Nuclear Operating Company

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

ABWR

January 20, 2010
U7-C-STP-NRC-100026

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 Nos. 52-001
Response to Request for Additional Information

Reference: 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).

This letter provides responses to Request for Additional Information (RAI) Letter Numbers 3 and 4 related to the application to amend the ABWR DCD Part 2, Tier 2, Sections 5.2 and 7.7 provided in Attachment 1 to the referenced letter. This submittal completes the responses to these RAI letters.

The attachment to this letter provides the following RAI question responses:

05.02.02-1 05.02.02-2 07.07-1 07.07-2 07.07-3

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

There are no commitments in this letter.

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

D050
NRO

STI 32601668

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

Executed on 1/20/2010

MA McBurnett

Mark McBurnett
Vice President, Oversight & Regulatory Affairs
South Texas Project Units 3 & 4

fjp

Attachment:

1. Question 05.02.02-1
2. Question 05.02.02-2
3. Question 07.07-1
4. Question 07.07-2
5. Question 07.07-3

cc: w/o attachments and enclosure except*
(paper copy)

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RAI 05.02.02-1

QUESTION

DCD Figure 5.1-3 (Sheet 2 of 11), a new solenoid operated valve (SOV) is added to SRV- E. Explain how you have assured addition of the new SOV will not prevent the SRV-E from performing its intended safety related functions.

RESPONSE:

Because the additional nitrogen gas supply system as described in the initial DCD amendment submittal is not required to meet the AIA rule, that system is being removed from the DCD amendment, and consequently, all of the DCD amendment markups associated with that change are being deleted. As a result, there will no longer be a DCD amendment change as described in this RAI.

The DCD amendment markups required as a result of this response are provided in the response to RAI 06.02.04-1 (Letter, Mark McBurnett to Document Control Desk, "Response to Request for Additional Information" dated January 13, 2010, U7-C-STP-NRC-100009).

RAI 05.02.02-2

QUESTION

Re: DCD Figure 5.1-3 (Sheet 4 of 11)
Describe the type of analyses performed to ensure that the non-safety AFI line connected to the CUW tie-in lines to the feedwater system is designed such that it will not inadvertently impact the ability of safety-related RCIC system which injects to the reactor through the Feedwater system to perform its intended functions. Also, summarize the results of these analyses.

RESPONSE:

The non-safety Alternate Feedwater Injection (AFI) line tie-in to the CUW line is to a non-safety portion of the CUW line and does not directly communicate with any safety-related system. For any situation in which the RCIC would be needed, the AFI system would not have any adverse impact on its operation for the reasons described below.

The AFI system is not required to operate in any design basis event in which the RCIC system would be needed. The AFI system is required only for beyond design basis events when all ECC systems, including the RCIC system, are unavailable. The AFI system is a manually operated system that is normally powered off. Powering on of the system requires the following actions: (a) going to the AFI Pump House, (b) energizing (closing) the electrical breakers, (c) opening normally closed MOVs, and (d) turning on the AFI pump. As a result, activation of the AFI system requires a deliberate act. Because the AFI system is manually operated and has no automated controls, inadvertent auto-initiation of the system is not possible. Consequently, inadvertent operation of the AFI system concurrent with RCIC system operation is not likely.

In the event RCIC is required to operate, backleakage from the RCIC system to the AFI system would be prevented by two check valves in the AFI line and one check valve in the CUW line as well as by three normally closed MOVs in the AFI injection line. Thus, any potential leakage sources in the AFI system, should they exist, would not impact the operation of the RCIC system.

There are no additional DCD amendment changes required as a result of this response.

RAI 07.07-1

QUESTION

Subsection 7.7.1.1 of ABWR Design Certification Rule (DCR) application references Chapter 9.5.14 in the description of the reactor water level instrumentation provided for the Alternate Feedwater Injection System. Subsection 9.5.14.4 reads: "*...The instrument lines to be used for monitoring the alternate feedwater injection are branched from the existing line and are connected to new level and pressure transmitters*".

GDC 24 "Separation of protection and control systems" reads "*The protection system shall be separated from control systems to the extent that failure of any single control system component or channel, or failure or removal from service of any single protection system component or channel which is common to the control and protection systems leaves intact a system satisfying all reliability, redundancy, and independence requirements of the protection system. Interconnection of the protection and control systems shall be limited so as to assure that safety is not significantly impaired*".

The staff request the applicant to clarify how and where the connection is made from which the AFI system gets its instrumentation signals and to demonstrate that the instrumentation included in the new AFI system does not create any potential for inadvertent actuation or creates challenges to current safety systems.

RESPONSE:

The instrumentation connections for the AFI system are shown in the marked-up drawings for FSAR Figure 5.1-3, Sheet 5 provided in the original amendment submittal and in updated Figure 6.2-39, Sheets 2 and 3, attached to this RAI, which supersedes the Figure 6.2-39 markups provided in the original submittal. There are no automated control systems or functions for the AFI system, because it is a manually operated system. The instrumentation for the AFI system only includes indicators that are for operator information. In addition, the water level and pressure instrumentation in the AFI pump room uses separate transmitters and power supply from existing instrumentation. Consequently, the AFI system does not create any potential for inadvertent actuation or challenges to current safety systems.

FSAR Figure 6.2-39, Sheets 2 and 3 are changed as a result of this response.

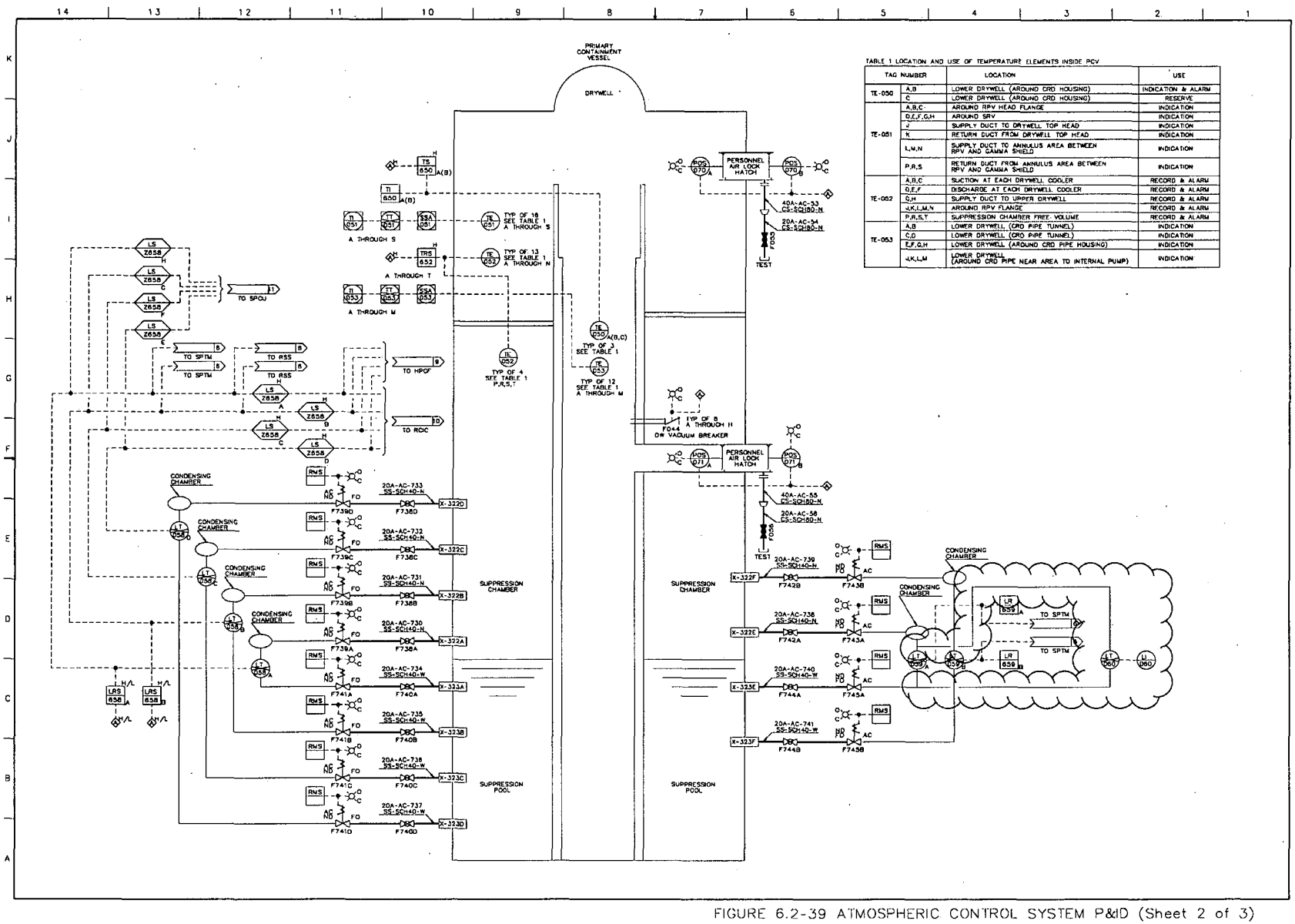

TABLE 1 LOCATION AND USE OF TEMPERATURE ELEMENTS INSIDE PCV

TAG NUMBER		LOCATION	USE
TE-050	A,B	LOWER DRYWELL (AROUND CRD HOUSING)	INDICATION & ALARM
	C	LOWER DRYWELL (AROUND CRD HOUSING)	RESERVE
TE-051	A,B,C	AROUND RPV HEAD FLANGE	INDICATION
	D,E,F,G,H	AROUND SRV	INDICATION
	J	SUPPLY DUCT TO DRYWELL TOP HEAD	INDICATION
	K	RETURN DUCT FROM DRYWELL TOP HEAD	INDICATION
	L,M,N	SUPPLY DUCT TO ANNULUS AREA BETWEEN RPV AND GAMMA SHIELD	INDICATION
	P,R,S	RETURN DUCT FROM ANNULUS AREA BETWEEN RPV AND GAMMA SHIELD	INDICATION
TE-052	A,B,C	SUCTION AT EACH DRYWELL COOLER	RECORD & ALARM
	D,E,F	DISCHARGE AT EACH DRYWELL COOLER	RECORD & ALARM
	G,H	SUPPLY DUCT TO UPPER DRYWELL	RECORD & ALARM
	J,K,L,M,N	AROUND RPV FLANGE	RECORD & ALARM
	P,R,S,T	SUPPRESSION CHAMBER FREE VOLUME	RECORD & ALARM
TE-053	A,B	LOWER DRYWELL (CRD PIPE TUNNEL)	INDICATION
	C,D	LOWER DRYWELL (CRD PIPE TUNNEL)	INDICATION
	E,F,G,H	LOWER DRYWELL (AROUND CRD PIPE HOUSING)	INDICATION
	J,K,L,M	LOWER DRYWELL (AROUND CRD PIPE NEAR AREA TO INTERNAL PUMP)	INDICATION

FIGURE 6.2-39 ATMOSPHERIC CONTROL SYSTEM P&ID (Sheet 2 of 3)

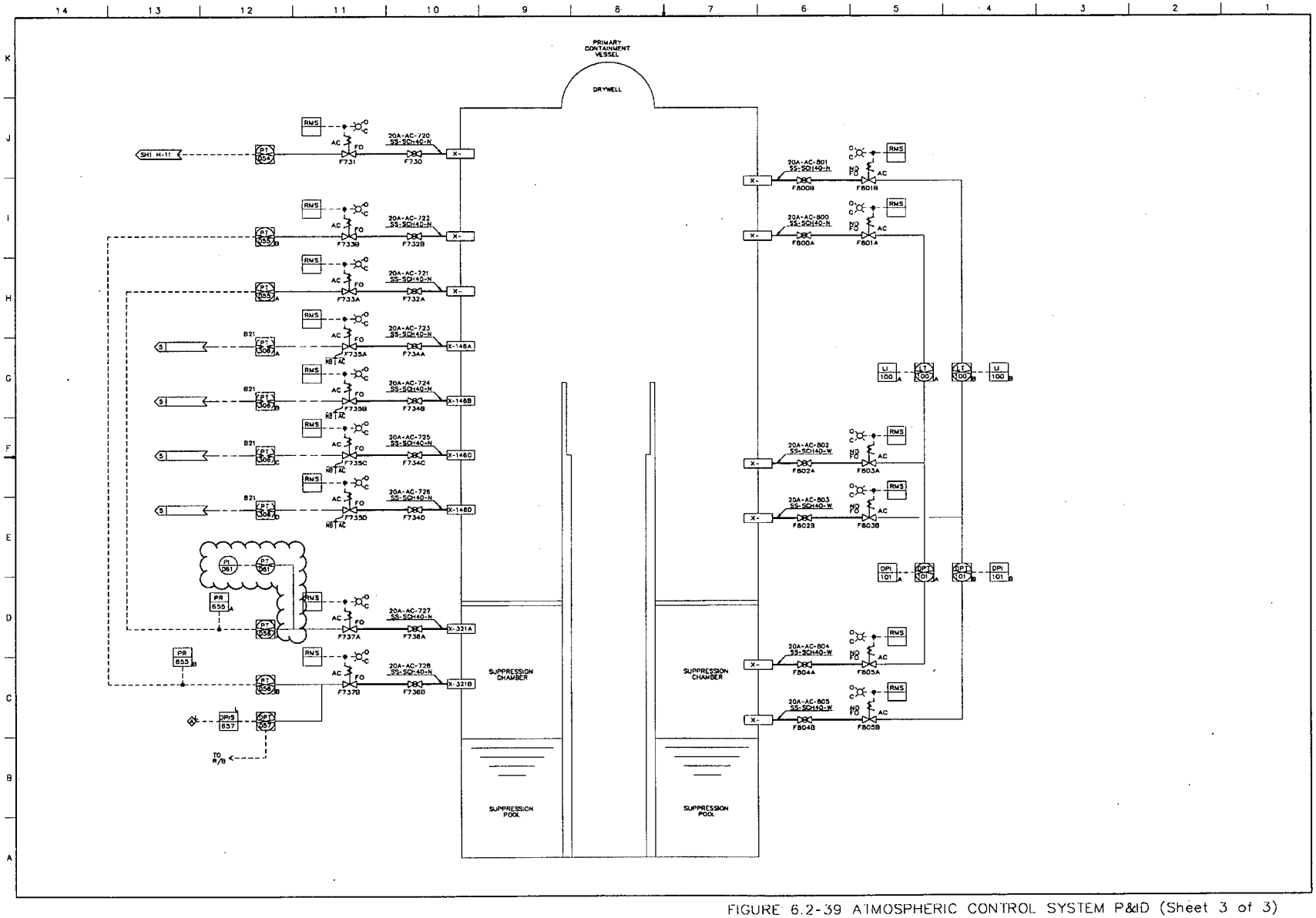

FIGURE 6.2-39 ATMOSPHERIC CONTROL SYSTEM P&ID (Sheet 3 of 3)
ABWR DCD/Tier 2 Rev.5

21-122

Question RAI 07.07-1

RAI 07.07-2

QUESTION

In NUREG -0800, Chapter 7.7, Section III, Review Procedures, Paragraph 1, "Use of digital systems", it reads "*...control system software should be developed using a structured process similar to that applied to safety system software. ...*".

The staff recognizes that the applicant states that the AFI system is non safety related and as described in Subsection 9.5.14.2, it *...provides enhanced safety during and after beyond design basis events.* However, similar to the ATWS Rule, the I&C components should be designed to sufficient quality. If the AFI I&C system is intended to be software based, the applicant should provide the software QA that would be utilized for developing the I&C system.

RESPONSE:

The AFI system is not a software-based system. It is a hard-wired system that is manually initiated only. There is no control function associated with this system. All instrumentation is for indication only.

There are no additional DCD amendment changes required as a result of this response.

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.

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. Consequently, there is no possibility that the AFI system instrumentation can adversely affect the plant safety systems. Because there is no automated function associated with this instrumentation and it is also a non-safety related system, no ITAAC is necessary to demonstrate that the AFI instrumentation is adequately isolated from the safety systems.

There are no additional DCD amendment changes required as a result of this response.