Nuclear Operating Company

South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

ABWR

April 8, 2010
U7-C-STP-NRC-100049

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

South Texas Project
Units 3 and 4
Docket No. 52-001
Response to Request for Additional Information

Reference:
1. Letter, Mark McBurnett to Document Control Desk, "Application to Amend the Design Certification Rule for the U.S. Advanced Boiling Water Reactor (ABWR)," dated June 30, 2009, U7-C-STP-NRC-090070 (ML092040048).
2. Letter, Mark McBurnett to Document Control Desk, "Response to Request for Additional Information," dated March 3, 2010, U7-C-STP-NRC-100056 (ML100640162) .

This letter provides the response to Request for Additional Information (RAI) Letter Number 11 related to the application to amend the ABWR DCD Part 2, Tier 2, Section 14.2 (Reference 1). This submittal completes the response to this RAI letter. Additionally, the response to RAI 07.07-3 submitted in Reference 2 is revised.

The attachments to this letter provide the following RAI responses:

07.07-3 (Revised) 14.02-1

Changes will be incorporated into the next update of the ABWR DCD Amendment application after review by the NRC Staff.

There are no commitments in this letter.

If you have any questions, please contact me at (361) 972-7136, or Bill Mookhoek at (361) 972-7274.

D050
NRO

STI 32618352

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 4/8/10

Scott Head
Manager, Regulatory Affairs
South Texas Project Units 3 & 4

fjp

Attachments:

1. Question 07.07-3 (Revised)
2. Question 14.02-1

cc: w/o attachment except*
(paper copy)

Director, Office of New Reactors
U. S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, Texas 76011-8064

Kathy C. Perkins, RN, MBA
Assistant Commissioner
Division for Regulatory Services
Texas Department of State Health Services
P. O. Box 149347
Austin, Texas 78714-9347

Alice Hamilton Rogers, P.E.
Inspection Unit Manager
Texas Department of State Health Services
P. O. Box 149347
Austin, Texas 78714-9347

C. M. Canady
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, TX 78704

*Steven P. Frantz, Esquire
A. H. Gutterman, Esquire
Morgan, Lewis & Bockius LLP
1111 Pennsylvania Ave. NW
Washington D.C. 20004

* Paul Kallan
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852

(electronic copy)

*George F. Wunder
* Paul Kallan
Loren R. Plisco
U. S. Nuclear Regulatory Commission

Steve Winn
Joseph Kiwak
Eli Smith
Nuclear Innovation North America

Jon C. Wood, Esquire
Cox Smith Matthews

Richard Peña
Kevin Pollo
L. D. Blaylock
CPS Energy

RAI 07.07-3

QUESTION

10 CFR 52.47(b)(1) requires that a DC application contain "... *proposed inspections, tests, analyses, and acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a facility that incorporates the design certification has been constructed and will be operated in conformity with the design certification, the provisions of the Atomic Energy Act, and the commission's rule and regulations...*"

In the application to amend the Design Certification for the US ABWR, the applicant should provide the ITAAC used to demonstrate that the I&C included in the AFI system does not adversely affect the plant safety systems and is adequately isolated from the said safety systems.

REVISED RESPONSE:

The AFI system is a manually-operated, non-safety related system. All of the instrumentation for the AFI system is for operator information only. There are no automated control functions associated with the instrumentation for this system. As noted in the response to RAI 03.02.02-1, the safety classification of the instrumentation and piping for the AFI system is the same as that for the existing instrumentation to which it is connected. Those requirements are identified in a mark-up to Table 3.2-1, which is included with that response. The associated ITAAC for the AFI System instrumentation has been provided in the DCD amendment application markup, which is attached to the response to RAI 14.02-1 (See Tier 1 Table 2.11.24, Item 12). The ITAAC for verification that the AFI instrumentation piping meets the quality requirements identified in Tier 2 Table 3.2-1 is provided in Tier 1, Section 3.3, Table 3.3 titled "Piping Design". The ITAAC for verification that adequate physical separation or electrical isolation exists between Class 1E divisions and non-Class 1E equipment is provided in Tier 1, Section 3.4, Table 3.4 titled "Instrumentation and Control". Consequently, there is no possibility that the AFI system instrumentation can adversely affect the plant safety systems.

DCD amendment application changes required as a result of this response are included with the response to the revision to RAI 07.07-1 and with the response to RAI 14.02-1 as noted above.

RAI 14.02-1

QUESTION

Your application to amend the design certification rule for the U.S. ABWR included the addition of a new alternate feedwater injection (AFI) system as described in DCD Tier 2 Section 9.5.14. In addition, Tier 2 Section 19S4.4 lists the AFI system as a key design feature for assuring core cooling following the impact of a large, commercial aircraft. In accordance with 10 CFR 52.47(b)(1), please provide the proposed inspections, tests, analyses, and acceptance criteria (ITAAC) for the AFI system that are necessary and sufficient to provide reasonable assurance that, if the ITAAC are met, a facility that incorporates this amended design certification has been constructed and will be operated in conformity with the design certification and NRC regulations. The NRC staff notes that DCD Tier 2 Section 14.2.12.1.78 provides for an AFI System Preoperational Test with a number of general test methods and acceptance criteria (e.g., flow test, NPSH test, I&C tests, etc). The staff believes that these test methods and acceptance criteria could be used to develop AFI system ITAAC. ITAAC may also be needed to ensure assumptions that the applicant made in its aircraft impact assessment are validated during construction.

RESPONSE:

An ITAAC for the AFI system is provided in the markup of Tier 1 to the ABWR DCD below. All changes to the DCD amendment are shown with gray shading. Note that NEI 07-13, Rev. 8, which is referenced in ITAAC Items 7 through 9, has not yet been released. However, it is expected that the NEI 07-13 requirements on intervening structures invoked in this ITAAC will be unchanged from those currently specified in released Rev 7.

2.11.24 Alternate Feedwater Injection System

Design Description

The alternate feedwater injection system (AFI) is a non-safety-related system that provides makeup water to the reactor vessel in the event that all normal and emergency core cooling systems are unavailable. The system consists of a pump, piping, and valves and is protected from damage due to beyond design basis events. The system takes suction from a water source and injects into the non-safety-related portion of the CUW system, which in turn flows into the feedwater system. System capacity and flow rate are sized in order to provide sufficient makeup to provide core cooling for a 24-hour period following scram from 100% power.

The AFI system is housed in a non-seismic AFI Pump House, which is located remotely from the Reactor Building, Control Building, and Turbine Building. The power supply and the water source for the AFI are also located remotely from those buildings. The system is manually operated and has no automatic controls. The AFI Pump House contains instrumentation to provide information to the operator on reactor vessel water level, reactor pressure, wetwell pressure, and suppression pool water level.

Inspections, Tests, Analyses and Acceptance Criteria

Table 2.11.24 provides a definition of the inspections, tests, and/or analyses, together with associated acceptance criteria, which will be undertaken for the AFI system.

Table 2.11.24 Alternate Feedwater Injection System

Inspections, Tests, Analyses and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
1. The basic configuration of the AFI system is as described in Section 2.11.24.	1. Inspections of the as-built AFI system are conducted.	1. The as-built AFI system configuration conforms with the description in Section 2.11.24.
2. The AFI pump is capable of injecting ≥800 gpm into the RPV at the lowest SRV safety lift pressure.	2. (a) Tests are conducted on the as-built AFI system. (b) Analyses are performed to convert the test results to the conditions of the Design Commitment.	2. The converted flow satisfies the following: the AFI pump is capable of injecting ≥800 gpm into the RPV at the lowest SRV safety lift pressure.
3. The AFI system water supply has a minimum capacity of 300,000 gallons and is refillable.	3. Inspections of the as-built AFI system water supply are conducted.	3. The as-built AFI system water supply has a minimum capacity of 300,000 gallons and is refillable.
4. The AFI Pump House is located a minimum of 300 feet from the nearest outside wall of each of the Reactor Building, Control Building, and Turbine Building.	4. Inspections of the as-built AFI Pump House are conducted.	4. The as-built AFI Pump House is located a minimum of 300 feet from the nearest outside wall of each of the Reactor Building, Control Building, and Turbine Building.
5. The AFI water supply is located a minimum of 300 feet from the nearest outside wall of each of the Reactor	5. Inspections of the as-built AFI water supply are conducted.	5. The as-built AFI water supply is located a minimum of 300 feet from the nearest outside wall of each of the

Inspections, Tests, Analyses and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
Building, Control Building, and Turbine Building.		Reactor Building, Control Building, and Turbine Building.
6. The AFI power supply is located a minimum of 300 feet from the nearest outside wall of each of the Reactor Building, Control Building, and Turbine Building.	6. Inspections of the as-built AFI power supply are conducted.	6. The as-built AFI power supply is located a minimum of 300 feet from the nearest outside wall of each of the Reactor Building, Control Building, and Turbine Building.
7. Barriers exist, which qualify as intervening structures as defined by NEI 07-13, Rev. 8, between the AFI Pump House and each of the Reactor Building, Control Building, and Turbine Building.	7. Inspections of the as-built AFI Pump House are conducted.	7. Barriers exist, which qualify as intervening structures as defined by NEI 07-13, Rev. 8, between the as-built AFI Pump House and each of the Reactor Building, Control Building, and Turbine Building.
8. Barriers exist, which qualify as intervening structures as defined by NEI 07-13, Rev. 8, between the AFI water supply and each of the Reactor Building, Control Building, and Turbine Building.	8. Inspections of the as-built AFI water supply are conducted.	8. Barriers exist, which qualify as intervening structures as defined by NEI 07-13, Rev. 8, between the as-built AFI water supply and each of the Reactor Building, Control Building, and Turbine Building.

Inspections, Tests, Analyses and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
9. Barriers exist, which qualify as intervening structures as defined by NEI 07-13, Rev. 8, between the AFI power supply and its auxiliaries and each of the Reactor Building, Control Building, and Turbine Building.	9. Inspections of the as-built AFI power supply/supplies are conducted.	9. Barriers exist, which qualify as intervening structures as defined by NEI 07-13, Rev. 8, between the as-built AFI power supply and its auxiliaries and each of the Reactor Building, Control Building, and Turbine Building.
10. Instrumentation exists to provide information to the operator in the AFI Pump House for reactor vessel water level, reactor pressure, suppression pool water level, and wetwell pressure.	10. Inspections of the as-built instrumentation are conducted.	10. Instrumentation exists to provide information to the operator in the AFI Pump House for reactor vessel water level, reactor pressure, suppression pool water level, and wetwell pressure.
11. MOVs in the AFI system injection line operate as designed on a manual initiation signal.	11. Tests are conducted on the as-built AFI system.	11. MOVs in the AFI system injection line operate as designed on a manual initiation signal.
12. An AFI instrumentation device which is physically attached to instrumentation piping satisfies the same requirements (safety class, quality group, and seismic category) as the instrumentation piping to which it is attached.	12. Inspections of the as-built instrumentation and related instrumentation piping are conducted.	12. An AFI instrumentation device which is physically attached to instrumentation piping for the as-built system satisfies the same requirements (safety class, quality group, and seismic category) as the instrumentation piping to which it is attached.