FPL Energy
Seabrook Station

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SBK-L-08039
Docket No. 50-443

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

Seabrook Station
License Amendment Request 08-01

"Application for Change to the Technical Specification Surveillance Requirements for Nuclear Instrumentation"

In accordance with the provisions of Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), FPL Energy Seabrook, LLC (FPL Energy Seabrook) is submitting License Amendment Request (LAR) 08-01 for an amendment to the Technical Specifications (TS) for Seabrook Station.

The proposed amendment modifies the surveillance requirements (SR) associated with the intermediate range and power range neutron detectors. The change modifies the frequency of the channel calibrations for the intermediate and power range detectors to permit 24 hours to measure neutron detector plateau curves after achieving steady-state operation at rated thermal power. The Enclosure contains FPL Energy Seabrook's evaluation of the proposed amendment and includes a mark-up of the TS page showing the proposed change.

As discussed in the enclosed LAR, the proposed change does not involve a significant hazard consideration pursuant to 10 CFR 50.92. A copy of this letter and the enclosed LAR has been forwarded to the New Hampshire State Liaison Officer pursuant to 10 CFR 50.91(b). FPL Energy Seabrook has determined that LAR 08-01 meets the criteria of 10 CFR 51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement. The Station Operation Review Committee has reviewed this LAR.

A001
NRR

FPL Energy Seabrook requests NRC Staff review and approval of LAR 08-01 with issuance of a license amendment by April 14, 2008 and implementation of the amendment within 5 days.

Should you have any questions regarding this letter, please contact Mr. James M. Peschel, Regulatory Programs Manager, at (603) 773-7194.

Very truly yours,

FPL Energy Seabrook, LLC.

Gene F. St. Pierre
Site Vice President

Enclosure: FPL Energy Seabrook's Evaluation of the Proposed Change

cc: S. J. Collins, NRC Region I Administrator
G. E. Miller, NRC Project Manager, Project Directorate I-2
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FPL Energy
Seabrook Station

AFFIDAVIT

SEABROOK STATION UNIT 1

Facility Operating License NPF-86
Docket No. 50-443

License Amendment Request 08-01
"Application for Change to the Technical Specification Surveillance Requirements for Nuclear Instrumentation"

The following information is enclosed in support of this License Amendment Request:

- **Enclosure** **FPL Energy Seabrook's Evaluation of the Proposed Change**

I, Gene St. Pierre, Site Vice President of FPL Energy Seabrook, LLC hereby affirm that the information and statements contained within this License Amendment Request 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
7th **day of** March, **2008**

Victoria S. Robertson
Notary Public

Gene St. Pierre
Gene St. Pierre
Site Vice President

VICTORIA S. ROBERTSON
MY COMMISSION EXPIRES DEC. 11, 2012
NOTARY PUBLIC
NEW HAMPSHIRE

ENCLOSURE

FPL Energy – Seabrook's Evaluation of the Proposed Change

Subject: License Amendment Request 08-01, "Application for Change to the Technical Specification Surveillance Requirements for Nuclear Instrumentation"

Attachment

Technical Specification Page Markups

1.0 SUMMARY DESCRIPTION

This evaluation supports a request to amend Operating License No. NPF-86 for Seabrook Station. The amendment modifies the surveillance requirements (SR) associated with the intermediate range and power range neutron detectors. The change modifies the frequency of the channel calibrations for the intermediate and power range detectors to permit 24 hours to perform the SR after achieving steady-state operation at rated thermal power.

2.0 DETAILED DESCRIPTION

2.1 Proposed Change

Technical Specification (TS) Table 4.3-1, Reactor Trip System Instrumentation Surveillance Requirements, calls for performing a channel calibration on the Power Range Neutron Flux High Setpoint (Functional Unit 2.a) and Intermediate Range Neutron Flux (Functional Unit 5) at least once per 18 months. These surveillance requirements (SR) are modified by note 5, which states:

> (5) Initial plateau curves shall be measured for each detector. Subsequent plateau curves shall be obtained, evaluated and compared to the initial curves. For the Intermediate Range and Power Range Neutron Flux channels the provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.

This amendment request proposes to revise note 5 as follows:

> (5) Initial plateau curves shall be measured for each detector. Subsequent plateau curves shall be obtained, evaluated and compared to the initial curves. *The plateau curves for the Intermediate Range and Power Range detectors are required to be measured or obtained within 24 hours after attaining steady-state operation at 100% of RATED THERMAL POWER.* For the Intermediate Range and Power Range Neutron Flux channels the provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.

2.2 Condition the Proposed Amendment is Intended to Resolve

The current TS do not provide sufficient time to measure or obtain plateau curves for the intermediate range and power range detectors. The proposed change resolves this condition.

The SR associated with the plateau curves is modified by note 5, which stipulates, in part, that the provisions of Specification 4.0.4 are not applicable for entry into Mode 2 or 1. Specification 4.0.4 requires that entry into a mode or other specified condition in the applicability of a limiting condition for operation (LCO) shall only be made when the SRs associated with the LCO have been met. In the case of the SR for the neutron detector plateau curves, note 5 permits an exception to Specification 4.0.4 because the SR cannot be performed until the plant is in the mode of applicability of the LCO.

Seabrook Station has not converted to the Improved Standard Technical Specifications (NUREG 1431) [Reference 1]. As a result, the Seabrook Station individual SRs do not stipulate the specific time frames and conditions necessary for meeting SRs to allow entry into the mode or condition of applicability without having performed the SR. Consequently, exceptions to Specification 4.0.4 exist in the Seabrook Station TS. The bases for Specification 4.0.4 state that when surveillance requirements become applicable as a consequence of an exception to Specification 4.0.4, a period of 24 hours, unless otherwise stipulated in the individual technical specification, is permitted to allow completion of surveillance testing. However, 24 hours is insufficient time to achieve steady-state full-power operation following a refueling outage and perform neutron detector plateau measurements. As a result, the proposed change allows 24 hours to measure and obtain the detector plateau curves after attaining steady-state operation (stable reactor power level) at 100% power, the condition necessary to perform the SR.

The change is necessary to support replacement of the power range neutron detectors during the April 2008 refueling outage. The need to develop a strategy for periodic replacement of the detectors followed from a root cause evaluation performed in response to the simultaneous failure of both source range neutron detectors. The resulting strategy for the power range detectors is to prevent failure of the power range instruments by replacing the detectors on a 15 year-interval. The currently installed detectors have been in operation since initial plant startup in 1990. Operating with a failed power range instrument is undesirable because of the decrease in redundancy in the nuclear instrumentation (NI) and the increased risk of a plant trip. Consequently, the planned replacement of the power range detectors during the upcoming refueling outage will improve reliability of the power range NI and minimize the likelihood of experiencing a power range detector failure and the accompanying risks during the upcoming operating cycles.

3.0 TECHNICAL EVALUATION

3.1 Description of the Nuclear Instrumentation System

The reactor trip system automatically shuts down the reactor whenever the limits of safe operation are approached. The NI is a component of the reactor trip system. The primary function of the NI is to protect the reactor by monitoring the neutron flux and generating appropriate trips and alarms for various phases of reactor operating and shutdown conditions.

The NI system uses information from three separate types of instrumentation channels to provide three discrete protection levels. Each range of instrumentation (source, intermediate, and power) provides the necessary overpower reactor trip protection required during operation in that range. Various types of neutron detectors, with appropriate solid-state electronic circuitry, are used to monitor the neutron flux leakage from a shutdown condition to 120 percent of full power. The lowest range ("source" range) covers six decades of neutron flux. The next range ("intermediate" range) covers eight decades, and the highest range of instrumentation ("power" range) covers approximately two decades of the total instrumentation range. The power range high neutron flux trip circuit trips the reactor when two of the four power range channels exceed the trip setpoint. The intermediate range high neutron flux trip circuit provides protection during reactor startup by tripping the reactor when one out of the two intermediate range channels exceeds the trip setpoint. The source range high neutron flux trip circuit trips the reactor when one of the two source range channels exceeds the trip setpoint, providing protection during reactor startup and plant shutdown. [Reference 2]

3.2 Evaluation

The SRs in TS Table 4.3-1 for a channel calibration on the Power Range Neutron Flux High Setpoint (Functional Unit 2.a) and Intermediate Range Neutron Flux (Functional Unit 5) are modified by note 4, which excludes the neutron detectors from the channel calibration. At the same time, note 5 to the SRs establishes a requirement to obtain the neutron detector plateau curves within a specific time period. The proposed change retains the SR for obtaining the detector plateau curves, but it modifies the frequency to provide a reasonable time to complete the SR after establishing the conditions necessary to perform the SR.

The purpose of the detector plateau curve is to provide initial baseline data for long term trending of detector health and aging characteristics and a measure of detector fill gas purity. Subsequent plateau curves are taken under full power, steady-state conditions to provide data for comparison to the initial curve. Significant changes in the curves over time are indicative of detector aging, fill

gas contamination, or leakage. This data is considered in determining when to replace an aging detector. Westinghouse recommends performing the intermediate and power range detector plateau curves at 100% power to provide consistency for obtaining and comparing data for long term trending. When consistently obtained under this condition, the curves may be obtained anytime during the operating cycle with meaningful data that may be compared to the initial baseline curve. [Reference 3]

During the spring 2008 refueling outage, FPL Energy Seabrook plans to replace two power range neutron detectors. Replacing the detectors on a 15-year interval is a corrective action to improve equipment reliability from a root cause evaluation that addressed failures of neutron detectors. Following replacement of the detectors, the TS require measuring the initial plateau curves for each detector. The power range and intermediate range nuclear instrumentation is required to be operable upon entry into mode 2; however, the SR for measuring the detector plateau curves contains an exception to TS 4.0.4, which permits 24 hours following entry into mode 2 to complete the SR. Nonetheless, because the detector plateau curves must be measured during steady-state operation at 100% power, 24 hours following entry into mode 2 does not provide sufficient time to achieve full power operation and complete the SR.

During a normal plant startup (not following a refueling), the duration for achieving full power operation after entry into mode 2 is approximately 22 hours. This interval is extended for a startup following a refueling outage. During startup of the plant following the 2008 refueling outage, the scheduled duration for attaining full power operation is approximately 116 hours. The reasons for the length of time to reach full power following a refueling include limitations on the rate of power increase, data collection, and adjustments to instrumentation. Fuel conditioning considerations limit the rate of power increase to 3% per hour between 20% and 80%, 2% per hour from 80% to 90%, and 1% per hour between 90% and 100%. Further, the plant is stabilized for periods ranging from 4 hours to 20 hours at various power levels during power ascension to collect data, perform flux mapping, and adjust the NIs and reactor coolant system temperature instruments.

The proposed change retains the 24-hour limit for completing the SR for the neutron detector plateau curves, but it more reasonably bases the 24-hour time limit on when plant conditions are established for performing the SR. This change is consistent with the intent of the 24-hour limit applied in conditions for which an exception to TS 4.0.4 is permitted. In addition, it is consistent with the application of the 24-hour allowance applied in other instances in the Seabrook Station TS, where attaining a specific condition within the mode of applicability is necessary before performing a SR. For example, TS 3.7.1.2, Auxiliary Feedwater System (AFW), which requires operable AFW pumps upon entering mode 3, contains an exception to TS 4.0.4 that permits testing of the turbine-driven AFW pump when secondary steam supply pressure is greater than 500

psig. In this example, the 24-hour time limit is based on the time that secondary steam pressure exceeds 500 psig, the condition necessary to perform the test, rather than the time of entry into mode 3.

When a SR permits an exception to TS 4.0.4, the equipment is considered operable during the 24-hour period allowed to complete the SR provided all other necessary surveillance testing has been completed satisfactorily and the equipment is not otherwise known to be inoperable. Following replacement of the neutron detectors, various tests and surveillance requirements provide reasonable assurance that the detectors are operable prior to measuring the detector plateau curves at full power. New detectors are functionally tested at the factory, and pre-installation electrical checks are performed to confirm that no degradation from the factory condition has occurred. As required by the TS, a channel calibration is performed on the nuclear instrumentation channels. During power ascension, channel checks are performed on the power range instruments at least once per 12 hours. In addition, during operation above 15% power, a daily comparison of reactor power determined by calorimetric and the power range instruments ensures the power range instruments indicate within 2% of the calorimetric-based power. Successful completion of these tests and surveillance requirements provides reasonable assurance that the instrumentation is functioning properly prior to obtaining the detector plateau curves.

The current TS, by providing an exception to TS 4.0.4, recognizes that the plant must be in the mode of applicability to complete the SR associated with the neutron detector plateau curves. However, the TS fails to recognize the specific condition – steady state operation at full power – required to perform the SR. The proposed change addresses this deficiency. A period of 24 hours from the time of establishing the conditions necessary to perform the SR provides sufficient time to allow power ascension testing to be conducted in a controlled and orderly manner. At the same time, this limit prevents the potential for full-power operation for extended periods without having completed the SR.

The Improved Standard TS (NUREG-1431) contain a similar SR (SR 3.3.1.11) for a channel calibration on the source range, intermediate range, and power range instrumentation. This SR also excludes the neutron detectors from the channel calibration. However, different from the Seabrook Station TS, no requirement exists in NUREG-1431 as a SR to measure and obtain detector plateau curves. Rather, the bases for TS 3.3.1.11 discuss that a channel calibration for the source range and intermediate range neutron detectors consists of obtaining the detector plateau or preamp discriminator curves, evaluating those curves, and comparing the curves to the manufacturer's data. Because no SR exists for measuring and obtaining neutron detector curves, NUREG-1431 does not specify a time limit for obtaining the curves. The bases do not discuss plateau curves with regard to the power range neutron detectors. The proposed amendment is, therefore, more restrictive than NUREG-1431 since it retains the SR for measuring and obtaining neutron detector curves and specifies a time limit for performing the activity.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements / Criteria

- 10 CFR 50.36, Technical Specifications, establishes the criteria for the content of the technical specifications.

The proposed change does not remove any SR from the TS; rather, the proposed amendment modifies the time permitted to complete a SR. 10 CFR 50.36 stipulates that the TS must include SRs, but the regulation does not specify a requirement for the TS to contain the frequency for performing the SRs. Therefore, the proposed change is consistent with 10 CFR 50.36.

- Appendix A to Part 50--General Design Criteria for Nuclear Power Plants

Criterion 20--Protection system functions. The protection system shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

Criterion 21--Protection system reliability and testability. The protection system shall be designed for high functional reliability and inservice testability commensurate with the safety functions to be performed. Redundancy and independence designed into the protection system shall be sufficient to assure that (1) no single failure results in loss of the protection function and (2) removal from service of any component or channel does not result in loss of the required minimum redundancy unless the acceptable reliability of operation of the protection system can be otherwise demonstrated. The protection system shall be designed to permit periodic testing of its functioning when the reactor is in operation, including a capability to test channels independently to determine failures and losses of redundancy that may have occurred.

Criterion 29--Protection against anticipated operational occurrences. The protection and reactivity control systems shall be designed to assure an extremely high probability of accomplishing their safety functions in the event of anticipated operational occurrences.

The proposed amendment does not affect the function, testability, or reliability of the NI or the reactor protection system. Further, the change has no impact on the ability of these systems to perform their intended safety functions in response to

an anticipated operational occurrence. Therefore, the protection systems continue to meet the applicable General Design Criteria of 10 CFR 50, Appendix A.

4.2 Precedent

None

4.3 Significant Hazards Consideration

No Significant Hazards Consideration

In accordance with 10 CFR 50.92, FPL Energy Seabrook has concluded that the proposed changes do not involve a significant hazards consideration (SHC). The basis for the conclusion that the proposed changes do not involve a SHC is as follows:

1. *The proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.*

   The probability or consequences of accidents previously evaluated in the UFSAR are unaffected by this proposed change. The duration for obtaining neutron detector plateau curves is not an initiator of any accident previously analyzed. There is no change to any equipment response or accident scenario, and this change results in no additional challenges to fission product barrier integrity. The proposed change does not alter the design, configuration, operation, or function of any plant system, structure, or component.

   The requested amendment modifies the frequency of the channel calibrations for the intermediate and power range detectors by permitting 24 hours to perform the SR (measure and obtain neutron detector plateau curves) after achieving steady-state operation at rated thermal power. This change has no impact on the consequences or probability of any accident previously evaluated. The proposed change does not impact the ability of the nuclear instrumentation, reactor protection system, or any other system, structure, or component to perform its intended function to mitigate the consequences of an accident within acceptable limits. The proposed change does not affect the source term, containment isolation, or radiological assumptions used in analyzing the consequences of accidents previously evaluated. Further, the proposed change neither increases the type or amount of radioactivity released offsite nor increases public or occupational radiation exposures. Therefore, the proposed change

does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. *The proposed changes do not create the possibility of a new or different kind of accident from any previously evaluated.*

   No new accident scenarios, failure mechanisms, or limiting single failures are introduced as a result of the proposed change. The proposed change does not challenge the performance or integrity of any safety-related system. The proposed change neither installs nor removes any plant equipment, and it does not alter the design, physical configuration, or operation of any plant structure, system, or component. No physical changes are being made to the plant, so no new accident causal mechanisms are being introduced. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. *The proposed changes do not involve a significant reduction in the margin of safety.*

   The margin of safety associated with the acceptance criteria of any accident is unchanged. The proposed change will have no affect on the operability or performance of the safety-related systems and components. The proposed change does not alter the design, configuration, operation, or function of any plant system, structure, or component. The ability of any operable structure, system, or component to perform its designated safety function is unaffected by this change. With this change, the TS will continue to require operable nuclear instrumentation. The proposed change does not create an initiating event, increase the likelihood of an initiating event, affect the ability to mitigate an event, affect containment performance, or affect operator actions in response to an event. Therefore, the margin of safety as defined in the TS is not reduced and the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, FPL Energy Seabrook concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92 (c), and accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusions

In conclusion, based on the considerations discussed previously, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be

conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22 (c) (9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement of environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. NUREG-1431, Standard Technical Specifications Westinghouse Plants, Revision 3.

2. Seabrook Station UFSAR, section 7.2.

3. Technical Manual for WL-24155, Power Range Detector Assembly Uncompensated Ionization Chamber (UIC), NCTR 82-38 Revision 03, January 2008.

Attachment

Proposed Technical Specification Change (mark-up)

Refer to the attached markup of the proposed changes to the Technical Specifications. The attached markup reflects the currently issued version of the Technical Specifications. At the time of submittal, the Technical Specifications were revised through Amendment No. 116. Pending Technical Specifications or Technical Specification changes issued subsequent to this submittal are not reflected in the enclosed markup.

Listed below are the license amendment requests that are awaiting NRC approval and may impact the currently issued version of the Technical Specifications affected by this LAR.

LAR	Title	FPL Energy Seabrook Letter	Date Submitted
None			

The following Technical Specifications are included in the attached markup:

Technical Specification	Title	Page
Table 4.3-1	Reactor Trip System Instrumentation Surveillance Requirements	3/4 3-12

TABLE 4.3-1 (Continued)

TABLE NOTATIONS

*Only if the Reactor Trip System breakers happen to be closed and the Control Rod Drive System is capable of rod withdrawal.

**Below P-6 (Intermediate Range Neutron Flux Interlock) Setpoint.

***Below P-10 (Low Setpoint Power Range Neutron Flux Interlock) Setpoint.

(1) If not performed in previous 92 days.

(2) Comparison of calorimetric to excore power indication above 15% of RATED THERMAL POWER. Adjust excore channel gains consistent with calorimetric power if absolute difference is greater than 2%. The provisions of Specification 4.0.4 are not applicable to entry into MODE 2 or 1.

(3) Single point comparison of incore to excore AXIAL FLUX DIFFERENCE above 50% of RATED THERMAL POWER. Recalibrate if the absolute difference is greater than or equal to 3%. The provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1. For the purposes of this surveillance requirement, monthly shall mean at least once per 31 EFPD.

(4) Neutron detectors may be excluded from CHANNEL CALIBRATION.

(5) Initial plateau curves shall be measured for each detector. Subsequent plateau curves shall be obtained, evaluated and compared to the initial curves. For the Intermediate Range and Power Range Neutron Flux channels the provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.

(6) Incore - Excore Calibration, above 75% of RATED THERMAL POWER. The provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1. For the purposes of this surveillance requirement, quarterly shall mean at least once per 92 EFPD.

(7) Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.

(8) If not performed in previous 31 days.

(9) Surveillance in MODES 3*, 4*, and 5* shall also include verification that permissives P-6 and P-10 are in their required state for existing plant conditions by observation of the permissive annunciator window.

(10) Setpoint verification is not applicable.

(11) The TRIP ACTUATING DEVICE OPERATIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers.

The plateau curves for the Intermediate Range and Power Range detectors are required to be measured or obtained within 24 hours after attaining steady-state operation at 100% of RATED THERMAL POWER.