October 3, 2003

Mr. Mark E. Warner, Site Vice President
c/o James M. Peschel
Seabrook Station
FPL Energy Seabrook, LLC
PO Box 300
Seabrook, NH 03874

SUBJECT: SEABROOK STATION, UNIT NO. 1 - ISSUANCE OF AMENDMENT RE: CHANGES TO TECHNICAL SPECIFICATIONS ASSOCIATED WITH CORE OFFLOAD DECAY TIME (TAC NO. MB6612)

Dear Mr. Warner:

The U.S. Nuclear Regulatory Commission (NRC or the Commission) has issued the enclosed Amendment No. 95 to Facility Operating License No. NPF-86 for the Seabrook Station, Unit No. 1, in response to the application dated October 11, 2002, filed by North Atlantic Energy Service Corporation (NAESCO) as the then licensee for Seabrook Station, Unit No. 1. On November 1, 2002, the NRC approved the transfer of the license for Seabrook Station, to the extent held by NAESCO, and certain co-owners of the facility, on whose behalf NAESCO was also acting, to FPL Energy Seabrook, LLC (FPLE Seabrook). By letter dated December 20, 2002, FPLE Seabrook requested that the NRC continue to review and act upon all requests before the Commission that had been submitted by NAESCO. FPLE Seabrook subsequently supplemented the application by letters dated July 16, 2003, July 17, 2003, August 18, 2003, August 25, 2003, September 9, 2003, and September 15, 2003,

The amendment revises Technical Specification 3/4.9.3, "Decay Time," reducing the minimum time irradiated fuel must decay after occupying part of a critical core prior to movement in the reactor vessel from 100 to 80 hours.

A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

/RA/

Victor Nerses, Senior Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosures: 1. Amendment No. 95 to NPF-86
2. Safety Evaluation

cc w/encls: See next page

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FPL ENERGY SEABROOK, LLC, ET AL.*

DOCKET NO. 50-443

SEABROOK STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 95
License No. NPF-86

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment filed by FPL Energy Seabrook, LLC, et al. (the licensee), dated October 11, 2002, as supplemented July 16, 2003, July 17, 2003, August 18, 2003, August 25, 2003, September 9, 2003 and September 15, 2003, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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*FPL Energy Seabrook, LLC (FPLE Seabrook), is authorized to act as agent for the: Hudson Light & Power Department, Massachusetts Municipal Wholesale Electric Company, and Taunton Municipal Light Plant and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-86 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 95, and the Environmental Protection Plan contained in Appendix B are incorporated into Facility License No. NPF-86. FPLE Seabrook shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: October 3, 2003

ATTACHMENT TO LICENSE AMENDMENT NO. 95

FACILITY OPERATING LICENSE NO. NPF-86

DOCKET NO. 50-443

Replace the following page of the Appendix A, Technical Specifications, with the attached revised page as indicated. The revised page is identified by amendment number and contains marginal lines indicating the area of change.

Remove	Insert
3/4 9-3	3/4 9-3

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 95 TO FACILITY OPERATING LICENSE NO. NPF-86

FPL ENERGY SEABROOK, LLC

SEABROOK STATION, UNIT NO. 1

DOCKET NO. 50-443

1.0 INTRODUCTION

By letter dated October 11, 2002 the North Atlantic Energy Service Corporation (NAESCO), as the then licensee for Seabrook Station, Unit No.1 (Seabrook or the licencee), submitted information and requested a Technical Specification (TS) change to reduce the minimum time irradiated fuel must decay prior to movement in the reactor vessel. On November 1, 2002, the U.S. Nuclear Regulatory Commission (NRC or the Commission) approved the transfer of the license for Seabrook, to the extent held by NAESCO, and certain co-owners of the facility on whose behalf NAESCO was also acting, to FPL Energy Seabrook, LLC (FPLE Seabrook or licensee). By letter dated December 20, 2002, FPLE Seabrook requested that the NRC continue to review and act upon all requests before the Commission that had been submitted by NAESCO. Additional information was submitted in the licensee's supplemental letters dated July 16, 2003, July 17, 2003, August 18, 2003, August 25, 2003, September 9, 2003, and September 15, 2003. The supplemental letters clarified the application, and did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on November 26, 2002 (67 FR 70767).

The licensee requested approval to revise TS 3/4.9.3, "Decay Time," to reduce the minimum time irradiated fuel must decay after occupying part of a critical core prior to movement in the reactor vessel from 100 to 80 hours.

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 100, Section 11(a)(1) requires that the licensee's facility be sited at a location such that the licensee is able to maintain the dose to an individual standing at the exclusion area boundary (EAB) for two hours immediately following the onset of a postulated fission product release below 25 rem whole body and below 300 rem to the thyroid from iodine. Additionally, 10 CFR 100.11(a)(2) requires that the licensee's facility be sited at a location such that the licensee is able to maintain the dose to an individual below 25 rem whole body and below 300 rem to the thyroid from iodine, given that the individual is located at the outer boundary of the low population zone (LPZ) for the duration of exposure to the radioactive cloud.

General Design Criterion (GDC) 19 “Control Room” states, in part:

> A control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss of coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident.

GDC 61 specifies, in part, that fuel storage systems shall be designed with residual heat removal capability having reliability and testability that reflects the safety importance of decay heat removal, and with the capability to prevent significant reduction in fuel coolant inventory under accident conditions. The spent fuel pool (SFP) cooling system is described in Chapter 9 of the Seabrook Updated Final Safety and Analysis Report (UFSAR). Section 9.1.3 provides design basis information for the SFP, including temperature limits for both normal (planned) and abnormal (emergency) refueling scenarios. The system description, along with the applicable design basis information, included in Chapter 9 provides the criteria needed to evaluate the impact that the increased SFP heat load has on the ability of the SFP to comply with the plant design basis and GDC 61.

In meeting the criterion, the licensee should demonstrate that sufficient SFP cooling capacity and make-up sources are available during planned and unplanned offload conditions, and time is available prior to pool boiling to supply makeup during unplanned offload conditions.

The staff used the following guidance in its evaluation of the licensee’s proposed change:

- Safety Guide 1.25, “Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors”

- Standard Review Plan (SRP) Section 15.7.4, “Radiological Consequences of Fuel Handling Accidents”

- SRP Section 6.4, “Control Room Habitability System”

- Regulatory Guide 1.194, “Atmospheric Relative Concentrations for Control Room Radiological Habitability Assessments at Nuclear Power Plants”

- The model TS contained in the improved standard technical specifications, NUREG-1431, Revision 2, “Standard Technical Specifications, Westinghouse Plants”

3.0 <u>TECHNICAL EVALUATION</u>

Reducing the minimum decay time required before moving irradiated fuel from the reactor vessel to the SFP will increase the short-term decay heat load in the SFP. The licensee evaluated the impact of the proposed amendment on the SFP cooling system and on postulated exposures to the control room and offsite. The reduced minimum decay time is based on the fuel handling accident (FHA). The licensee then used the assumed reduced decay time as an input assumption for determining the adequacy of the SFP cooling system to accommodate the reduced decay time.

3.1 SFP Cooling System Description

The Seabrook SFP cooling system is designed to assure adequate cooling to stored fuel, assuming a single failure of an active component coincident with a loss of offsite power. The SFP cooling system consists of two seismically-qualified cooling trains, each equipped with one 1100 gpm SFP cooling pump and one counter-flow heat exchanger. The system also contains a third SFP cooling pump that can be cross-tied to either train, which provides additional cooling capability for heat loads associated with full core offloads.

The normal operation of the SFP cooling system is defined as operation with two spent fuel cooling trains operable (two pumps and two heat exchangers), one primary containment component cooling water loop supplying both heat exchangers, and the Atlantic Ocean as the ultimate heat sink. The heat exchangers are provided with primary component cooling water flow (PCCW) at a flow rate of 3000 gpm during normal operation. A seismic Category I normal makeup and a backup supply capable of being connected to an alternate seismic Category I source is provided. To ensure adequate electrical separation of the emergency electrical buses, electrical power is manually connected to the third pump, which is capable of being powered by either the A or B emergency buses.

The Atlantic Ocean serves as the normal supply of cooling water and as the ultimate heat sink for Seabrook. In the unlikely event that the main circulating water tunnel is unavailable, a mechanical draft evaporative cooling tower serves as the ultimate heat sink. The cooling tower is designed to supply cooling water to the primary component cooling water and diesel heat exchangers while sustaining a loss of offsite power and any single active failure. When the reactor is defueled, and primary component cooling water would otherwise not be required, the cooling tower can supply the alternate SFP cooling heat exchanger for removal of decay heat.

A normal refueling at Seabrook consists of a full core discharge to the SFP. The acceptance criterion is to maintain SFP temperature below 141 °F with a single failure of an active component. The licensee currently conducts cycle-specific analyses to determine the rate of core offload, and thus the rate of heat source addition to the SFP, to assure they do not exceed the acceptance criterion.

3.2 SFP Heat Up Analysis

The licensee evaluated the following fuel offload cases for the impact of decrease in decay time on the SFP heat up analysis, and the resulting pool temperatures.

3.2.1 Normal Offload (Full Core Offload starting at 80 hours post-shutdown)

The licensee analyzed a full core offload scenario that begins 80 hours after shutdown, with the PCCW inlet temperature assumed to be 65 °F, and a transfer rate of six fuel assemblies per hour. Using this transfer rate, the full core could be unloaded in approximately 32 hours. Therefore, the corresponding time after shutdown in which the full core could be offloaded to the SFP is 112 hours. The licensee has determined that in order to maintain the SFP bulk water temperature below the design value of 141 °F (when the service water is at 65 °F), any full core offloads must be completed in greater than 118.5 hours after shutdown. As a result, the licensee must continue administrative controls to ensure full core offloads are not accomplished in less than 118.5 hours unless supported by cycle-specific analyses confirming that the SFP bulk water temperature will not exceed its design limit of 141 °F. The licensee, in its amendment request, has committed to establishing administrative controls to provide guidance for full core offload completion in less than 118.5 hours to maintain SFP bulk water temperature at or below 140 °F. The licensee, in its supplemental letter dated August 25, 2003, has reaffirmed its commitment to continue to perform cycle-specific analyses described above before each refueling outage as currently outlined in Section 9.1.3 of the Seabrook UFSAR.

The decay heat generation rate for the spent fuel was calculated using Branch Technical Position ASB 9-2 as prescribed in SRP Section 9.1.3. The total decay heat load to the SFP was calculated to be 47.79 MBtu/Hr for the bounding case in which the SFP is filled to its capacity of 1232 assemblies. With the service water temperature of 65 °F, two SFP cooling trains and one PCCW train operable, and an assumed time of 32 hours to achieve full core offload, a maximum SFP bulk water temperature of 142 °F is reached 110 hours after shutdown. This is above the design temperature of 141 °F. In order to assure that bulk SFP water temperature is maintained below its design limit when the service water temperature is at 65 °F, the refueling offloads that results in the complete offloading of the core must not be completed in less than 118.5 hours.

Since the SFP maximum temperature varies proportionally with the decay heat load, and the decay heat load depends on operational factors that are licensee-controlled, such as planned offload start times and fuel assembly offload rates, the licensee can maintain the SFP temperature below its design temperature limit of 141 °F. However, cycle-specific analyses are required to demonstrate that the planned offload will not result in temperatures exceeding the design limit. Seabrook UFSAR Section 9.1.3 currently contains a requirement that the licensee conducts cycle-specific analyses before each refueling outage to ensure SFP temperatures will remain below 141 °F during full core offload. Given that the licensee did not provide a bounding analysis that met the design basis SFP bulk water temperature, the licensee will continue to perform cycle-specific analyses that show that the SFP cooling will remain within its design limits before a specific core may be offloaded. In addition, the licensee will establish administrative controls to include guidance on acceptable conditions for maintaining 140 °F SFP temperatures when the cooling tower is used as the ultimate heat sink.

The licensee stated that during summer months minor temperature excursions result in time frames where the maximum ocean temperature exceeds the 65 °F design threshold for the ultimate heat sink, and that system analyses have been performed to permit continued plant operation up to a maximum ocean temperature of 68.5 °F. Refueling outages at Seabrook are typically scheduled during the spring and fall time periods. The licensee, in its August 25, 2003 letter, has agreed to continue to perform cycle-specific analyses in which it will evaluate the performance of the SFP cooling system to remove the decay heat associated with the previously discharged fuel assemblies and the full core offload, to ensure design basis SFP temperature limits are not violated. In addition, the licensee has committed to establish administrative controls to control decay times prior to the movement of irradiated fuel assemblies from the reactor based on service water temperature. The design basis capability of the SFP cooling system along with procedural controls provides assurance that the SFP will operate within its design limits.

The staff has reviewed the licensee's analysis of the Normal Offload Condition. The assumption of a decay time of 80 hours has been incorporated into the analysis. Since the bounding analysis, submitted by the licensee, was unable to demonstrate that the design basis SFP bulk water temperature design limit would be met, the licensee has agreed to continue to perform cycle-specific analyses prior to each refueling. Provided the cycle-specific analyses, as discussed in UFSAR Section 9.1.13, shows that the design basis capability of the SFP cooling system is adequate to maintain the pool below its design temperature limit of 141 °F, the licensee may proceed with core offload. Given this consideration, the NRC staff finds the SFP cooling capacity to be adequate for this fuel offload case.

3.2.2 Abnormal Offload (Full Core Offload starting at 150 hours post-shutdown)

The SRP abnormal offload case is defined as a full core offload 150 hours after shutdown, plus one refueling load at equilibrium conditions after 36 days decay. The licensee has calculated the heat load that would be associated with the abnormal offload case using the specific recommendations in SRP 9.1.3, which assumes a 150 hour offload time, and does not require the assumption of an active failure. The abnormal heat load based on the SRP scenario (45.37 Mbtu/Hr) was compared to the heat load associated with a normal full core offload at 80 hours after a full cycle operation (47.79 Mbtu/Hr), and found to be less limiting. Therefore, the maximum temperature for the SRP abnormal case would be bounded by the normal full core offload case.

The staff finds that the licensee has adequately addressed the abnormal Offload Condition. However, since the licensee's evaluation is based on 150 hour decay for the abnormal offload condition, cycle-specific analysis is required for abnormal offloads that take place prior to 150 hours post-shutdown to assure SFP temperature limits are not violated. The licensee, in its August 25, 2003, supplement, stated that it will perform cycle-specific analysis in which it will evaluate the performance of the SFP cooling system to remove the decay heat associated with the previously discharged fuel assemblies and the full core offload, to ensure design-basis SFP temperature limits are not violated. In addition, the licensee will establish administrative controls to control decay times prior to the movement of irradiated fuel assemblies from the reactor based on service water temperature. Based on the design basis capability of the SFP cooling system, along with procedural controls, assurance is provided that the SFP will operate within its design limits. Therefore, the NRC staff finds the licensee has an adequate methodology and the SFP cooling capacity is acceptable for the unplanned full core offload conditions to maintain the bulk SFP water temperature below the design limit.

3.3 Time-to-Boil and Makeup Water

In the unlikely event there is a complete loss of cooling, the SFP bulk water temperature will begin to rise and will eventually reach the boiling temperature. The licensee has calculated, for the normal offload conditions, the time required for the pool to heat up from the design temperature of 140 °F to the boiling temperature of 212 °F to be 3.28 hours. The corresponding maximum boil-off rate, based on the maximum heat load, was calculated to be approximately 100 gpm.

The licensee stated that there is adequate time to align and supply sufficient water, from a variety of sources, to the SFP prior to the time to boil. Makeup sources include: the refueling water storage tank, demineralized water, and the Chemical and Volume Control System. All of these sources are capable of providing makeup flows in excess of 100 gpm, and are readily available and accessible. Based on the above, the staff finds the time-to-boil analysis acceptable.

3.4 Structural Integrity of the SFP

The licensee stated that the structural analysis for the SFP does not require a change. The maximum bulk SFP water temperature remains below 141 °F. The American Concrete Institute 349 Code limits the concrete temperature to (1) 150 °F for normal operation or any long-term period, 200 °F for local areas, (2) 350 °F for accident or any other short-term period, and (3) 650 °F from steam or water jets in the event of a pipe failure.

After reviewing the SFP heatup analysis for Seabrook, the staff concludes that the SFP cooling system capability is adequate for the increased heat load associated with the proposed reduction in core offload time; therefore, temperatures used for structural analysis are unaffected.

3.5 FHA Inside the Open Containment

The licensee revised the design basis analysis of the FHA inside containment during fuel movement, which begins as soon as 80 hours after reactor shutdown. The revised analysis also used the thyroid dose conversion factors taken from International Commission on Radiological Protection Publication 30 (ICRP-30). The staff finds the use of ICRP-30 dose conversion factors to be acceptable as noted in NRC Regulatory Issue Summary 2001-19, “Deficiencies in the Documentation of Design Basis Radiological Analyses Submitted in Conjunction with License Amendment Requests,” issued October 18, 2001.

The staff determined that the licensee generally followed guidance in Safety Guide 1.25 and SRP 15.7.4 in its development of the radiological consequences analysis of the FHA inside the open containment. The licensee followed its design basis as documented in the Seabrook UFSAR with the exception of the decay time, dose conversion factors, and control room ventilation system operation. Leaving this equipment hatch open during irradiated fuel movement causes a different release pathway than was previously analyzed. The dispersion in the environment is important in the analysis of the control room operator dose because of the close distances between the release points and the intake points into the control room. The staff’s review of the licensee’s atmospheric relative concentration (X/Q) values used for the dose analysis are discussed in Section 3.5.1.

The licensee’s analysis assumed that 80 hours after reactor shutdown, an irradiated fuel assembly with the highest rated gaseous fission product inventory is dropped within the flooded vessel during fuel movement and releases the gap activity from all the fuel rods in that assembly. The refueling pool water retains a portion of the iodine released, while all the noble gases are released to the containment atmosphere. The entire amount of radioactivity released from the water is released to the outside environment as a short duration puff release (a shorter duration than the standard 2 hours). The staff finds that the licensee used appropriately conservative assumptions in the offsite dose analysis. The licensee’s assumptions for the FHA inside the open containment are given in Table 1.

SRP 15.7.4 acceptance criteria for offsite consequences of an FHA are that the doses at the EAB and LPZ are well within (defined as 25% or less) the 10 CFR 100.11 exposure guidelines of 25 rem whole body and 300 rem thyroid. Even though the licensee only reported the EAB dose, this bounds the LPZ dose for this analysis. Since the release duration is so short (within 2 hours), the only difference in analysis input assumptions between the EAB and LPZ dose is the X/Q value. Because the LPZ X/Q value used is less than that for the EAB, the LPZ dose results would be lower than that calculated for the EAB. The licensee's EAB dose results are less than the SRP 15.7.4 acceptance criteria. The LPZ dose results are bounded by the EAB dose results.

The licensee also analyzed the dose to the control room operators as a result of a design basis FHA in the open containment. The licensee used several assumptions that are changed from the previous licensing basis as documented in the Seabrook UFSAR. The analysis was revised to eliminate the initial period of control room filter bypass, to delay the initiation of control room recirculation filters for one hour and to use revised control room flow rates based on the worst case one fan operating condition. The licensee developed composite control room X/Q values to account for the radiation release being assumed to enter the control room by two pathways - unfiltered in-leakage through the control room envelope boundary and control room ventilation system intake. The composite X/Q values weighted the base X/Q values for each receptor by the intake rate for that receptor, then summed the product over both receptors. The staff does not object to this formulation, but did not explicitly determine acceptability of the resulting composite value. Rather, the staff reviewed the base control room X/Q values for acceptability. With the exception of the control room unfiltered in-leakage assumption of 1 cfm, the revised control room ventilation system assumptions are acceptable to the staff because they generally follow guidance in SRP 6.4. The licensee's analysis with the 1 cfm unfiltered in-leakage assumption gives control room dose results which are within the GDC-19 dose limits of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident. SRP 6.4 further gives the dose guidelines as 5 rem whole body, 30 rem thyroid and 30 rem beta skin dose.

The staff performed an independent analysis of the FHA inside the open containment, using the licensee's values and the regulatory guidance stated above in Section 2.0. The staff's analysis showed good agreement with the licensee's EAB, LPZ, and control room dose values. Table 2 gives the licensee's analysis results.

3.5.1 Atmospheric Relative Concentration Estimates

The licensee used previously calculated licensing basis X/Q values listed in the Seabrook UFSAR. Estimates for the dose assessment described above are for the dual control room air intakes, assumed unfiltered in-leakage through the control room vestibule door, and the EAB.

The licensee calculated weighted X/Q values for the dual control room air intakes, assuming that both channels would perform continuously and simultaneously during the course of an accident to individually provide one-half of the needed air, and that air from at least one of the two intakes could be assumed to be uncontaminated. Therefore, for each time period, the licensee divided the higher of the two control room air intake X/Q values by a factor of two. Present NRC guidance in SRP 6.4 permits such a reduction in the X/Q values for dual intakes when the intakes are adequately separated to provide a low contamination intake and designed to meet single failure, seismic, flood, tornado, and hurricane criteria, as appropriate. The licensee will need to recalculate the weighted X/Q and dose values if the ratio of any of the input flow rates for the dual intakes and/or unfiltered in-leakage changes with respect to the others.

The licensee used the previously calculated licensing basis X/Q value as listed in the Seabrook UFSAR for the EAB dose calculation. The EAB X/Q value is independent of the containment personnel hatch being open and is also independent of the dual control room air intakes and the control room unfiltered in-leakage rate assumptions. Given this consideration, the staff finds the licensee's use of the previously calculated X/Q value to be acceptable.

3.6 FHA Within the SFP

The licensee performed an analysis of the FHA in the SFP that occurs at the revised decay time of 80 hours. With exception of the control room X/Q values and release duration, all other analysis assumptions were as described above for the FHA in the open containment. The control room X/Q values and release duration were as described in the Seabrook UFSAR. The staff performed an independent analysis and was able to confirm the licensee's results. The licensee's analysis assumptions are listed in Table 1 and its results are listed in Table 2.

SRP 15.7.4 acceptance criteria for offsite consequences of an FHA are that the doses at the EAB and LPZ are well within (defined as 25% or less) the 10 CFR 100.11 exposure guidelines SRP 15.7.4 acceptance criteria. The licensee's control room dose results are within the GDC-19 dose limits of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident.

3.7 Summary

The staff concludes, based on the considerations discussed above, that there is adequate cooling water flow to the SFP heat exchangers to remove the decay heat generated by the spent fuel in the pool during the proposed normal and abnormal offload conditions. The staff also finds that the licensee has sufficient time, prior to the onset of boiling, to align makeup water to the pool and provide makeup at a rate in excess of the boil-off rate.

As described above, the staff reviewed the assumptions, inputs, and methods used by the licensee to assess the radiological impacts of allowing a shorter decay time before movement of irradiated fuel at Seabrook. The staff finds that the licensee used analysis methods and assumptions consistent with the regulatory requirements and guidance identified in the Regulatory Evaluation. The staff compared the doses estimated by the licensee to the applicable criteria identified in the Regulatory Evaluation. The staff finds that there is reasonable assurance that the licensee's estimates of the EAB, LPZ, and control room doses will continue to comply with these criteria. Therefore, because the postulated offsite doses from the FHA remain within 10 CFR Part 100 limits, the control room doses remain within GDC-19 limits, and the SFP system remains in compliance with GDC 61, the staff finds that the reduction in minimum decay time prior to movement of irradiated fuel in the reactor vessel from 100 hours to 80 hours is acceptable.

FPLE Seabrook considered the dose to control room operators due to these FHAs. In their analyses, the licensee assumed that the control room unfiltered inleakage was 1 cfm, as currently in their design basis. At the time of the submittal, FPLE Seabrook had not performed integrated leakage testing to confirm this leakage value. On June 12, 2003, the staff issued Generic Letter (GL) 2003-01, "Control Room Habitability." This generic letter identifies staff concerns regarding the reliability of current surveillance testing to identify and quantify control room inleakage, and requests licensees to confirm the most limiting unfiltered inleakage into their control room envelope. FPLE Seabrook is required by GL 2003-01 to respond to the information request within 180 days of its issue. However, this amendment was submitted prior to the issuance of GL 2003-01. The staff has determined that there is reasonable assurance that the Seabrook control room will be habitable during a DBA FHA with the revised minimum decay time, and this amendment may be approved prior to the staff's review of the licensee's response to the generic letter. The staff bases this determination on: (1) the relative magnitude of the release to the environment and the infiltration assumed in the licensee's analyses, (2) favorable site X/Q values, and (3) the initial and periodic testing and other actions already taken by the licensee. The staff's approval of this amendment does not relieve FPLE Seabrook of addressing the information requests in GL 2003-01 and does not imply that the staff would necessarily find the analysis in this amendment acceptable as a response to information request 1(a) in GL 2003-01.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Hampshire and Massachusetts State officials were notified of the proposed issuance of the amendment. The State officials had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (67 FR 70767). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (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.

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Table 1

Fuel Handling Accident Analysis Assumptions

Reactor Power, MWt	3654
Radial Peaking Factor	1.65
Fuel Decay Period, hours	80
Number of Assemblies in Core	193
Number of Fuel Rods in an Assembly	264
Number of Damaged Rods	264
Fraction of Gap Activity Released from Damaged Rods	1.0
Fraction of Core Inventory in Gap	
Kr-85	0.3
Iodines and noble gases other than Kr-85	0.1
Pool Decontamination Factor, Effective	100
Iodine Species in Fuel Gap, %	
Elemental	99.75
Organic	0.25
Release Duration, hours	
From Containment	Instantaneous Puff
From Spent Fuel Pool	2
Atmospheric Dispersion, sec/m^3	
EAB	Seabrook UFSAR Table 15B-4
LPZ	Seabrook UFSAR Table 15B-5
Control Room	See Table 3
Control Room Volume, ft^3	2.46E+5
Control Room Emergency Flow, cfm	600
Control Room Emergency Recirculation Rate, cfm	500
Control Room Filter Efficiency, %	
Elemental	95
Organic	95
Aerosol	99
Control Room Unfiltered Inleakage, cfm	1

Table 2

Fuel Handling Accident Analysis Dose Results

FHA in Open Containment

80 hours decay time	EAB Dose (rem)		LPZ Dose (rem)		Control Room Dose (rem)		
	Whole Body	Thyroid	Whole Body	Thyroid	Whole Body	Skin	Thyroid
Licensee Results	2.2	69.6	NC*	NC	0.31	1.5	7.38
Acceptance Criteria	6	75	6	75	5	30	30

FHA in Spent Fuel Pool

80 hours decay time	EAB Dose (rem)		LPZ Dose (rem)		Control Room Dose (rem)		
	Whole Body	Thyroid	Whole Body	Thyroid	Whole Body	Skin	Thyroid
Licensee Results	0.17	4.4	0.08	2.1	0.11	1.5	0.55
Acceptance Criteria	6	75	6	75	5	30	30

*NC, not calculated

Table 3

Seabrook Relative Concentration (X/Q) Values

Postulated Release from Personnel Hatch to:

Time (hr)	Control Room Vestibule Door X/Q (sec/m^3)	Control Room Dual Air Intakes* X/Q (sec/m^3)
0 - 1	4.08 E-03	7.85 E-04
1- 2	3.18 E-03	5.70 E-04
2 - 8	2.04 E-03	3.48 E-04
8 - 24	1.44 E-03	2.34 E-04
24 - 96	9.78 E-04	1.53 E-04
96 - 720	7.51 E-04	1.00 E-04

* All values for the control room dual air intakes are for the intake with the higher X/Q value, reduced by a factor of 2 as described above.