,c}	38.640	Note 1	
	Pm + Pb	N/A		N/A		Note 1		N/A		Note 1		Note 1	
	Pm+Pb+Q	N/A		[ ]^{a,c}	48.300	[ ]^{a,c}	48.300	N/A		N/A		N/A	
	$\sigma_1 + \sigma_2 + \sigma_3$	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	154.560	[ ]^{a,c}	64.400
Threaded Area Lower Joints	Pm	[ ]^{a,c}	9.660	N/A		[ ]^{a,c}	9.660	[ ]^{a,c}	9.660	N/A		[ ]^{a,c}	9.660
	Stress Intensity Due to Bell Mouth	N/A		[ ]^{a,c}	20.700	[ ]^{a,c}	20.700	[ ]^{a,c}	20.700	N/A		N/A	

TABLE RAI 25-1

		Design Condition		Normal Condition		Upset Condition		Testing Condition		Faulted Condition		Emergency Cond.	
Component	**Parameters Per ASME Code III**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**	**Calculated (ksi)**	**Allowed (ksi)**
CAPPED LATCH HOUSING													
Cap	Pm	[ ]^{a,c}	16.100	N/A		Note 1		[ ]^{a,c}	27.000	[ ]^{a,c}	38.640	Note 1	
	Pm + Pb	[ ]^{a,c}	24.150	N/A		Note 1		[ ]^{a,c}	40.500	Note 1		Note 1	
	Pm+Pb+Q	N/A		[ ]^{a,c}	48.300	[ ]^{a,c}	48.300	N/A		N/A		N/A	
	$\sigma_1 + \sigma_2 + \sigma_3$	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	154.560	[ ]^{a,c}	64.400
Latch Housing	Pm	[ ]^{a,c}	16.100	N/A		Note 1		[ ]^{a,c}	27.000	[ ]^{a,c}	38.640	Note 1	
	Pm + Pb	[ ]^{a,c}	24.150	N/A		Note 1		[ ]^{a,c}	40.500	Note 1		Note 1	
	Pm+Pb+Q	N/A		[ ]^{a,c}	48.300	[ ]^{a,c}	48.300	N/A		N/A		N/A	
	$\sigma_1 + \sigma_2 + \sigma_3$	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	154.560	[ ]^{a,c}	64.400
Canopy	Pm	[ ]^{a,c}	16.100	N/A		Note 1		[ ]^{a,c}	27.000	[ ]^{a,c}	38.640	Note 1	
	Pm + Pb	N/A		N/A		Note 1		N/A		Note 1		Note 1	
	Pm+Pb+Q	N/A		[ ]^{a,c}	48.300	[ ]^{a,c}	50.700	N/A		N/A		N/A	
	$\sigma_1 + \sigma_2 + \sigma_3$	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	64.400	[ ]^{a,c}	154.560	[ ]^{a,c}	64.400
Threaded Area CLH	Pm	[ ]^{a,c}	9.660	[ ]^{a,c}	9.660	[ ]^{a,c}	9.660	[ ]^{a,c}	9.660	N/A		[ ]^{a,c}	9.660
	Stress Intensity Due to Bell Mouth	N/A		[ ]^{a,c}	17.900	[ ]^{a,c}	17.900	[ ]^{a,c}	17.900	N/A		N/A	

Note 1: Previously analyzed loads remain bounding.

RAI #36

The LOCA submittals did not address slot breaks at the top and side of the pipe. Justify why these breaks are not considered for the Seabrook large break LOCA (LBSOCA) and SBLOCA responses.

FPL Energy Seabrook Response:

Break location, type, and size are specifically considered for the Seabrook Station LBLOCA analysis. The analysis concluded that the cold leg guillotine break is limiting for Seabrook Station. The uncertainties related to break location, type, and size were included in the model uncertainties for the Seabrook Station Best Estimate LBLOCA peak cladding temperature.

For Small Break LOCA events, the effects of break location have been generically evaluated as part of the application of the NOTRUMP Evaluation Model (Reference 1). This document concluded that a break in the Reactor Coolant System cold leg was limiting. Additionally, the effects of break orientation were considered during the evaluation of safety injection in the broken loop and application of the COSI Condensation Model (Reference 2). This work concluded that a break oriented at the bottom of the Reactor Coolant System cold leg piping was limiting with respect to peak cladding temperature.

While these references specifically address the short-term response to the LOCA break spectrum, the long-term effects associated with potential reactor coolant pump loop seal re-plugging core uncovery is addressed in the following.

A review of the analysis conditions associated with potential core uncovery due to loop seal re-plugging has previously been performed in Reference 3. Reference 3 documents the Westinghouse position with regards to the potential for Inadequate Core Cooling scenarios following large and intermediate break LOCAs as a result of loop seal re-plugging. Reference 3 concludes the following:

- The Reactor Coolant System response following a LOCA is a dynamic process and that the expected response in the long-term is similar to the response that occurs in the short-term. This short-term response has been analyzed extensively through computer analysis and tests and is well documented.
- Consideration of the physical mechanisms for liquid plugging of the pump suction leg U-bend piping following large and intermediate break LOCA at realistic decay heat levels precludes quasi steady-state inadequate core cooling conditions.
- It is important to emphasize that the operator guidance provided in the Emergency Response Guidelines includes actions to be taken in the event of an indication of a challenge to adequate core cooling following a LOCA.

A review of the key contributors associated with long-term loop seal plugging core uncovery scenarios, under LOCA conditions, was performed as part of Reference 4 including a review of pertinent experimental data.

a,c

From References 3 and 4, it can be concluded that post-LOCA core uncovery scenarios as a result of loop seal re-plugging do not constitute a significant concern to Seabrook Station plant safety.

Westinghouse proprietary information is provided in Enclosure 2.

References

1. WCAP-11145-P-A, "Westinghouse Small Break LOCA ECCS Evaluation Model Generic Study With the NOTRUMP Code", S. D. Rupprecht, et al., 1986.
2. WCAP-10054-P Addendum 2, Revision 1, "Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model", C. M. Thompson, et al., July 1997.
3. OG-87-37, "Westinghouse Owners Group (WOG) Post LOCA Long Term Cooling, Letter from Roger Newton (WOG) to Thomas Murley (NRC)", August 26, 1987.
4. NSD-NRC-97-5092, "Core Uncovery Due to Loop Seal Re-Plugging During Post-LOCA Recovery," Letter from N. J. Liparulo (W) to NRC, March, 1997

Attachment RAI 2-1

Table 1
Steam Generator Water Level - High-High

Parameter	**Allowance***
Process Measurement Accuracy	a,c
[ ]a,c (PMA_{PP})	
[ ]a,c (PMA_{RL})	
[ ]a,c (PMA_{PD})	
[ ]a,c (PMA_{FV})	
[ ]a,c (PMA_{DL})	
[ ]a,c (PMA_{SC})	
[ ]a,c (PMA_{ID})	
[ ]a,c (PMA_{FR})	
[ ]a,c (PMA_{MD})	
Primary Element Accuracy (PEA)	
Sensor Calibration Accuracy (SCA)	
Sensor Reference Accuracy (SRA)	
Measurement & Test Equipment Accuracy (SMTE)	
Sensor Pressure Effects (SPE)	
Sensor Temperature Effects (STE)	
Sensor Drift (30 months) (SD)	
Bias	
[ ]a,c ($Bias_1$)	
Systematic Pressure Effect ($Bias_5$)	
Rack Calibration	
Rack Accuracy (RCA)	
Reference Accuracy (RRA)	
Measurement & Test Equipment Accuracy (RMTE)	
Rack Temperature Effect (RTE)	
Rack Drift (RD)	

* In percent span (0-100% Narrow Range Level, 85.72 inches)

Table 1 (Continued)
Steam Generator Water Level - High-High

Channel Statistical Allowance =

a,c

[ ]

a,c

[ ]

Table 2
Steam Generator Water Level - Low-Low
Loss of Normal Feedwater Analysis

Parameter	Allowance*
Process Measurement Accuracy	$\Big[$ $\Big]^{a,c}$
[ ]^{a,c} (PMA_{PP})	
[ ]^{a,c} (PMA_{RL})	
[ ]^{a,c} (PMA_{SC})	
[ ]^{a,c} (PMA_{FV})	
[ ]^{a,c} (PMA_{DL})	
[ ]^{a,c} (PMA_{ID})	
[ ]^{a,c} (PMA_{FR})	
[ ]^{a,c} (PMA_{MD})	
Primary Element Accuracy (PEA)	
Sensor Calibration Accuracy (SCA)	
Sensor Reference Accuracy (SRA)	
Measurement & Test Equipment Accuracy (SMTE)	
Sensor Pressure Effects (SPE_L)	
Sensor Temperature Effects (STE)	
Sensor Drift (30 months) (SD)	
Bias	
[ ]^{a,c} ($Bias_1$)	
Systematic Pressure Effect ($Bias_3$)	
Rack Calibration	
Rack Accuracy (RCA)	
Reference Accuracy (RRA)	
Measurement & Test Equipment Accuracy (RMTE)	
Rack Temperature Effect (RTE_B)	
Rack Drift (RD_B)	

* In percent span (0-100% Narrow Range Level, 85.72 inches)

Table 2 (Continued)
Steam Generator Water Level - Low-Low
Loss of Normal Feedwater Analysis

Channel Statistical Allowance =

a,c

[ ]

a,c

[ ]

Table 3
Steam Generator Water Level - Low-Low
Large Feedline Break Analysis

Parameter	**Allowance*** a,c
Process Measurement Accuracy	
[ ]a,c (PMA_{PP})	
[ ]a,c (PMA_{RL})	
[ ]a,c (PMA_{FV})	
[ ]a,c (PMA_{DL})	
[ ]a,c (PMA_{SC})	
[ ]a,c (PMA_{ID})	
[ ]a,c (PMA_{FR})	
[ ]a,c (PMA_{MD})	
Primary Element Accuracy (PEA)	
Sensor Calibration Accuracy (SCA)	
Sensor Reference Accuracy (SRA)	
Measurement & Test Equipment Accuracy (SMTE)	
Sensor Pressure Effects (SPE)	
Sensor Temperature Effects (STE)	
Sensor Drift (30 months) (SD)	
Environmental Allowance	
Transmitter Adverse Temperature Effects (EA_1)	
Cable IR Effects ($Bias_2$)	
Reference Leg Heatup (EA_3)	
Bias	
[ ]a,c ($Bias_1$)	
Systematic Pressure Effect ($Bias_3$)	
Rack Calibration	
Rack Accuracy (RCA)	
Reference Accuracy (RRA)	
Measurement & Test Equipment Accuracy (RMTE)	
Rack Temperature Effect (RTE)	
Rack Drift (RD)	

* In percent span (0-100% Narrow Range Level, 85.72 inches)

Table 3 (Continued)
Steam Generator Water Level - Low-Low
Large Feedline Break Analysis

Channel Statistical Allowance =

a,c

[ ]

a,c

[ ]

Table 4
Steam Generator Water Level - Low-Low
Small/Intermediate Feedline Break Analysis

Parameter | **Allowance***

a,c

Process Measurement Accuracy
[ ]^{a,c} (PMA_{PP})
[ ]^{a,c} (PMA_{RL})
[ ]^{a,c} (PMA_{FV})
[ ]^{a,c} (PMA_{DL})
[ ]^{a,c} (PMA_{SC})
[ ]^{a,c} (PMA_{ID})
[ ]^{a,c} (PMA_{FR})
[ ]^{a,c} (PMA_{MD})

Primary Element Accuracy (PEA)

Sensor Calibration Accuracy (SCA)

Sensor Reference Accuracy (SRA)

Measurement & Test Equipment Accuracy (SMTE)

Sensor Pressure Effects (SPE)

Sensor Temperature Effects (STE)

Sensor Drift (30 months) (SD)

Environmental Allowance
Transmitter Adverse Temperature Effects (EA_1)
Cable IR Effects ($Bias_2$)
Reference Leg Heatup (EA_2)

Bias
[ ]^{a,c} ($Bias_1$)
Systematic Pressure Effect ($Bias_3$)

Rack Calibration
Rack Accuracy (RCA)
Reference Accuracy (RRA)
Measurement & Test Equipment Accuracy (RMTE)

Rack Temperature Effect (RTE)

Rack Drift (RD)

* In percent span (0-100% Narrow Range Level, 85.72 inches)

Table 4 (Continued)
Steam Generator Water Level - Low-Low
Small/Intermediate Feedline Break Analysis

Channel Statistical Allowance =

a,c

[ ]

a,c

[ ]

Table 5
Steam Generator Water Level - Low-Low
Steam Break Analysis

Parameter	Allowance* (a,c)
Process Measurement Accuracy	
[ ]^{a,c} (PMA$_{PP}$)	
[ ]^{a,c} (PMA$_{RL}$)	
[ ]^{a,c} (PMA$_{FV}$)	
[ ]^{a,c} (PMA$_{DL}$)	
[ ]^{a,c} (PMA$_{SC}$)	
[ ]^{a,c} (PMA$_{ID}$)	
[ ]^{a,c} (PMA$_{FR}$)	
[ ]^{a,c} (PMA$_{MD}$)	
Primary Element Accuracy (PEA)	
Sensor Calibration Accuracy (SCA)	
Sensor Reference Accuracy (SRA)	
Measurement & Test Equipment Accuracy (SMTE)	
Sensor Pressure Effects (SPE)	
Sensor Temperature Effects (STE)	
Sensor Drift (30 months) (SD)	
Environmental Allowance	
Bias	
[ ]^{a,c} (Bias$_1$)	
Systematic Pressure Effect (Bias$_3$)	
Rack Calibration	
Rack Accuracy (RCA)	
Reference Accuracy (RRA)	
Measurement & Test Equipment Accuracy (RMTE)	
Rack Temperature Effect (RTE)	
Rack Drift (RD)	

* In percent span (0-100% Narrow Range Level, 85.72 inches)

Table 5 (Continued)
Steam Generator Water Level - Low-Low
Steam Break Analysis

Channel Statistical Allowance =

a,c

[ ]

a,c

[ ]

Table 6
Overtemperature ΔT Reactor Trip

Parameter		**Allowance***
Process Measurement Accuracy	a,c	a,c
Primary Element Accuracy (PEA)		
Sensor Calibration Accuracy	a,c	
Sensor Reference Accuracy	a,c	
Sensor Measurement & Test Equipment	a,c	
Sensor Pressure Effects (SPE_P)		
Sensor Temperature Effects	a,c	
Sensor Drift	a,c	

Table 6 (Continued)
Overtemperature ΔT Reactor Trip

Parameter	**Allowance***
Bias	
[ ]a,c	[ ]a,c
Environmental Allowance	
Seismic (Rack)	
[ ]a,c	
Rack Calibration Accuracy	
[ ]a,c	
Rack Measurement & Test Equipment Accuracy	
[ ]a,c	
Rack Temperature Effect	
[ ]a,c	

Table 6 (Continued)
Overtemperature ΔT Reactor Trip

Parameter		**Allowance***
Rack Drift		
[ ]a,c		[ ]a,c
α - Accuracy of hot leg streaming [ ]a,c		
R/E nonlinearity (RE_{LIN})		
RTD Lead Imbalance (RTD_{li})		

* In percent ΔT span (T_{avg} – 100 °F, pressure - 900 psi, power – 150 % RTP, ΔT - 84.8 °F = 150 % RTP, ΔI – 120 % ΔI)
** See Table 7 for gain and conversion calculations

Table 6 (Continued)
Overtemperature ΔT Reactor Trip

Hot Leg RTDs = 2/Loop (1 RTD assumed failed)
@Cold Leg RTDs = 1/Loop

Channel Statistical Allowance =

a,c

[ ]

a,c

[ ]

Table 7
Overtemperature ΔT Calculations

The equation for Overtemperature ΔT is:

$$\Delta T \frac{(1+\tau_1 S)}{(1+\tau_2 S)} \frac{1}{(1+\tau_3 S)} \leq \Delta T_0 \left\{K_1 - K_2 \frac{(1+\tau_4 S)}{(1+\tau_5 S)} \left[\qquad \right] + K_3 (P - P') - f_1(\Delta I)\right\}$$

K_1 (nominal)	=	1.21 Technical Specification value
K_1 (max)	=	[ ]^{a,c}
K_2	=	0.021 Technical Specification value
K_3	=	0.0011 Technical Specification value
vessel ΔT	=	56.5 °F smallest ΔT based on evaluation of temperature data
ΔI gain	=	1.71 % Technical Specification value

PMA conversions:

ΔI I/E mismatch (PMA_2)	=	[
ΔI Incore flux (PMA_3)	=	
ΔT Burndown (PMA_5)	=	
Power Cal. (PMA_4)	=	]^{a,c}

Pressure conversions:

Pressure gain	=	[
Pressure (SCA_P)	=	
Pressure (SRA_P)	=	
Pressure ($SMTE_P$)	=	
Pressure (STE_P)	=	
Pressure (SD_P)	=	
Pressure ($Bias_{P1}$)	=	
Pressure ($Bias_{P2}$)	=	
Pressure ($RMTE_P$)	=	
Pressure (NPC_P)	=	]^{a,c}

Table 7 (Continued)
Overtemperature ΔT Calculations

ΔI conversions:

ΔI conversion =
ΔI ($RMTE_{\Delta I}$) =
ΔI ($Seis_{\Delta I}$) =

[ ]a,c

NIS conversions:

NIS ($RMTE_{NIS}$) =
NIS (RTE_{NIS}) =

[ ]a,c

T_{avg} conversions:

T_{avg} conversion =
T_{avg} ($RMTE_{Tavg}$) =

[ ]a,c

Total Allowance = [ ]a,c = 8.7 %

Table 8
Overpower ΔT Reactor Trip

Parameter		**Allowance***
Process Measurement Accuracy		
[ ]	a,c	[ ] a,c
Primary Element Accuracy (PEA)		
Sensor Calibration Accuracy		
[ ]	a,c	
Sensor Reference Accuracy		
[ ]	a,c	
Sensor Measurement & Test Equipment		
[ ]	a,c	
Sensor Pressure Effects		
Sensor Temperature Effects		
Sensor Drift		
[ ]	a,c	
Environmental Allowance		
[ ]	a,c	
Rack Calibration Accuracy		
[ ]	a,c	

Table 8 (Continued)
Overpower ΔT Reactor Trip

Parameter	Allowance*
Rack Measurement & Test Equipment Accuracy	
[ ]a,c	[ ]a,c
Rack Temperature Effect	
[ ]a,c	
Rack Drift	
[ ]a,c	
α - Accuracy of hot leg streaming [ ]a,c	
R/E nonlinearity (RE_{LIN})	
RTD Lead Imbalance (RTD_{li})	

* In percent ΔT span (Tavg - 100 °F, power - 150 % RTP, ΔT - 84.8 °F = 150 % RTP)
** See Table 9 for gain and conversion calculations

Table 8 (Continued)
Overpower ΔT Reactor Trip

Hot Leg RTDs = 2/Loop (1 RTD assumed failed)
@Cold Leg RTDs = 1/Loop

Channel Statistical Allowance =

a,c

a,c

Table 9
Overpower ΔT Calculations

The equation for Overpower ΔT is:

$$\Delta T \frac{(1+\tau_1 S)}{(1+\tau_2 S)} \frac{1}{(1+\tau_3 S)} \leq \Delta T_0 \{K_4 - K_5 \frac{(\tau_7 S)}{(1+\tau_7 S)} \frac{1}{(1+\tau_6 S)} T - K_6 [\qquad\qquad] - f_2(\Delta I)\}$$

K_4 (nominal)	=	1.116 Technical Specification value
K_4 (max)	=	[ ]a,c
K_5	=	0.020 Technical Specification value
K_6	=	0.00175 Technical Specification value
vessel ΔT	=	56.5 °F smallest ΔT based on evaluation of temperature data

PMA conversions:

a,c

ΔT Burndown (PMA_5) = [

Power Cal. (PMA_7) =]

a,c

T_{avg} conversion = [

T_{avg} ($RMTE_{Tavg}$) =]

Total Allowance = [ ]a,c = 4.0 %

Table 10
Seabrook Station Stretch Power Uprate RPS/ESFAS Parameters

Protection Function	Safety Analysis Limit	Nominal Trip Setpoint	TA	CSA	Margin	TS Allowable Value
					a,c	
Overtemperature Delta T Reactor Trip	1.34	1.21				See Note 1
Overpower Delta T Reactor Trip	1.176	1.116				See Note 2
Steam Generator Water Level - Low Low Reactor Trip	0% span	20% span				≥19.5% span
Steam Generator Water Level - High-High Feedwater Isolation	97.7% span (3)	90.8% span				≤91.3% span

Notes:

(1) Note that 0.5% of ΔT span is applicable to the OTΔT input channels ΔT, T_{avg} and Pressurizer Pressure; 0.25% of ΔT span is applicable to ΔI.

(2) Note that 0.5% of ΔT span is applicable to the OPΔT input channels ΔT and T_{avg}.

(3) Based on Maximum Reliable Indicated Limit (MRIL).

Westinghouse

Westinghouse Electric Company
Nuclear Services
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355
USA

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

Direct tel: (412) 374-4643
Direct fax: (412) 374-4011
e-mail: greshaja@westinghouse.com

Our ref: CAW-04-1896

September 24, 2004

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: Westinghouse Reponses to NRC Requests for Additional Information (RAIs) for Seabrook Station Stretch Power Uprate (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-04-1896 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. The affidavit, which accompanies this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR Section 2.390 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by FPL Energy.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-04-1896, and should be addressed to J. A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Very truly yours,

J. A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Enclosures

cc: W. Macon, NRC
E. Peyton, NRC

bcc: J. A. Gresham (ECE 4-7A) 1L
R. Bastien, 1L (Nivelles, Belgium)
C. Brinkman, 1L (Westinghouse Electric Co., 12300 Twinbrook Parkway, Suite 330, Rockville, MD 20852)
RCPL Administrative Aide (ECE 4-7A) 1L, 1A (letter and affidavit only)

CAW-04-1896

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared J. A. Gresham, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

J.A. Gresham

J. A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Sworn to and subscribed
before me this 24th day
of September, 2004

Sharon L. Fiori
Notary Public

Notarial Seal
Sharon L. Fiori, Notary Public
Monroeville Boro, Allegheny County
My Commission Expires January 29, 2007
Member, Pennsylvania Association Of Notaries

(1) I am Manager, Regulatory Compliance and Plant Licensing, in Nuclear Services, Westinghouse Electric Company LLC (Westinghouse), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.

(2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Westinghouse "Application for Withholding" accompanying this Affidavit.

(3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged or as confidential commercial or financial information.

(4) Pursuant to the provisions of paragraph (b)(4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.

(ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of

Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

(e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.

(f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

(a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.

(b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.

(c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

(d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.

(f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.

(iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390, it is to be received in confidence by the Commission.

(iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.

(v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked Westinghouse Reponses to NRC Requests for Additional Information (RAIs) for Seabrook Station Stretch Power Uprate (Proprietary), dated September 2004 being transmitted by the FPL Energy letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted for use by Westinghouse for Seabrook Station stretch power uprate is expected to be applicable for other licensee submittals in response to certain NRC requirements for justification of plant power uprating.

This information is part of that which will enable Westinghouse to:

(a) Provide information in support of plant power uprate licensing submittals.

(b) Provide plant specific calculations.

(c) Provide licensing documentation support for customer submittals.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of similar information to its customers for purposes of meeting NRC requirements for licensing documentation associated with power uprate licensing submittals

(b) Westinghouse can sell support and defense of the technology to its customers in the licensing process.

(c) The information requested to be withheld reveals the distinguishing aspects of a methodology which was developed by Westinghouse.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar calculations, evaluations, analysis, and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.390 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.390(b)(1).

COPYRIGHT NOTICE