FPL Energy
Seabrook Station

FPL Energy Seabrook Station
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March 24, 2006

Docket No. 50-443

SBK-L-06055

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

Seabrook Station
Facility Operating License NPF-86
Response to Request for Additional Information Regarding
License Amendment Request 05-04,
Application for Measurement Uncertainty Recapture Power Uprate

References

1. FPL Energy Seabrook, LLC letter SBK-L-05205, "License Amendment Request 05-04, Application for Measurement Uncertainty Recapture Power Uprate," dated September 22, 2005.
2. Memo to D. J. Roberts NRC, from G. E. Miller NRC, "Seabrook Station Unit No. 1 Facsimile Transmission, Draft Request for Additional Information (RAI) To Be Discussed in an Upcoming Conference Call (TAC NO. MC8434), dated January 24, 2006.
3. Memo to D. J. Roberts NRC, from G. E. Miller NRC, "Seabrook Station Unit No. 1 Facsimile Transmission, Draft Request for Additional Information (RAI) To Be Discussed in an Upcoming Conference Call (TAC NO. MC8434), dated February 1, 2006.

By letter dated September 22, 2005 (Reference 1), FPL Energy Seabrook, LLC (FPL Energy Seabrook) requested an amendment to facility operating license NPF-86 and the Seabrook Station Technical Specifications. This license amendment request (LAR) is an application for a measurement uncertainty recapture power uprate which will increase the Seabrook Station licensed reactor core power by 1.7% from 3587 megawatts thermal (MWt) to 3648 MWt.

A101

By memos dated January 24, 2006 and February 1, 2006 (References 2 and 3, respectively), the Nuclear Regulatory Commission (NRC) identified additional information that is required to support its review of this LAR. The information requested and the FPL Energy Seabrook responses are provided in Enclosure 1 to this letter. Enclosure 2 to this letter contains a copy of the ISO-New England letter approving the Seabrook Station MUR application.

Enclosure 3 provides Caldon Topical Report ER-482P (Proprietary), "Bounding Uncertainty Analysis for Thermal Power Determination at Seabrook NNP Using the LEFM CheckPlus™ System." Enclosure 4 provides Caldon Topical Report ER-527P (Proprietary), "LEFM CheckPlus™ Meter Factor Calculation and Accuracy Assessment for Seabrook Nuclear Power Station (Alden Reports No. 2006-009/C0730)." Enclosure 5 contains the application for withholding proprietary information contained in Enclosures 3 and 4 from public disclosure, including an affidavit in conformance with the provisions of 10 CFR 2.790 for withholding proprietary information.

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

Very truly yours,

FPL Energy Seabrook, LLC

Gene St. Pierre
Site Vice President

Enclosures (5)

cc: S. J. Collins, NRC Region I Administrator
G. E. Miller, NRC Project Manager
G. T. Dentel, NRC Resident Inspector

Mr. Bruce Cheney, ENP, Director, Division of Emergency Services
NH Department of Safety,
Division of Emergency Services, Communications and Management
Bureau of Emergency Management
33 Hazen Drive
Concord, NH 03305

Oath and Affirmation

I, Gene St. Pierre, Site Vice President of FPL Energy Seabrook, LLC hereby affirm that the information and statements contained within this correspondence including the enclosures 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
24th day of March, 2006

Shirley Sweeney
Notary Public

Gene St. Pierre
Site Vice President

Enclosure 1
Seabrook Station
Facility Operating License NPF-86
LAR 05-04
Measurement Uncertainty Recapture Power Uprate
Response to NRC Requests for Additional Information

January 24, 2006 Requests For Additional Information

RAI #1

Section 2.1 of Attachment 1 to LAR 05-04 indicates that there are some external unified fracture mechanics [sic: ultrasonic flow meters] (UFMs) (Caldon 2-path chordal devices) installed on the same pipe as the Caldon Leading Edge Flow Measurement (LEFM) CheckPlus™ system. The NRC staff understands the Caldon external UFMs to be single-path diameteral devices, not 2-path chordal devices, as stated. Please explain this apparent discrepancy.

Additionally, please indicate whether these devices will be removed after installation of the Caldon LEFM CheckPlus™ UFM system. If they are to remain in place, please describe the function they will perform.

FPL Energy Seabrook Response to RAI #1

Seabrook Station currently uses four ultrasonic flow measurement (UFM) systems to measure individual feedwater mass flows to each of the four steam generators. The feedwater mass flow data from the ultrasonic flow measurement systems is used periodically to normalize the steam mass flow input to the secondary power calorimetric. The ultrasonic flow measurement systems do not provide continuous live mass flow data to the current secondary power calorimetric.

The ultrasonic flow measurement systems installed at Seabrook Station are Caldon Model 8300 2-path chordal type ultrasonic flow meters. This type of meter is sometimes referred to as a "leading edge flow meter" (LEFM) or a "transit time flow meter." The spool pieces and transducers for each ultrasonic flow measurement system were not originally supplied by Caldon, but were analyzed and approved by Caldon for use with the Caldon Model 8300 processors.

Each ultrasonic flow measurement system utilizes four acoustic transducers (two per path) "internally" mounted in a spool piece located between the feedwater regulator valve and steam generator in each feedwater line. Each transducer is mounted inside a boss on the spool piece using machined spacers to precisely control the transducer spacing and 45 degree orientation relative to the axis of the flowing stream. The housing of each transducer is "wetted" or immersed directly in the feedwater within each mounting boss.

The new Caldon LEFM CheckPlus™ System will be installed in the common feedwater header upstream of the feedwater regulating valves, as opposed to the existing systems which are located on the individual feedwater lines to each steam generator, downstream of the feedwater regulating valves. The existing systems will not interact (hydraulically or electrically) with the new Caldon LEFM CheckPlus™ System.

The existing 2-path ultrasonic flow measurement systems will remain in place for use by the Engineering Department for data collection only. They will not be relied upon or used to support any functions associated with the power calorimetric.

RAI #2

Section 2.1 of Attachment 1 to the LAR states that the transmittal of data from the proposed UFM to the plant computer will be via fiber optic cable and data converters to provide raw and conditioned data and diagnostic and quality information. Please explain the difference between raw and conditioned data and their respective functions.

FPL Energy Seabrook Response to RAI #2

Per FPL Energy Seabrook's definition of terms used herein, "Raw" LEFM CheckPlus™ System data would include diagnostic information and unconditioned process data such as:

- Individual normalized velocities for each of the 8 paths
- Individual acoustic gains for each of the 8 paths
- Individual speed of sound for each of the 8 paths
- Path status and data rejects for each of the 8 paths

"Raw" data will be used primarily for detailed system performance monitoring and diagnostics by the System Engineer.

"Conditioned" LEFM CheckPlus™ System data would include intermediate and final calculational results as well as high level system alarms such as:

- Total mass flow
- Acoustically derived feedwater temperature
- Average feedwater pressure
- System Maintenance and Fail Alarms

"Conditioned" data will be used primarily as input for the secondary calorimetric power determination and for operator interface.

RAI #3

In response to Criterion 4 of the NRC safety evaluation approving Caldon Topical Reports ER-80P and ER-157P, you stated that the calibration factor for the Seabrook spool piece will be established by testing at Alden Research Laboratory and the final acceptance of the site-specific uncertainty analyses will occur after the completion of the commissioning process. As such, the uncertainties listed in Table 2.3-1, "Total Power Uncertainty Determination," are the preliminary calculated values to be confirmed by the laboratory tests and the commissioning process. Please confirm that Table 2.3-1 contains the bounding values, and submit the uncertainty calculations referenced in the table notes for NRC staff review.

Additionally, please explain how the laboratory calibration of the UFM will be confirmed during in-situ site acceptance testing.

FPL Energy Seabrook Response to RAI #3

The calculations used to determine the values in Table 2.3-1 "Total Power Uncertainty Determination" are described in ER-482P (proprietary) which is provided in Enclosure 3 to this submittal. The revised Table 2.3-1 is provided below.

The Seabrook LEFM CheckPlus™ System was calibrated at Alden Research Laboratories between January 16 and 18, 2006. During the calibration testing, an NRC representative witnessed the tests and discussed details of the uncertainties associated with the collection of the test data. In addition, use of the calibration data in the plant conditions and the uncertainties associated with that extrapolation / interpolation were reviewed in detail. References that justify the handling of these data were identified and have been provided to the NRC under separate cover for the purposes of the review of hydraulic uncertainties. For completeness, a brief discussion of the principles is provided below.

The calibration test plan is developed to provide Meter Factor calibration data over a wide range of hydraulic test conditions. For the Seabrook LEFM CheckPlus™ System, these tests included straight pipe testing, plant piping modeling and parametric variations of those models, and extreme swirl tests. Meter Factor data, determined by comparing the lab reference standard to the flow as measured by the LEFM CheckPlus™ System, were collected for each configuration at various different flow rates. Measurements of the hydraulic profile, called Flatness Ratio, were also collected for each test condition at each flow rate. Meter Factor vs. Flatness Ratio was plotted for all conditions and all flow rates and was compared to analytically derived expected performance curves for quality control purposes. These data provide a quantitative measure of Meter Factor vs. actual velocity profile encountered.

Following installation of the LEFM CheckPlus™ System at Seabrook Station, the LEFM CheckPlus™ System measurements of velocity profile will be compared to the reference measurements collected during the laboratory calibration. It is expected that the range of velocity profiles encountered during calibration at Alden Research Laboratories will envelope the velocity profiles encountered in the plant and will require no extrapolation. However, in the event that the lab velocity profile data does not completely envelope the installation velocity profile data, the range of extrapolation will be very small and since the Meter Factor vs. Flatness

Ratio calibration curve is linear, extrapolation uncertainties will also be very small. A preliminary estimate of the uncertainty associated with applying the calibration data in the plant will be made as part of the calibration test report.

A final verification of this uncertainty will be made following installation and commissioning of the meter in the plant, based on in-plant measurements of the profile flatness. These data will be collected and the comparison to laboratory data will be made per Caldon Engineering Field Procedure EFP-61. This procedure was provided in Caldon Information Package INFO-18 (proprietary), submitted to the Nuclear Regulatory Commission on December 16, 2005.

The following table replaces LAR 05-04 Attachment 1 Table 2.3-1 (page 2-6) in its entirety. The table has been revised to include the Seabrook-specific uncertainty calculations based on the calibration of the Seabrook LEFM CheckPlus™ System at Alden Research Laboratories. Refer to ER-482P provided in Enclosure 3.

TABLE 2.3-1
TOTAL POWER UNCERTAINTY DETERMINATION

	Parameter[1]	ER-157P Uncertainty	Seabrook Station Uncertainty
1.	Hydraulics: Profile factor	0.25%	0.18%
2.	Geometry: Spool dimensions, alignment, thermal expansion	0.09%	0.10%
3.	Time Measurements: Transit times and non fluid time delay	0.045%	0.07%[6]
4.	Feedwater Density:[2] LEFM temperature determination, pressure input, and correlation[5]	0.07%	0.07%
5.	Subtotal: Mass flow uncertainty (Root sum square of items 1, 2, 3, and 4 above)	0.28%	0.23%
6.	Feedwater Enthalpy:[3] LEFM temperature determination, pressure input, and correlation[5]	0.08%	0.09%
7.	Steam Enthalpy: Pressure input and moisture uncertainty	0.07%	0.08%
8.	Other Gains and Losses	0.07%	0.03%
9.	Total Power Determination Uncertainty	0.33%[4]	0.29%

NOTES:

1. Items 1 through 6 are directly associated with the Caldon LEFM CheckPlus™ System device. Items 7 and 8 are based on other plant process inputs discussed below.
2. Density errors due to the density correlation, the LEFM feedwater temperature determination and the feedwater pressure measurement.
3. Enthalpy errors due to the enthalpy correlation, the LEFM feedwater temperature determination and the feedwater pressure measurement.
4. ER-157P demonstrates that the Caldon LEFM CheckPlus™ System can support uncertainties less than ±0.33%.
5. The bounding uncertainties in pressure and temperature are ±15 psi and ±0.6°F, respectively.
6. Caldon plant-specific calculation.

RAI #4

Section 2.5 of Attachment 1 to the LAR states that administrative controls will be developed to specify that if the Caldon LEFM CheckPlus™ system has experienced an outage of one of the two sections (with four paths each), plant operation will be consistent with a complete out-of-service condition (i.e., two sections out of service). The Caldon Topical Report ER-157P was approved assuming that the UFM system would be considered out-of-service in the case of more than one path out-of-service.

Per the description in the LAR, it appears that the system could by operated assuming full accuracy with up to three paths out-of-service. Please clarify this apparent discrepancy.

FPL Energy Seabrook Response to RAI #4

The Caldon LEFM CheckPlus™ System will consist of two sections (four paths each) of transducers. As stated Attachment 1 of LAR 05-04, Section 2.5 (page 2-10), FPL Energy Seabrook has decided that loss of one path (which causes the associated section to become inoperable), indicated by an "LEFM Trouble" alarm in the control room, will initiate the Caldon LEFM CheckPlus™ System Allowed Outage Time (48-hour) clock. Caldon Topical Report ER-482 states that the loss of one section results in an slightly greater uncertainty than with two sections operable. FPL Energy Seabrook has conservatively decided that it will not apply the greater uncertainty (one section operable) to plant operations. Thus, FPL Energy Seabrook assumes the Caldon LEFM CheckPlus™ System is inoperable for loss of one or more paths.

RAI #5

RIS 2002-003, Attachment 1, Guideline I.1.F lists five aspects of calibration and maintenance procedures, each to be specifically addressed for all instruments that affect the power calorimetric calculation. Section 2.4 of Attachment 1 to the LAR addresses the five aspects with respect to the UFM, but only the last three (I.1.F.iii through I.1.F.v) are addressed for all other instruments affecting the power calorimetric calculation. Please provide sufficient information to address the remaining two aspects for all instrumentation, including the plant computer, that affect the power calorimetric calculation.

Please note that Section 2.5.2 of Attachment 1 to the LAR states that a main plant computer system failure will be treated as a loss of both the Caldon LEFM CheckPlus™ system and the ability to obtain a correct calorimetric power calculation using alternate plant instrumentation. As such, maintaining and controlling main plant computer software and hardware configuration is necessary for correct power calorimetric calculation.

FPL Energy Seabrook Response to RAI #5

RIS 2002-003, Attachment 1 Guideline I.1.F lists five aspects of calibration and maintenance procedures, each to be specifically addressed for all instruments that affect the power calorimetric calculation. Item i requires information on maintaining calibration and Item ii requires information on controlling software and hardware configuration.

As stated in Attachment 1 to LAR 05-04 Section 2.3 (page 2-7), the process inputs to the main plant computer are obtained from analog instrumentation channels that are maintained and calibrated in accordance with required periodic calibration procedures. Configuration of the hardware associated with these process inputs is maintained in accordance with Seabrook Station change control process.

In addition, maintenance and calibration is performed on the main plant computer inputs in accordance with the Seabrook Station periodic maintenance program. Housekeeping type preventative maintenance tasks (cleaning/replacing of air filters, cleaning of cabinets, etc.) are performed routinely on the main plant computer system. Software configuration is maintained in accordance with the Seabrook Station change control process which includes verification and validation of changes to software configuration.

RAI #6

In your submittal you address Section VII.2.B of Attachment 1 to RIS 2002-03 with respect to the safety parameter display system, however no additional information is provided with respect to control room controls, displays, and alarms. Please provide a description of those parameters of the Caldon LEFM CheckPlus™ system that will be controlled, displayed, or alarmed in the control room.

FPL Energy Seabrook Response to RAI #6

The LEFM CheckPlus™ system parameters that will be controlled, displayed, or alarmed in the control room are presented below.

LEFM CheckPlus™ System Controls:

- There are no LEFM CheckPlus™ system controls available in the control room. All control of the LEFM CheckPlus™ system must be performed locally at the LEFM CheckPlus™ system electronics panel which will be located in the turbine building.
- The operators will have the ability to select the LEFM CheckPlus™ system output as the source of input data for the Main Plant Computer System secondary calorimetric calculation using the Main Plant Computer System graphic display CALMODE.

LEFM CheckPlus™ System Parameter Displays:

- LEFM CheckPlus™ system calculated core power level (megawatts thermal MWt) will be displayed on the Main Plant Computer System secondary calorimetric graphic display CALDIS.
- Detailed LEFM CheckPlus™ system process and diagnostic data, extracted by the Main Plant Computer System from the LEFM CheckPlus™ system, will be available in the control room via the Main Plant Computer System Satellite Display System standard database display functions.

LEFM CheckPlus™ System Alarms:

The LEFM CheckPlus™ system alarm conditions listed below will be annunciated in the control room via Main Plant Computer System Video Alarm System. Each of these alarm conditions may be further broken down into more detailed individual Video Alarm System alarms to enhance operator response. There are no hardwired annunciator alarms for the LEFM CheckPlus™ system.

- LEFM Trouble – indicates a failure or degradation of the LEFM CheckPlus™ system that adversely affects the mass flow determination uncertainty or a complete failure of the LEFM CheckPlus™ system / Main Plant Computer System communications datalink.

  The response to this alarm condition requires entry into the Allowed Outage Time (AOT) for the LEFM CheckPlus™ system.

- LEFM Datalink Trouble – indicates that the Main Plant Computer System / LEFM CheckPlus™ communication datalink is degraded, but still functioning (i.e., a problem that does not affect the validity of the data transferred from the LEFM CheckPlus™ system to the Main Plant Computer System).

  The response to this alarm is to diagnose and correct the cause of the communication problem. Entry into the Allowed Outage Time is not required since valid data is still being transferred from the LEFM CheckPlus™ system to the Main Plant Computer System.

- LEFM Uninterrupted Power Supply (UPS) Trouble – indicates an input power supply failure / degradation or a fault of the Uninterrupted Power Supply system.

  The response to this alarm condition is to initiate actions to correct the input power or Uninterrupted Power Supply problem. Entry into the Allowed Outage Time is not required since power for the LEFM CheckPlus™ system is being supplied by the Uninterrupted Power Supply inverters and batteries whenever this alarm is annunciated.

- LEFM Cabinet High Temperature - indicates a high ambient air temperature in the LEFM CheckPlus™ system cabinet (LEFM CheckPlus™ system cabinet air conditioning failure).

  The response to this alarm condition is to initiate actions to correct the high temperature condition. Entry into the Allowed Outage Time is not required since the LEFM CheckPlus™ system is rated to operate at required accuracy for ambient temperatures as high as the maximum turbine building ambient temperature in the area of the LEFM CheckPlus™ system cabinet.

February 1, 2006 Requests For Additional Information

NOTE

FPL Energy Seabrook performed bounding analysis at an analyzed core power level of 3659 MWt (3678 MWt NSSS power level) that were applicable to both the stretch power uprate (SPU) and the MUR power uprate. These analyses were submitted to the NRC in FPL Energy Seabrook, LLC letter NYN-04016, "License Amendment Request 04-03, Application for Stretch Power Uprate," dated March 17, 2004. Also, note that Tables in LAR 04-03 are typically labeled "SPU Conditions," not "Bounding Conditions," or "MUR Conditions."

RAI #1

Please address and discuss the following points:

a. Identify the nature and quantity of mega volt-amps reactive (MVAR) support necessary to maintain post-trip loads and minimum voltage levels.

b. Identify what MVAR contributions Seabrook is credited by the transmission system operator (TSO) in order to support the bulk electric supply system (i.e., the grid).

c. Identify any changes to questions 1.a and 1.b that would follow implementation of the power uprate.

d. Address the compensatory measures that FPLE would take to compensate for the depletion of the nuclear unit MVAR capability on a grid-wise basis due to this power uprate.

e. Provide an evaluation of the impact of any MVAR shortfall listed in question 1.d on the ability of the offsite power system to maintain post-trip voltage levels and to supply power to safety buses during peak electrical demand periods. The subject evaluation should document any information exchanges between the TSO and Seabrook on this matter.

FPL Energy Seabrook Response to RAI #1

The ISO-New England letter approving the Seabrook Station MUR application is provided in Enclosure 2 to this submittal.

a. The current MVAR support necessary to maintain post-trip house loads and minimum voltage levels is 29 MVAR. The nature and quantity of MVARs required to maintain post-trip loads and minimum voltage levels was evaluated and submitted with the Seabrook Station Measurement Uncertainty Recapture (MUR) license amendment request (LAR) 05-04 in the Enclosure, entitled "Seabrook Uprate System Impact Study, Phase 2 Final Report" (page 3).

b. The Seabrook Station generator is capable of supplying the current transmission system operator (ISO-New England) requirement of 367 MVARs at the rated gross electrical output of 1295 MWe as stated in the system impact study referenced in a. above.

c. After the MUR, the MVAR support necessary to maintain post-trip house loads and minimum voltage levels is 29 MVAR which is unchanged for the MUR. The post-MUR MVAR capability requirement set by ISO-New England is 375 MVAR. The 5 MVAR increase in station loads for the MUR noted on the table on page 3 of the system impact study is directly attributed to the new main generator static excitation system, which is not required post-trip.

d. LAR 05-04 Attachment 1 Sections 6.1.1 and 6.1.2 (page 6-1) describe the rewound main generator stator. The rewound generator will ensure that there is no MVAR shortfall. Section 6.1.3 describes the "Seabrook Uprate Impact Study" that was completed to evaluate the system impacts in accordance with the "New England Power Pool (NEPOOL) Reliability Standards," and the "NEPOOL Minimum Interconnection Standards." A copy of the study was included as an Enclosure to the MUR LAR 05-04. No compensatory measures related to MVAR output were required for FPL Energy Seabrook MUR power uprate.

e. There is no shortfall in MVARs. The ability of the offsite power system to maintain minimum post-trip voltage and to supply power to the safety buses is described in the MUR LAR 05-04, Attachment 1, Sections 6.1.3 and 6.2 (pages 6-1 and 6-2, respectively).

RAI #2

Provide a detailed comparison of the existing ratings with the uprated ratings and the effect of the power uprate on the following equipment:

a. Main generator rating and power factor

b. Isophase bus, and modifications to the cooling system

c. The new main power transformers (include a detailed description of the new transformers)

d. Unit auxiliary / start-up transformers

e. Main generator breaker

FPL Energy Seabrook Response to RAI #2

a. The ratings for the rewound generator are 1373.1 MVA, 25 KV, 60 Hz, and 0.960 power factor, as described in the MUR LAR 05-04, Section 6.1.1 (page 6-1). The ratings for the existing generator are 1350 MVA, 25 KV, 60 Hz, and 0.92 power factor as described in FPL Energy Seabrook SPU LAR 04-03, Attachment 1 Subsection 8.4.16.2 (page 8-66).

b. The isophase bus and the cooling system are not changed for the MUR power uprate. The isophase bus and associated cooling equipment are designed to accept the maximum generator output for the MUR condition. A summary of the isophase bus is provided in the SPU LAR 04-03, Attachment 1 Subsection 8.4.16.2.2 (page 8-69), and referenced in the MUR LAR 05-04 Table 6.1-1, Item 6.2 (Page 6-4). The NRC issued Amendment No. 101 to facility operating license NPF-86 dated February 28, 2005. The Safety Evaluation Report (SER) for Amendment No. 101 Section 3.3.2.2.4 (page 50) described the NRC evaluation and approval of the isophase bus and cooling system.

c. The main power transformers (Generator Step-up (GSU) Transformers) are not changed for the MUR power uprate. The main power transformers maximum design rating is 1380 MVA at 65°C rise. The main power transformers are designed to accept the maximum generator output for the MUR condition. A summary of the evaluation of the main power transformers is provided in the SPU LAR 04-03, Attachment 1 Subsection 8.4.16.2.2 (page 8-68), and referenced in the MUR LAR 05-04 Table 6.1-1, Item 6.2 (Page 6-4). The SER for Amendment No. 101 Section 3.3.2.2.3 (page 50) described the NRC evaluation and approval of the main power transformers.

d. The unit auxiliary / startup transformers are not changed for the MUR power uprate. The unit auxiliary transformers and startup transformers maximum design rating are 40.32 MVA at 65°C. The unit auxiliary / startup transformers are designed to provide the maximum station loads for the MUR condition. A summary of the evaluation of the unit auxiliary / startup transformers was provided in the SPU LAR 04-03, Attachment 1 Subsection 8.4.16.2.2 (page 8-68), and referenced in the MUR LAR 05-04 Table 6.1-1, Item 6.2 (Page 6-4). The SER for Amendment No. 101 Sections 3.3.2.2.5 (page 50) and 3.3.2.2.6 (page 51) described the NRC evaluation and approval of the unit auxiliary / startup transformers.

e. The main generator breaker is not changed for the MUR power uprate. The main generator breaker is rated at 35 kA. The main generator breaker is designed to accept the maximum generator output for the MUR condition. A summary of the evaluation of the main generator breaker was provided in the SPU LAR 04-03, Attachment 1 Subsection 8.4.16.2.2 and Table 8.4.16-10 (pages 8-69 and 8-91, respectively), and referenced in the MUR LAR 05-04 Table 6.1-1, Item 6.2 (Page 6-4). The SER for Amendment No. 101 Sections 3.3.2.2.7 (page 51) described the NRC evaluation and approval of the main generator breaker.

RAI #3

Provide a list of loads affected by the power uprate change. Identify the motor loads before and after the power uprate change.

FPL Energy Seabrook Response to RAI #3

The motor loads were analyzed for conditions that bound the MUR power uprate. All motor loads remain within their design limits. The motor loads are acceptable for the MUR condition. A summary of the evaluation of the motor loads was provided in the SPU LAR 04-03, Attachment 1 Subsection 8.4.16.1 (page 8-63), and referenced in the MUR LAR 05-04 Table 6.1-1, Item 6.1(Page 6-4). The SER for Amendment No. 101 Section 3.3.2.2.8 (page 51) described the NRC evaluation and approval of the motor loads.

RAI #4

Please discuss, in detail, the impact of the proposed power uprate on the plant's ability to cope with, and recover from, a station black out (SBO) event consistent with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36. The SBO coping analysis should address the following topics:

a. Condensate inventory for decay heat removal

b. Class 1E battery capability

c. Compressed air

d. Effects of loss of ventilation

e. Containment isolation

FPL Energy Seabrook Response to RAI #4

The station blackout analysis was performed at an analyzed core power level of 3659 MWt, which bounds the MUR operating conditions. Therefore, the ability to cope with and recover from a station blackout is not changed for the MUR power uprate. A summary of the evaluation of Seabrook Station's ability to cope with and recover from a station blackout was provided in the SPU LAR 04-03, Attachment 1 Subsection 6.3.9 (page 6-253) and referenced in the MUR LAR 05-04 Table 3.1-1, Item 3.31 (Page 3-5). This summary includes a discussion of the evaluation of the:

a. Condensate inventory for heat removal,

b. Class 1E battery capability,

c. Compressed air,

d. Effects of loss of ventilation, and

e. Containment isolation.

The SER for Amendment No. 101 Section 3.3.5 (page 53) described the NRC evaluation and approval of the ability to cope and recover from a station blackout.

RAI #5

Please discuss, in detail, the environmental qualification of electrical equipment that is important to safety to assure this equipment remains functional during and following design basis events. Acceptance criteria are based on 10 CFR 50.49 as it relates to specific requirements regarding the qualification of electrical equipment important to safety that is located in a harsh environment. For reference, specific review criteria are contained in the Standard Review Plan, Section 3.11.

FPL Energy Seabrook Response to RAI #5

The environmental qualification of electrical equipment was performed at an analyzed core power level of 3659 MWt, which bounds the MUR operating conditions. Therefore, the environmental qualification of electrical equipment is not changed for the MUR power uprate. A summary of the evaluation of Environmental Qualification Program is provided in SPU LAR 04-03, Attachment 1 Subsection 9.2 (page 9-5), and referenced in MUR LAR 05-04 Table 5.1-1, Item 5.20 (Page 5-5). The SER for Amendment No. 101 Section 3.3.1 (page 46) described the NRC evaluation and approval of the environmental qualification of electrical equipment.

Letter from ISO-New England
Approving the Seabrook Station MUR Application

Stephen G. Whitley
Senior Vice President & Chief Operating Officer

September 3, 2004

Mr. Mark R. Sorensen
FPL Energy
P.O. Box 14000
Juno Beach, FL 33408

Mr. Fernando DaSilva
FPL Energy, LLC.
8 Woodland Road
Assonet, MA 02702

Subject: FPLE-04-G02

Gentlemen:

ISO New England has determined pursuant to Section 18.4 that implementation of the Participant plan identified in the following application will not have a significant adverse effect on the reliability or operating characteristics of the Participant that submitted the application or upon the system of any other Participant, subject to satisfaction of any conditions identified below with respect thereto:

FPL Energy Seabrook LLC (FPLE) Subordinate Generation 18.4 Application FPLE-04-G02 for increasing the gross electrical megawatt output of Seabrook Station Unit 1, located in Seabrook, New Hampshire (the "Project"), by 23 MW (1295 MW to 1318 MW), as the second phase of two phases that is targeted to be in service during the fall of 2006, as detailed in Mr. Mark Sorensen's August 20, 2004 transmittal to Mr. Stephen Rourke, Chairman - NEPOOL Reliability Committee, which will not have a significant adverse effect upon the reliability or operating characteristics of the NEPOOL system subject to the following conditions:

1. The Project having the net ratings of 1265.4 MW at 0 °F, 20 °F, 50 °F and 90 °F; a gross maximum plant rating of 1318 MW; and a gross reactive capability, under full rated output conditions, of 0 MVAr leading and 375 MVAr lagging.

2. Rewinding the Seabrook generator to increase the generator MVA rating from 1350 MVA to 1373.1 MVA with the generator parameters as specified in the documentation of the analysis of the Phase 2 Project.

3. Replacement of the present Seabrook generator's Alterrex excitation system with a high-initial-response static system with a ceiling of at least 200% and with capability for a power system stabilizer that shall remain inactive until such additional analysis of its control settings demonstrate the acceptability of those settings to provide a benefit to the stability performance of the NEPOOL System.

4. The Seabrook Station Unit 1, with implementation of the Phase 2 Project resulting in 1318 gross MW output or any lesser output, will be required to limit its gross output level in real-time operation such that the net loss of source that results from a contingent Seabrook generator trip is at or below the real-time-based maximum allowable net source loss for the NEPOOL Control Area. Any reductions to the gross output of Seabrook Station Unit 1 to meet this requirement will be required within 30 minutes of being directed to do so by ISO New England.

5. Completion of additional analyses and implementation of any mitigation of significant adverse effect upon the reliability or operating characteristics of the NEPOOL system as a result of the Northeast Reliability Interconnect Project associated with 18.4 Applications BHE-03-T01, BHE-03-T02, CMP-03-T01, CMP-03-T02, and CMP-03-X01.

6. Completion of any additional transmission modifications required for the Phase II Project that may result from the development of the Vermont Yankee Power Uprate, Step 1 & 2, (the "VY Uprate") to the extent required under the Subordinate 18.4 Application Policy. The analysis of the Phase 2 Project included the presently planned characteristics of the proposed VY Uprate and will not require further analysis unless those characteristics change significantly as the result of the VY Uprate removing its existing Subordinate Approval under the Subordinate 18.4 Application Policy.

The above plan is hereby approved for implementation.

Sincerely,

Stephen G. Whitley
Senior Vice President and Chief Operating Officer

cc: 18.4 Application

Application for Withholding
Proprietary Information from Public Disclosure

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March 13, 2006
CAW 06-02

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

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: Caldon Ultrasonics ER-482 Rev.2 "Bounding Uncertainty Analysis for Thermal Power Determination at Seabrook NPP Using the LEFM ✓+ System"
and
Caldon Ultrasonics ER-527 Rev. 2 "LEFM ✓+ Meter Factor Calculation and Accuracy Assessment for Seabrook Nuclear Power Station (Alden Reports No. 2006-009/C0730)"

Gentlemen:

This application for withholding is submitted by Caldon Ultrasonics, NuFlo Measurement Systems ("Caldon") pursuant to the provisions of paragraph (b)(1) of Section 2.390 of the Commission's regulations. It contains trade secrets and/or commercial information proprietary to Caldon and customarily held in confidence.

The proprietary information for which withholding is being requested is identified in the subject submittal. In conformance with 10 CFR Section 2.390, Affidavit CAW-06-02 accompanies this application for withholding setting forth the basis on which the identified proprietary information may be withheld from public disclosure.

Accordingly, it is respectfully requested that the subject information, which is proprietary to Caldon, be withheld from public disclosure in accordance with 10 CFR Section 2.390 of the Commission's regulations.

Correspondence with respect to this application for withholding or the accompanying affidavit should reference CAW-06-02 and should be addressed to the undersigned.

Very truly yours,

CR Hastings

Calvin R. Hastings
General Manager

Enclosures

March 13, 2006
CAW-06-02

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared Calvin R. Hastings, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Caldon Ultrasonics, NuFlo Measurement Systems ("Caldon") and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

CR Hastings

Calvin R. Hastings
General Manager
Caldon Ultrasonics, Nuflo Measurement Systems

Sworn to and subscribed before me

this 13th day of

March, 2006

Joann B. Thomas

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Joann B. Thomas, Notary Public
City of Pittsburgh, Allegheny County
My Commission Expires July 28, 2007
Member, Pennsylvania Association of Notaries

1. I am the General Manager of Caldon Ultrasonics, NuFlo Measurement Systems 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 rulemaking proceedings, and am authorized to apply for its withholding on behalf of Caldon.

2. I am making this Affidavit in conformance with the provisions of 10CFR Section 2.390 of the Commission's regulations and in conjunction with the Caldon application for withholding accompanying this Affidavit.

3. I have personal knowledge of the criteria and procedures utilized by Caldon 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 Caldon.

   (ii) The information is of a type customarily held in confidence by Caldon and not customarily disclosed to the public. Caldon 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 Caldon policy and provides the rational basis required. Furthermore, the information is submitted voluntarily and need not rely on the evaluation of any rational basis.

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 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 Caldon's competitors without license from Caldon 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, and assurance of quality, or licensing a similar product.

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

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

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

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

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

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

(c) Use by our competitor would put Caldon 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 Caldon of a competitive advantage.

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

(f) The Caldon 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 10CFR 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 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 titled Caldon Ultrasonics ER-482 Rev. 2 "Bounding Uncertainty Analysis for Thermal Power Determination at Seabrook NPP Using the LEFM ✓+ System" and Caldon Ultrasonics ER-527 Rev. 2 "LEFM✓+ Meter Factor Calculation and Accuracy Assessment for Seabrook Nuclear Power Station (Alden Reports No. 2006-009/C07300)". The information sought to be withheld is appropriately marked pursuant to 10 CFR § 2.390(b)(1)(i)(A, B) and is applicable ER-482 and ER-527 in their entirety. This information is voluntarily submitted for use by the NRC Staff in their review of the accuracy assessment of the proposed methodology for LEFM CheckPlus Systems used by Seabrook for an MUR UPRATE.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Caldon because it would enhance the ability of competitors to provide similar flow and temperature measurement systems 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 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 Caldon effort and the expenditure of a considerable sum of money.

In order for competitors of Caldon to duplicate this information, similar products would have to be developed, similar technical programs would have to be performed, and a significant manpower effort, having the requisite talent and experience, would have to be expended for developing analytical methods and receiving NRC approval for those methods.

Further the deponent sayeth not.