December 1, 2004

MEMORANDUM TO: Darrell J. Roberts, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

FROM: Victor Nerses, Senior Project Manager, Section 2 ***/RA/***
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: SEABROOK STATION, UNIT NO. 1, DRAFT REQUEST FOR ADDITIONAL INFORMATION (TAC NO. MC1097)

The enclosed raft request for additional information (RAI) was transmitted by facsimile on December 1, 2004, to Mr. Michael O'Keefe of FPL Energy, LLC(the licensee). This draft RAI was transmitted to facilitate the technical review being conducted by the Nuclear Regulatory Commission (NRC) and to support a conference call with the licensee in order to clarify certain items.

This RAI is related to the licensee's amendment request for Seabrook Station, Unit No. 1 (SS) dated October 6, 2003. The proposed amendment would revise SS's Technical Specifications for full implementation of an alternate source term.

Review of the RAI would allow the licensee to determine and agree upon a schedule to respond to the RAI. This memorandum and the attachment do not convey or represent an NRC staff position regarding the licensee's request.

Docket No. 50-443

Enclosure: Draft Request for Additional Information

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NAME	VNerses	RDennig
DATE	12/01/04	12/01/04

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DRAFT REQUEST FOR ADDITIONAL INFORMATION

RELATED TO ALTERNATE SOURCE TERM AMENDMENT REQUEST

SEABROOK STATION, UNIT NO. 1

DOCKET NO. 50-443

By letter dated October 6, 2003, FPL Energy Seabrook, LLC (licensee) submitted an amendment request for Seabrook Station, Unit No. 1 (SS). The proposed amendment would revise SS's Technical Specifications for full implementation of an alternate source term (AST).

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information the licensee provided that supports the proposed amendment and requests the following additional information to clarify the submittal. If you believe that the requested information has been previously docketed, please provide a specific reference to the document where the information may be found.

1. Table 11.1-1 of the Seabrook Updated Final Safety Analysis Report (UFSAR) was utilized to obtain a distribution of the ^{131}I - ^{135}I isotope in primary coolant. This distribution was based upon 1% fuel defects. The licensee utilized this distribution and the inhalation thyroid dose conversion factors from Federal Guidance Report No. (FGR) 11 to calculate the activity level of isotopes ^{131}I - ^{135}I at an overall primary coolant activity level of 1 *Ci/g of dose equivalent ^{131}I. The licensee utilized this activity level to calculate the dose consequences of Main Steam Line Break (MSLB) and Steam Generator Tube Rupture (SGTR) accidents at 1 *Ci/g and at 60 *Ci/g of dose equivalent ^{131}I. Total Effective Dose Equivalent (TEDE) doses were calculated using EDE dose conversion factors from FGR 11. The results met the acceptance criteria of Regulatory Guide 1.183. As long as actual reactor coolant activity levels remain below 1 *Ci/g and 60 *Ci/g, when calculated using the inhalation thyroid conversion factors of FGR 11, acceptable doses would result if a MSLB or SGTR accident occurred and similar conditions existed as were identified in the submittal. The staff considers that use of the thyroid dose conversion factors appear acceptable but that the licensee's proposed definition of dose equivalent ^{131}I should be changed. The licensee should consider whether they agree to the following definition change (note the words in bold):

> DOSE EQUIVALENT 1-131 shall be that concentration of 1-131 (micro curie per gram) which alone would produce the same **TEDE** dose as the quantity and isotopic mixture of 1-131, 1-132, 1-133, 1-134, and 1-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed **under Inhalation** in Federal Guidance Report No. 11 (FGR 11), "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion and Ingestion."

2. The staff considers that the licensee has not provided adequate justification for their assumption that only 1.15% of the ECCS leakage is available for flashing. The licensee has provided an analysis with 10% presumed to flash that the staff finds as acceptable. Since there is a lack of adequate justification for the 1.15% the licensee should withdraw their 1.15% flashing analysis, and instead, the analysis based upon 10% flashing should be utilized for this

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licensing action.

3. Please provide how the iodine partition coefficients of Table 2.1-4 were obtained?

4. The licensee assumed that the rupture of a letdown line does not result in a reactor trip. Is this an appropriate assumption since an iodine spike has occurred and primary coolant activity is at 1 *Ci/g of dose equivalent ^{131}I? Would It be reasonable to assume that the reactor will be shutdown in order to control primary side activity levels of dose equivalent ^{131}I rather than to remain operating? Under such a condition, the release would occur over a duration substantially less than 30 days. Therefore, if you consider the NRC staff's assumptions reasonable, does the rupture of the letdown line require re-analysis? (Note that Items 5 and 6 below also address the analysis of the letdown line rupture.)

5. The licensee assumed that no loss of offsite power with the rupture of the letdown line. What is the basis for not assuming a loss of offsite power for this accident when all the other accidents have assumed a loss of offsite power?

6. The licensee assumed that a letdown line rupture resulted in a release from the secondary side via the condenser. The licensee indicated that this assumption was consistent with the pre-trip treatment of a secondary side release for a SGTR. A review of the SGTR analysis in the UFSAR did not address releases for this accident occurring from the condenser. The FPLES analysis used a decontamination factor of 100 for radioiodine and particulate for the release from the condenser. If the release path were the condenser, it would seem that the partition factor for iodine should be as noted in Section 2.2-7 of NUREG-0133. This value is 0.15. On the other hand, if a loss of offsite power is assumed, the partition factor should be consistent with the treatment of the secondary side releases from the Main Steam Safety Valves and Atmospheric Dump Valves of the intact steam generators during a SGTR or a MSLB accident. Based upon the above and the response to Item 5, it would appear that the letdown line analysis would need to be revised.

7. The acceptance criterion used by the licensee for consequences of the release of the contents of the offgas system is inconsistent with BTP 11-5 of SRP 11.3 that clearly indicates that the criteria associated with the contents of a waste gas processing system is limited to Part 20. This BTP was issued July 1981. On the other hand, Section 5.6.1 of NUREG-0133, issued October 1978, specifically calls out the limit for a PWR with charcoal as being a small fraction of Part 100 provided that the gross radioactivity measured prior to entering the adsorption system is limited by a release rate alarm setpoint with indication in the main control room. This monitor provides reasonable assurance that the potential consequence of an accident does not result in a total body dose which exceeds a small fraction of Part 100. Does Seabrook have such a release rate alarm setpoint? What was the criterion in the Seabrook Radiological Effluent Technical Specifications for a release from this pathway?

8. The analysis of the liquid waste system failure may not be necessary. Refer to the Seabrook Operating License SER and also to Section 4.4 of NUREG-0133. The latter specifies the manner of treatment of tanks outside containment which contain radioactive liquid and are not surrounded by liners, dikes or walls capable of holding the tank contents and do not have tank overflow and drains connected to the liquid radwaste system. Indoor tanks are excluded in the analysis unless (based upon the design basis fission product release leakage from the fuel results in concentration in the tank that would exceed the limits of 10 CFR Part 20, Appendix B,

Table 2, Column 2) the leaked fluid is capable of affecting the nearest existing or known future water supply in an unrestricted area. The licensee should indicate how the liquid waste system failure at SS is not excluded from analysis by NUREG-0133.