FPL Energy
Seabrook Station

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August 7, 2007

Docket No. 50-443
SBK-L-07139

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

Seabrook Station
Response to Request for Additional Information
License Amendment Request 06-03
"Application for Amendment to the Technical Specifications for Miscellaneous Changes"

References:

1. FPL Energy Seabrook, LLC letter SBK-L-06059, License Amendment Request 06-03, Application for Amendment to the Technical Specifications for Miscellaneous Changes, August 7, 2006.

2. NRC letter to FPL Energy Seabrook, LLC, Request for Additional Information Regarding License Amendment Request for Miscellaneous Technical Specification Changes (TAC NO. MD 2791), November 22, 2006.

3. FPL Energy Seabrook, LLC letter SBK-L-06243, Response to Request for Additional Information Regarding License Amendment Request 06-03, Application for Amendment to the Technical Specifications for Miscellaneous Changes, January 22, 2007.

4. FPL Energy Seabrook, LLC letter SBK-L-07087, Revised No Significant Hazards Consideration Determination for License Amendment Request 06-03, Application for Amendment to the Technical Specifications for Miscellaneous Changes, May 14, 2007.

5. NRC facsimile to FPL Energy Seabrook, LLC, Request for Additional Information Regarding Proposed License Amendment, May 3, 2007.

By letter dated August 7, 2006, (Reference 1) FPL Energy Seabrook, LLC (FPL Energy Seabrook) submitted License Amendment Request (LAR) 06-03, Application for Amendment to

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the Technical Specifications for Miscellaneous Changes. In Reference 2, the NRC requested additional information in order to complete its evaluation of the LAR, and Reference 3 provided the requested information. Subsequent discussions with the NRC staff regarding the submittal in Reference 3 identified a need to revise the No Significant Hazards Consideration Determination (NSHCD) for this LAR. Reference 4 transmitted a revision to the NSHCD previously submitted in Reference 3.

In Reference 5, the NRC further requested additional information in order to complete its evaluation of the LAR. Enclosed is the FPL Energy Seabrook response to the NRC Request for Additional Information (RAI) dated May 3, 2007.

The information in this submittal does not alter the conclusion discussed in Reference 4 that the proposed changes do not involve a significant hazard consideration pursuant to 10 CFR 50.92. A copy of this letter has been forwarded to the New Hampshire State Liaison Officer pursuant to 10 CFR 50.91(b).

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

Very truly yours,

FPL Energy Seabrook, LLC

for Gene St. Pierre

Gene St. Pierre
Site Vice President

Enclosure

cc: S. J. Collins, NRC Region I Administrator
G. E. Miller, NRC Project Manager, Project Directorate I-2
W. J. Raymond, NRC Resident Inspector

Mr. Christopher M. Pope, Director Homeland Security and Emergency Management
New Hampshire Department of Safety
Division of Homeland Security and Emergency Management
Bureau of Emergency Management
33 Hazen Drive
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OATH AND AFFIRMATION

I, Michael W. Kiley, Plant Manager of FPL Energy Seabrook, LLC, hereby affirm that the information and statements contained within this response to the request for additional information regarding License Amendment Request 06-03, "Application for Amendment to the Technical Specifications for Miscellaneous Changes," 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 August, 2007

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

Victoria Susan Robertson
Notary Public

Michael W. Kiley
Plant Manager

Enclosure to SBK-L-07139

FPL Energy Seabrook Response to Request for Additional Information

Response to Request for Additional Information
License Amendment Request 06-03
"Application for Amendment to the Technical Specifications for Miscellaneous Changes"

By letter dated August 7, 2006, FPL Energy Seabrook, LLC (FPL Energy Seabrook) submitted license amendment request (LAR) 06-03. The LAR requested to revise various sections of the Seabrook Station, Unit No. 1 (Seabrook) Technical Specifications (TSs). This letter relates specifically to the changes proposed for TS 3.3.9, "Remote Shutdown System," and TS 3.7.4, "Service Water System/Ultimate Heat Sink." The Nuclear Regulatory Commission (NRC) staff has reviewed the submittal and has determined that the following additional information is needed to complete its review with respect to the aforementioned TS sections.

NRC Question

1) In your submittal, you stated that:

> "To enhance plant reliability, a design change (DCR 90-032) was implemented in 1991 to replace the pneumatic actuator installed on these valves with a gear operated manual actuator. Additionally, the design change upgraded the downstream branch header remote/manual isolation valves MS-V-393 and MS-V-394 for use as the GDC 57 containment isolation valves. MS-V-393 arid MS-V-394 replaced MS-V-127 and MS-V-18 as the GDC 57 containment isolation valves." (Excerpt from letter dated August 7, 2006)

> "The containment isolation boundary was relocated to the downstream valves, encompassing approximately 23 feet of piping, which was upgraded from ANS Safety Class 3 to ANS Safety Class 2 as part of the design change." (Excerpt from letter dated January 22, 2007)

The NRC staff requests additional information about valves MS-V-393 and MS-V-394. Specifically, do these air operated valves satisfy the minimum design requirements of ANSI N271-1976 "Containment Isolation Provisions for Fluid Systems' as endorsed by NRC Regulatory Guide 1.141? If the valves do not satisfy the minimum design requirements, provide a description of the deviation from the guidelines and a justification for the deviation.

FPL Energy Seabrook Response

FPL Energy Seabrook believes that valves 1-MS-V-393 and 1-MS-V-394 satisfy the minimum design requirements of ANSI N271-1976, "Containment Isolation Provisions for Fluid Systems." Compliance with the specific applicable requirements of ANSI N271-1976 is discussed below.

4.0 Design Requirements

4.2 General Requirements

4.2.1 As a minimum, containment isolation provisions inside the containment shall be designed to withstand the maximum containment temperature and, non-concurrently, the containment pressure resulting from the structural integrity test and the appropriate combinations of design conditions.

This item is not applicable. Valves 1-MS-V-393 and 1-MS-V-394 are located outside of containment.

4.2.2. All power-operated isolation valves shall be capable of remote manual actuation from the main control room.

Valves 1-MS-V-393 and 1-MS-V-394 are capable of being actuated from the control room.

4.2.3. All power-operated isolation valves shall have provisions in the control room for indication of the status of the valve showing open and closed positions. Position indication shall be from a direct acting source, e.g., limit switch. A failure of an indication circuit shall not cause a failure of the actuation circuit. Single channel indication is sufficient for each valve. All electric power-operated isolation valves shall have provisions in the control room for indication of the availability of power at the line side of the motor starter, e.g., position indicating lights energized from control power transformer. Sealed closed manual isolation valves are under administrative controls and do not require position indication in the control room for valve status.

Main control board position indication is provided for valves 1-MS-V-393 and 1-MS-V-394. Position indication is provided via valve limit switches. Failure of the indication circuit will not result in a failure of the actuation circuit. These valves are air-operated valves.

4.2.4. Isolation valve closure shall be completed when an isolation signal is received and the valve shall not be opened until the signal is removed and deliberate operator action is taken (reset switch). This is to prevent the valve from returning to the pre-accident condition automatically when the isolation signal is removed.

This item is not applicable. Valves 1-MS-V-393 and 1-MS-V-394 do not receive an automatic isolation signal.

4.2.5. Diversity in means of actuation of isolation valves in series should be considered to preclude common mode failure.

This item is not applicable. Valves 1-MS-V-393 and 1-MS-V-394 utilize a closed system inside containment as one of the two barriers and are not in series with other containment isolation valves.

4.4 Containment Isolation Barrier Design

4.4.1 Valve Location. Specific requirements for the number and the location of isolation valves are given in Section 3, Design Criteria.

Each supply line utilizes a closed system inside containment and a single isolation valve outside containment as the isolation barriers. Valve location has been addressed in response to previous RAIs dated November 22, 2006 (response dated January 22, 2007).

4.4.2 Method of Valve Actuation. Containment isolation valves shall be provided with actuation features appropriate to the valve type and required closure time. Power-operated isolation valves shall have one operator which should have two methods of actuation, a primary and secondary mode except as below. For power-operated isolation valves which automatically operate upon receipt of a containment isolation signal, the automatic initiating signal shall be the primary mode and the secondary mode shall be a remote manual initiation from the main control room. It shall not be possible for remote manual operation to override the automatic isolation signal until the sequence of automatic events following an isolation signal is completed. It shall not be possible for the operator to override the containment isolation signal such that all containment isolation valves can be returned to their normal (pre-accident) condition with a single action. The design of the override shall necessitate a deliberate, premeditated action on the part of the operator for each isolation valve (e.g., key locked switch or manual "hold-open" with return to automatic closure).

For power-operated isolation valves which do not receive a containment isolation signal, the primary mode shall be a remote manual initiation signal from the main control room. Those valves outside the containment should have a local secondary mode of operation, e.g., hand-wheel. Administrative controls should be provided for the local secondary mode of operation to ensure proper positioning of the valve (either open or closed) during this mode of operation. Those valves inside containment need not have a secondary mode of operation.

Air-opened isolation valves should have a direct acting or reverse acting spring actuator to move the valve; upon air failure the valve shall move to the position of greater safety, either open or closed.

Manual and simple check valves have only one mode of actuation. In locating valves which may require local manual operation, consideration should be given to accessibility

when manual operation is required and to possible radiation levels resulting from postulated accidents.

Valves 1-MS-V-393 and 1-MS-V-394 do not receive an automatic containment isolation signal. If isolation is required, the valves may be remotely actuated from the main control board or the remote safe shutdown panel and can be locally closed using the valve handwheel. The valves are air-operated valves that fail open via a spring actuator to ensure the availability of the turbine driven emergency feedwater pump.

4.4.3 Valve Position. The position of an isolation valve for normal and shutdown plant operating conditions depends on the fluid system requirements. The post-accident position depends on the requirements of the fluid system following an accident. If the fluid system is required for an engineered safety feature or is engineered safety feature related, the isolation valve may remain open or be opened. If the fluid system is not required for an engineered safety feature or engineered safety feature related system, the isolation valve shall be automatically closed if opened.

Valves 1-MS-V-393 and 1-MS-V-394 perform the Engineered Safety Features (ESF) related function of providing the steam supply to the turbine driven emergency feedwater pump. These valves do not receive an automatic closure signal and will normally be open in the post-accident condition.

4.4.4 Valve Closure Time. The objective in establishing valve closure times should be to limit the release of radioactivity from the containment. Valve closure times normally provided by standard commercial valve operators are adequate except for certain fluid systems. In determining valve closure time, consideration shall be given to fluid system requirements (e.g. water hammer) and the effect of closure time on valve reliability, as well as containment isolation requirements. The requirements given below are for containment isolation.

In general, power-operated valves 3-1/2 inches to 12 inches in diameter should be closed at least within a time determined by dividing the nominal valve diameter by 12 inches per minute. (As an example, a 12-inch diameter valve would be required to close within one minute, a six-inch valve within 30 seconds.) Valves three inches and less should generally close within 15 seconds. All valves larger than 12 inches in diameter should close within one minute unless an accident radiation dose calculation is performed to show under accident conditions that the longer closure times do not result in a significant increase in off-site dose.

Shorter valve closure times may be required for purge, vent, or other valves which may be open during plant operation and which provide an open path from the containment atmosphere to the environment outside the containment. Closure time of these valves shall be based on the requirements for accident radiation dose, and emergency core cooling effectiveness.

Other special cases may also require valve closure times less than specified above. The time delay in 4.4.5 below shall be considered in selecting valve closure time.

Valves 1-MS-V-393 and 1-MS-V-394 are 3 inch valves with a maximum closure time of 15 seconds. No minimum valve closure time is specified for these steam supply valves.

4.4.5 Sequence of Actuation. A containment isolation signal initiates closing of isolation valves isolated immediately following an accident. There is generally no particular sequence of actuation for isolation valve closure; however, on loss of off-site a-c power, the emergency diesel generators may have to be started prior to actuation of valves with a-c operators. This condition, closing times and possible adverse transient conditions unique to isolating a given fluid system, should be considered in determining whether a particular sequence of valve actuation is required.

This item is not applicable. Valves 1-MS-V-393 and 1-MS-V-394 are air operated valves that do not receive an automatic isolation signal.

4.4.6 Signals for Valve Closure. Diversity in the actuation parameters sensed should be considered.

This item is not applicable. Valves 1-MS-V-393 and 1-MS-V-394 do not receive an automatic isolation signal.

4.4.7 System Redundancy. Redundancy shall be considered in the electrical as well as the mechanical design (see 3.2). Mechanical redundancy shall be provided by the requirement for two isolation barriers. When actuation of two power-operated isolation valves in series is required, electrical redundancy shall be provided by supplying power from independent power sources. Engineered safety feature or engineered safety feature related systems may have different requirements. The power shall be supplied from a Class 1E source and be either a-c or d-c depending on the system under consideration. American National Standard Criteria for Class 1E Electrical Systems for Nuclear Power Generating Stations, N41.12-1975 (IEEE 308-1974) gives guidance on the design of electrical systems.

Valves 1-MS-V-393 and 1-MS-V-394 are air operated valves providing an ESF related function. Mechanical redundancy is provided by the closed system inside containment. Since each line has a single isolation valve located outside of containment, electrical redundancy is not required.

4.4.8 Closed Systems. General Design Criterion 57 specifies requirements for lines that penetrate the containment structure and connect to a closed system inside containment other than the reactor coolant pressure boundary. If a closed system is to be considered an isolation barrier, it shall meet the applicable requirements for containment isolation barrier design given in this standard (see 4.5, 4.6, and Section 5, Testing). Closed systems may have branch lines which run outside the missile protection as long as the

branch lines have isolation valves and the combination of the valves inside the containment and outside the containment meet the requirements of General Design Criteria 56 and 57. In addition closed systems within the containment shall be designed to handle the added internal pressure caused by the heating of the system fluid from the temperature rise of the containment atmosphere in the event of an occurrence requiring containment isolation.

Valves 1-MS-V-393 and 1-MS-V-394 are located outside of the containment. The closed system inside containment is not affected by this change and continues to satisfy the requirements of GDC 57.

4.4.8 Safety Class. Containment isolation barriers shall be assigned to either Safety Class 1 or 2 in accordance with American National Standards ANSI/ANS-51.1-1983 for PWRs [2] and ANSI/ANS.52.1-1983 for BWRs [3]. Containment isolation barriers shall be at least Safety Class 2, since Safety Class 2 applies to the reactor containment, including those barriers used to effect isolation of the reactor containment atmosphere from the outside environment.

Valves 1-MS-V-393 and 1-MS-V-394 and the associated piping are designed as Safety Class 2. These valves are not associated with the reactor coolant pressure boundary.

4.7 Isolation Valve Design

4.7.1 Valve Types. Isolation valves may be gate, globe, butterfly, diaphragm, check (simple check valves are acceptable only inside containment), ball, plug, and relief valves, depending upon the fluid system requirements. In addition, the valve shall have closure and leakage characteristics that meet the requirements for containment isolation in this standard.

Valves 1-MS-V-393 and 1-MS-V-394 are Masoneilan Model 41411-control valves incorporating a globe-balanced plug, pilot operated control valve specifically designed to handle severe service conditions (i.e. high-pressure drops and extremely high temperature conditions in high-pressure steam applications). The valves conform to the requirements of ANSI B16.104 (FCI 70-2) for Class V leakage criteria. This limits leakage to a maximum value of 0.0005 cubic centimeters per minute, per inch port diameter per PSI differential. In this case, maximum leakage is approximately 3.2 cc/min.

4.7.2 Valve Leakage. The objective shall be to limit valve leakage to as low as reasonably attainable. The basic requirement for total valve leakage shall be to meet the acceptance criterion for Type C tests of 10 CFR 50, Appendix J [6].

The valves conform to the requirements of ANSI B16.104 (FCI 70-2) for Class V leakage criteria. This limits leakage to a maximum value of 0.0005 cubic centimeters per minute, per inch port diameter per PSI differential. In this case,

maximum leakage is approximately 3.2 cc/min. This leakage rate meets the criteria specified in ANSI B16.104.

4.7.4 Relief Valves. When relief valves discharge into the containment and also serve as isolation valves, the discharge side of the valve shall be designed to withstand and be tested at the containment design pressure.

This item is not applicable. Valves 1-MS-V-393 and 1-MS-V-394 are not relief valves.

4.12 Determination of Isolation Requirements for Remote Manual Controlled Systems. Remote manual valves may be provided on engineered safety feature or engineered safety feature related systems in order to maintain containment or preserve system function in the event of a leak or line break in such systems. Provisions shall be made to allow the main control room operator to know when to isolate the affected line.

An analysis of the consequences of a leak or line break in these systems shall be made in order to determine how fast the operator shall isolate the line. The results of this analysis shall be used to determine the provisions needed to alert the operator that the line requires isolation. The provisions which indicate the requirement for isolation may include devices which measure parameters such as flow, temperature, pressure, noise, radiation, and sump water level outside containment.

Valves 1-MS-V-393 and 1-MS-V-394 are remote manual valves to ensure the ESF related function of providing the steam supply to the turbine driven emergency feedwater pump. In the event of a steam generator tube rupture (SGTR), the valve associated with the affected generator will be closed in accordance with the requirements of Emergency Operating Procedure E-3, Steam Generator Tube Rupture, Step 3. The radiological analysis associated with the SGTR event assumes that an Atmospheric Steam Dump Valve remains stuck open for 20 minutes following an attempted isolation, also at Step 3 of E-3. Isolation in accordance with this procedure ensures that the analyzed radiological consequences remain bounding.

4.14 Piping Between Isolation Barriers or Piping Which Forms Part of Isolation Barriers. The piping between isolation barriers or the piping which forms part of isolation barriers shall meet the requirements of 3.7 and applicable requirements for isolation barriers. This piping shall be protected to the same requirements as isolation barriers and be the same safety class as the isolation barriers.

EFW turbine steam supply piping up to and including valves MS-V393/V394 and drain piping is a pressure retaining portion of primary containment and is thereby designated ANS safety class 2, in accordance with ANSI N18.2a-1975. This piping is designed as Seismic Category I and is designed to withstand the containment design temperature and internal pressure and to withstand the post-LOCA environment. This piping meets the requirements for physical protection.

The significant hazards consideration provided in the May 14, 2007 letter is not affected by the information provided in this submittal.