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February 4, 2009

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Mr. Jeffrey A. Ciocco

Docket No. 52-021
MHI Ref: UAP-HF-09031

Subject: MHI's Responses to US-APWR DCD RAI No.135-1818 Revision 0

Reference: 1) "REQUEST FOR ADDITIONAL INFORMATION NO. 135-1818 REVISION 0, SRP Section: 16 - Technical Specifications Application Section: TS Section 3.5, QUESTIONS for Technical Specification Branch (CTSB)" dated December 22, 2008.

With this letter, Mitsubishi Heavy Industries, Ltd. ("MHI") transmits to the U.S. Nuclear Regulatory Commission ("NRC") a document entitled "Responses to Request for Additional Information No.135-1818 Revision 0."

Enclosed is the responses to Questions 16-48 through 16-58 that are contained within Reference 1.

Please contact Dr. C. Keith Paulson, Senior Technical Manager, Mitsubishi Nuclear Energy Systems, Inc. if the NRC has questions concerning any aspect of the submittals. His contact information is below.

Sincerely,

Y. Ogata

Yoshiki Ogata,
General Manager- APWR Promoting Department
Mitsubishi Heavy Industries, LTD.

Enclosure:

1. Responses to Request for Additional Information No.135 Revision 0

CC: J. A. Ciocco
C. K. Paulson

D081
NRO

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Docket No. 52-021
MHI Ref: UAP-HF-09031

Enclosure 1

UAP-HF-09031
Docket No. 52-021

Responses to Request for Additional Information No.135-1818
Revision 0

February 2009

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

2/4/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 135-1818 REVISION 0**
SRP SECTION:	**16 - TECHNICAL SPECIFICATIONS**
APPLICATION SECTION:	**TS SECTION 3.5**
DATE OF RAI ISSUE:	**12/22/2008**

QUESTION NO.: 16-48

TS SECTION 3.5 (EDITORIAL)
The following editorial errors were noted in US-APWR TS 3.5:
1. Page 3.5.1-3, SR 3.5.1.4, FREQUENCY, Insert hard return (space) before and after the word "OR". Also the word "OR" should be underlined and indented.

2. Page 3.5.1-3, SR 3.5.1.4, FREQUENCY, NOTE: The phrase "of indicated level" should be deleted unless a percentage value is also to be given.

3. Page B 3.5.2-1, first sentence of the last paragraph has two commas following the word "valves". Delete one of the commas.

4. Page B 3.5.2-3, APPLICABLE SAFETY ANALYSES (continued): the second sentence of the penultimate fourth paragraph states "The LCO ensures that an SIS train will deliver sufficient water to .." The sentence should state "The LCO ensures that at least 2 SIS trains are available to deliver sufficient water to ..".

5. Page B 3.5.2-3, LCO section: the first sentence of the first paragraph states " .. three independent (and redundant) SIS trains are required to ensure that sufficient SIS flow is available, assuming a single failure affecting either train." This should state ".. affecting one of the three required trains."

6. Page B 3.5.2-5. ACTIONS section, A1 and A.2: the last senrtence states "The 72 hour Completion Time refers to Chapter 19 (Ref. 5) and .." This should state "The 72 hour Completion Time is based on PRA analyses described in Chapter 19 (Ref. 5) and.."

7. Page B 3.5.3-1, LCO section: the last sentence of the third paragraph has two periods at the end of the sentence. Delete one of the periods.

8. Page B 3.5.4-1, BACKGROUND section, 4th paragraph: the "and" is missing between "..the SI and CS/RHR pumps.."

9. Page B 3.5.4-1, BACKGROUND section, bullet a.: should read "Sufficient borated water volume.."

10. Page B 3.5.4-2, APPLICABLE SAFETY ANALYSES section, first paragraph, third sentence: should read ".. B 3.5.3, "Safety Injection Systems (SIS) - Shutdown," and B 3.6.6, "Containment Spray System. .."

11. Page B 3.5.4-5, SURVEILLANCE REQUIREMENTS section, SR 3.5.4.1, second paragraph: delete this paragraph since there is no modifing Note in SR 3.5.4.1.

ANSWER:

TS 3.5 and related Bases are revised to incorporate the comments in QUESTION NO.16-48 items through 2 to 11.

1. Hard return (space) will be inserted before and after the word "OR." The format of SR applying Surveillance Frequency Control Program is prescribed in TSTF-425, which was approved by NRC. We followed this prescription, in which "OR" is neither underlined nor indented.

Impact on DCD

1. and 2. The DCD Chapter 16, TS 3.5.1, Surveillance Requirement, SR 3.5.1.4 will be revised as follows:

	SURVEILLANCE	FREQUENCY
SR 3.5.1.4	Verify boron concentration in each accumulator is = 4000 ppm and = 4200 ppm.	[31 days OR In accordance with the Surveillance Frequency Control Program] AND --------NOTE-------- Only required to be performed for affected accumulators ---------- Once within 6 hours after each solution volume increase of = 190 gallons ~~of indicated level~~ that is not the result of addition from the refueling water storage pit

3. The DCD Chapter 16, TS 3.5.2 BASES, Background, 5th paragraph, first sentence will be revised as follows:

The SIS flow paths consist of piping, valves~~,~~, and pumps such that water from the RWSP can be injected into the RCS following the accidents described in this LCO.

4. The DCD Chapter 16, TS 3.5.2 BASES, Applicable Safety Analyses, 5th paragraph, second sentence will be revised as follows:

The LCO ensures that at least two ~~an~~ SIS trains are available to ~~will~~ deliver sufficient water to match boiloff rates soon enough to minimize the consequences of the core being uncovered following a large LOCA.

5. The DCD Chapter 16, TS 3.5.2 BASES, LCO, 1st paragraph, 1st sentence will be revised as follows:

In MODES 1, 2, and 3, three independent (and redundant) SIS trains are required to ensure that sufficient SIS flow is available, assuming a single failure affecting one of the three required trains ~~either train~~.

6. The DCD Chapter 16, TS 3.5.2 BASES, Actions, 1st paragraph, last sentence will be revised as follows:

The 72 hour Completion Time refers is based on PRA analyses described in ~~to~~ Chapter 19 (Ref. 5) and is a reasonable time for repair of many SIS components.

7. The DCD Chapter 16, TS 3.5.3 BASES, LCO, 3rd paragraph, last sentence will be revised as follows:

During an event requiring ECCS actuation, a flow path is required to provide an abundant supply of water from the RWSP to the RCS via the SI pumps to the reactor vessel direct injection nozzles associated with the SIS train.~~.~~

8. The DCD Chapter 16, TS 3.5.4 BASES, Background, 4th paragraph will be revised as follows:

During normal operation in MODES 1, 2, and 3, the SI and CS/RHR pumps are aligned to take suction from the RWSP.

9. The DCD Chapter 16, TS 3.5.4 BASES, Background, 6th paragraph, bullet a. will be revised as follows:

a. Sufficient borated water volume exists to support continued operation of the SI and CS/RHR pumps and

10. The DCD Chapter 16, TS 3.5.4 BASES, Applicable Safety Analyses, 1st paragraph, 3rd sentence will be revised as follows:

The design basis transients and applicable safety analyses concerning each of these systems are discussed in the Applicable Safety Analyses section of B 3.5.2, "Safety Injection System (SIS) - Operating," B 3.5.3, "Safety Injection System (SIS) - Shutdown," and B 3.6.6, "Containment Spray ~~and Cooling~~ Systems."

11. The DCD Chapter 16, TS 3.5.4 BASES, Surveillance Requirements, SR 3.5.4.1, 2nd paragraph will be revised as follows:

~~The SR is modified by a Note that eliminates the requirement to perform this Surveillance when ambient air temperatures are within the operating limits of the RWSP. With ambient air temperatures within the band, the RWSP temperature should not exceed the limits.~~

Impact on COLA

There are impacts on the COLA to incorporate the DCD change.

Impact on PRA

There is no impact on the PRA.

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SRP SECTION:	**16 - TECHNICAL SPECIFICATIONS**
APPLICATION SECTION:	**TS SECTION 3.5**
DATE OF RAI ISSUE:	**12/22/2008**

QUESTION NO.: 16-49

TS 3.5.1, Accumulators.
Justify within the BASES text (APPLICABLE SAFETY ANALYSES) for LCO 3.5.1 the specified volume of water required for the accumulator by SR 3.5.1.2. The BASES does not address the "dead volume" within the accumulator nor instrument uncertainty in the measurement of the volume. Within the BASES text, explain how the total volume specified in LCO 3.5.1, SR 3.5.1.2 is adequate to ensure the required volumes of water as identified in the safety analysis are available.

The BASES text states: "The contained water volume is slightly larger than the deliverable volume for the accumulators", however the term "slightly" is not defined. Without the "dead" volume, the total volume at the top of the standpipe required to ensure adequate volume for the low flow injection period following a large LOCA, and subsequently, the height of the standpipe within the vessel, can not be verified as a design feature. Without the "dead" volume and instrument uncertainty, the adequacy of the total volume measurement to ensure adequate water for the large flow injection condition can not be verified. Revise the BASES and provide a reference to appropriate analyses, as needed, to demonstrate the adequacy of the contained water volume referred to in SR 3.5.1.2.

ANSWER:

Since the flow damper is near the bottom of the accumulators, the dead volume exists. The dead volume in each accumulator is 3434 gallons. Therefore the contained water volume is 3434 gallons larger than the deliverable volume for the accumulators.

The safety analysis assumes that the range of the accumulator water volume is between 19,338 and 19,734 gallons. These values include the dead volume which is not taken into account in large and small break LOCA analyses.

Therefore the values of SR 3.5.1.2 in the DCD Revision 1 are corrected to between 19,338 gallons and 19,734 gallons which are the same values as the safety analysis assumption.

Note that these values are not taking the instrument uncertainty in the measurement of the volume into consideration. The contained water volumes of the accumulators are controlled by using the water level gauges in consideration of the instrument inaccuracy.

Since the description of the BASES text (APPLICABLE SAFETY ANALYSES) is not enough, this will be revised in the next revision of the DCD.

Impact on DCD

Editorial: In the second paragraph on page B 3.5.1-3 of DCD Revision 1, the second sentence will be revised as shown below.

The contained water volume is ~~slightly~~ 3434 gallons larger than the deliverable volume for the accumulators, since the flow damper is near the bottom of the accumulators and the dead volume in each accumulator is 3434 gallons.

Editorial: After the second paragraph on page B 3.5.1-3 of the DCD Revision 1, the following sentence will be added.

The safety analysis assumes values of 19,338 gallons and 19,734 gallons.

Editorial: On page 3.5.1-2 of the DCD Revision 1, the values of SR 3.5.1.2 will be corrected as shown below.

Verify borated water volume in each accumulator is
= ~~19,300~~ 19,338 gallons and = ~~19,700~~ 19,734 gallons.

Impact on COLA

There are impacts on the COLA to incorporate the DCD change.

Impact on PRA

There is no impact on the PRA.

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DATE OF RAI ISSUE:	**12/22/2008**

QUESTION NO.: 16-50

TS 3.5.1, Accumulators.
Justify the selected Completion Time (CT) of 24 hours for Required Action B.1. Revise supporting information in the TS bases B 3.5.1, as appropriate, to include additional details.

Condition B is for one inoperable accumulator for reasons other than boron concentration with action to restore the accumulator to operable status within 24 hours. In the TS bases B 3.5.1, a mere reference to PRA is made to justify the CT of 24 hours. In the STS, the required justification is provided in the Westinghouse topical report "WCAP-15049" which is listed as Reference 4 in the STS bases 3.5.1. The STS text reflects implementation of TSTF-370, "Increase accumulator Completion Time from 1 hour to 24 hours (WCAP-15049), Revision 0. TSTF-370 requirements should be followed if a CT of 24 hours is adopted in the APWR TS.

This information is needed to ensure adequacy of the assigned Completion Time and completeness of supporting information provided in the TS bases.

ANSWER:

US-APWR is a four loop PWR plant based on the same basic design concept of conventional PWRs, but modified incorporating new technologies to improve safety. Taking into consideration that the basic design concept of US-APWR including the design base success criteria of the accumulators are the same with conventional PWRs, the basis of the 24 hour CT discussed in TSTF-370 is considered applicable to the US-APWR TS.

The advanced accumulator, which is one of the new technologies incorporated, has a dual flow rate function. Since this function is achieved by the structure of the passive dampers installed in the accumulator tank, loss of dual flow rate function is unlikely to occur when the accumulator itself is available. Moreover, the core damage scenarios after LOCA events when an accumulator is unavailable are equivalent to conventional plants. For these reasons the dual flow rate function of the advanced accumulator does not impact the applicability of the conclusion of TSTF-370 to the US-APWR TS.

In addition, the US-APWR PRA has performed a sensitivity study to assess the impact of accumulator outage on the core damage frequency. In the sensitivity study, the core damage frequency assuming one accumulator and one safety train out of service was quantified. The result of this sensitivity study is documented in DCD chapter 19, section 19.1.4.1.2. The sensitivity analysis indicates that the increment of CDF is very low.

Discussions provided in the response to this RAI will be incorporated in the basis for LCO of Accumulators documented in DCD chapter 16.

Impact on DCD

The description of the bases for LCO B.1 [and B.2] applied to Accumulators in page B 3.5.1-5 of the bases document for US-APWR technical specifications, in DCD revision 1, will be revised as follows:

B.1 [and B.2]
If one accumulator is inoperable for a reason other than boron concentration, the accumulator must be returned to OPERABLE status within 24 hours. In this Condition, the required contents of three accumulators cannot be assumed to reach the core during a LOCA. Due to the severity of the consequences should a LOCA occur in these conditions, the 24 hour Completion Time to open the valve, remove power to the valve, or restore the proper water volume or nitrogen cover pressure ensures that prompt action will be taken to return the inoperable accumulator to OPERABLE status. The Completion Time minimizes the potential for exposure of the plant to a LOCA under these conditions. The 24 hours allowed to restore an inoperable accumulator to OPERABLE status is reasonable based on the consideration that the conclusion of TSTF-370 is applicable to US-APWR. The basic design concept of US-APWR including the design base success criteria of accumulators, and the core damage scenarios after postulated LOCA events when an accumulator is inoperable are equivalent with conventional PWRs, and therefore, the TSTF-370 is considered applicable. Additionally, PRA studies in Chapter 19, Subsection 19.1.4.1.2 (Ref. 4) show low CDF increment under conditions where one accumulator is inoperable ~~Chapter 19 (Ref. 4)~~. [Required Action B.2 allows the option to apply the requirements of Specification 5.5.18 to determine a Risk Informed Completion Time.]

Impact on COLA

There are impacts on the COLA to incorporate the DCD change.

Impact on PRA

There is no impact on the PRA.

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QUESTION NO.: 16-51

TS 3.5.2, SIS - Operating.

Justify only identifying 2 SIS valves in SR 3.5.2.1. The justification needs to address each of the applicable valves discussed in FSAR Section 6.3.2.2.6 [ECCS] Major Valves.

SR 3.5.2.1 identifies two Accumulator Makeup Valves as being in the closed position with power removed, however Chapter 6 identifies two Safety Injection Pump Accumulator Makeup Valves (SIS-AOV-201A and D) as being closed with control power locked out. Chapter 6 identifies four Accumulator Makeup Valves (SIS-AOV-215A, B, C, and D) which are normally closed but not locked out. Chapter 6 also identifies the Safety Injection Pump Full-flow Test line Stop Valves as being normally closed with control power locked out. It is not clear which of these valves should be included in SR 3.5.2.1. If not included in SR 3.5.2.1, identify the SR which verifies the valve position.

ANSWER:

SR 3.5.2.1 addresses Safety Injection Pump Accumulator Makeup Valves (SIS-AOV-201B and C). These valves are provided in the cross line between B and C safety injection trains, thereby misalignment of these valves could lead to simultaneous unavailability of two trains.

Each of the Safety Injection Pump Full-flow Test line Stop Valves (SIS-MOV-024A, B, C and D) is provided in the associated independent train, and misalignment of these valves could not cause simultaneous unavailability of two or more trains.

The valve identification number will be specified in SR 3.5.2.1, and the second sentence of BASES for SR 3.5.2.1, "Misalignment of these valves could render its associated SIS train inoperable" will be corrected to "Misalignment of these valves could render two SIS trains inoperable."

Impact on DCD

The DCD Chapter 16, TS 3.5.2, Surveillance Requirements, SR 3.5.2.1 will be revised as follows:

	SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify the following valves are in the listed position (with power to the valve operator removed).		[12 hours OR
Number 2 SIS-AOV-201B and C	Function Accumulator Makeup	Position CLOSED	In accordance with the Surveillance Frequency Control Program]

The DCD Chapter 16, TS 3.5.2 BASES, Surveillance Requirements, SR 3.5.2.1, second sentence will be revised as follows:

Misalignment of these valves could render two ~~its associated~~ SIS trains inoperable.

Impact on COLA

There are impacts on the COLA to incorporate the DCD change.

Impact on PRA

There is no impact on the PRA.

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DATE OF RAI ISSUE:	**12/22/2008**

QUESTION NO.: 16-52

TS 3.5.2, SIS - Operating.

Clarify in SR 3.5.2.1 whether power to the valve operator is removed or if there are other acceptable means of securing the valves in position (e.g., key locking the control).

The information provided in the FSAR on securing these valves in position is inconsistent. SR 3.5.2.1 states the valve will be in the identified position with power to the valve operator removed. The BASES section states that either removal of power or key locking the control provides an adequate control. FSAR Chapter 6 identifies (for the valves identified in RAI 16.3.5.2-03) that the control power is locked out. The FSAR needs to be internally consistent on the acceptable means of securing the valve to prevent inadvertent misalignment.

ANSWER:

Safety Injection Pump Accumulator Makeup Valves (SIS-AOV-201B and C) will be secured to prevent misalignment by "removal of power." Therefore, the phrase "or by key locking the control in the correct position" will be deleted from the third sentence of BASES for SR 3.5.2.1.

Impact on DCD

The DCD Chapter 16, TS 3.5.2 BASES, Surveillance Requirements, SR 3.5.2.1, 3rd sentence will be revised as follows:

> Securing these valves in position by removal of power ~~or by key locking the control in the correct position~~ ensures that they cannot change position as a result of an active failure or be inadvertently misaligned.

Impact on COLA

There are impacts on the COLA to incorporate the DCD change.

Impact on PRA

There is no impact on the PRA.

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QUESTION NO.: 16-53

TS 3.5.2, SIS - Operating.

Justify not including a SR to verify valves in the SIS system actuate to the required position on demand or include a SR for this verification.

The SIS includes valves that actuate in response to operator actions to properly align the system (e.g. the transfer from cold leg injection to hot leg injection) or isolate a train of the SIS in the event of a line break. The concern is that if surveillance of these valves is not required, the accident analysis should not credit them to perform their identified safety functions.

ANSWER:

NUREG-1431, Rev.3.1 specifies that periodic actuation verification shall be performed for automatic ECCS valves which actuate on receipt of SI signal, but it does not specify the actuation verification for remote manual-operated valves. It is considered that remote manual-operated valves have higher reliability than automatic ECCS valves.

Also, in the US-APWR, based on NUREG-1431, Rev.3.1, actuation verification is not specified for remote manual-operated valves.

Impact on DCD

There is no impact on the DCD.

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.

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DATE OF RAI ISSUE:	**12/22/2008**

QUESTION NO.: 16-54

TS 3.5.2, SIS - Operating.

Provide the event(s) in the BASES text (APPLICABLE SAFETY ANALYSIS) for LCO 3.5.2 (page B 3.5.2-3) which establishes the performance requirements for the SI pumps.

The BASES is not consistent with NUREG-1431, Rev. 3.1, TS LCO 3.5.2, BASES - APPLICABLE SAFETY ANALYSES in that it does not address the safety analyses establishing the flow and discharge head requirements for the SI pumps.

For the small LOCA, the SI pumps are credited in the safety analysis and must be capable of maintaining the flow rate and pressure discussed in FSAR Chapter 6.3.2.2.1. This event or other bounding event should be included in the BASES similar to the discussion of the centrifugal charging pumps and SI pumps in this section of NUREG-1431, Rev. 3.1.

ANSWER:

The events which credit the SI pumps are small break LOCA, SGTR and MSLB in addition to large break LOCA. Since the description of the events in the DCD Revision 1 is not enough, these three events will be added in the next revision of the DCD. These events are the same as NUREG-1431, Rev. 3.1.

Impact on DCD

Editorial: After the second sentence of the second paragraph on page B 3.5.2-3 of the DCD Revision 1, the following sentences will be added.

> The SI pumps are credited in a small break LOCA event. This event establishes the flow and discharge head at the design point for the SI pumps. The SGTR and MSLB events also credit the SI pumps.

Impact on COLA

There are impacts on the COLA to incorporate the DCD change.

Impact on PRA

There is no impact on the PRA.

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DATE OF RAI ISSUE:	**12/22/2008**

QUESTION NO.: 16-55

TS 3.5.2, Safety Injection System (SIS) - 0perating.

Clarify the following statement in the TS Bases B 3.5.2, Applicable Safety Analyses section, first paragraph: "The LCO helps to ensure that the following acceptance criteria for the ECCS, estabilised by 10 CFR 50.46 (Ref. 2), will be met following a LOCA: ... e. Adequate long term core cooling capacity is maintained."

This statement is a repeat of the STS Bases B 3.5.2 text for ECCS pumps in the Westinghouse design in which the Residual Heat Removal (RHR) function for long term cooling is combined with the Low Head Safety Injection (LHSI) function. The APWR design, however, does not have a LHSI pump, and the RHR function is combined with the Containment Spray (CP) function which is covered separately in APWR TS 3.6.6.

The RHR function should be discussed in the APWR TS Bases B 3.5.2 for long term core cooling capacity.

ANSWER:

The SI pumps are used to inject the borated water into the RCS during a LOCA for the purpose of maintaining core cooling. Therefore long term core cooling is achieved by using the SI pumps. In the next revision of the DCD, the sentence that long term core cooling is achieved by using the SI pumps will be added.

Impact on DCD

Editorial: After the forth paragraph on page B 3.5.2-3 of the DCD Revision 1, the following sentence will be added.

Long term core cooling is achieved by using the SI pumps.

Impact on COLA

There are impacts on the COLA to incorporate the DCD change.

Impact on PRA

There is no impact on the PRA.

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QUESTION NO.: 16-56

TS 3.5.2, SIS - Operating.

Provide the unique identifier, function, and position for the SIS valves in SR 3.5.2.1 on separate lines. The comparable section in NUREG-1431, Rev. 3.1, specifies this information requirement for each valve.

ANSWER:

Valve I.D. number "SIS-AOV-201B and C" will be added to Number column of SR 3.5.2.1.

Impact on DCD

Please see the response of Question No. 16-51.

Impact on COLA

There are impacts on the COLA to incorporate the DCD change.

Impact on PRA

There is no impact on the PRA.

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QUESTION NO.: 16-57

TS 3.5.4, RWSP.

Clarify in BASES (APPLICABLE SAFETY ANALYSIS) for LCO 3.5.4 (page B 3.5.4-3) whether the inadvertent ECCS actuation accident analysis sets performance requirements for the RWSP (water boron concentration and temperature) and, if applicable, describe these performance requirements. The concern is that the BASES is not consistent with the accident analysis (FSAR Section 15.5.1) which states the inadvertent ECCS actuation accident is not applicable to the US-APWR.

ANSWER:

The description in DCD Section 15.5.1 is correct; the inadvertent emergency core cooling system (ECCS) actuation accident is not applicable to the US-APWR. None of the components of the ECCS (safety injection pumps or accumulators) are capable of injecting water into the reactor coolant system (RCS) at normal, at-power operating pressures. The incorrect statement about the inadvertent ECCS actuation accident will be deleted from DCD Chapter 16 page B 3.5.4-3.

Impact on DCD

The DCD Chapter 16, TS 3.5.4 BASES (page B 3.5.4-3) will be revised as follows:

~~The maximum boron concentration is an explicit assumption in the inadvertent ECCS actuation analysis, although it is typically a nonlimiting event and the results are very insensitive to boron concentrations.~~ The maximum temperature ensures that the amount of cooling provided from the RWSP during the heatup phase of a feedline break is consistent with safety analysis assumptions; the minimum is an assumption in ~~both~~ the MSLB ~~and inadvertent ECCS actuation analyses, although the inadvertent ECCS actuation event is typically nonlimiting~~.

Impact on COLA

There are impacts on the COLA to incorporate the DCD change.

Impact on PRA

There is no impact on the PRA.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

2/4/2009

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

RAI NO.:	**NO. 135-1818 REVISION 0**
SRP SECTION:	**16 - TECHNICAL SPECIFICATIONS**
APPLICATION SECTION:	**TS SECTION 3.5**
DATE OF RAI ISSUE:	**12/22/2008**

QUESTION NO.: 16-58

TS 3.5.5, pH Adjustment.

Clarify the applicability of the LCO 3.5.5 COMPLETION TIMES for ACTIONS A and B, restore the mass of NaTB to within limit within 72 hours while in Modes 1 through 4. The clarification needs to address this COMPLETION TIME in relation to the corresponding SR 3.5.5.1 surveillance frequency to verify the mass of the NaTB every 24 months consistent with the BASES of the 24 month SURVEILLANCE interval established to coincide with plan refueling.

The BASES for SR 3.5.5.1 states that access to the NATB pH adjustment baskets is only feasible during outages. It is unclear how the Condition A 72 hour completion time is feasible for Modes 1 through 4 if the mass of the NaTB can only be verified during an outage.

ANSWER:

The applicability of this LCO in MODE 1 though 4 is appropriate since this condition is mainly prepared for accident during operation. Since NaTB is a stable chemical and the very low probability that the mass of NaTB may change, the variations are expected to be minor such that the required capability is substantially available. Therefore, surveillance frequency established to coincide with planned refueling is reasonable. As surveillance is executed in every refueling outage, actual ACTIONS are available for plant startup, from MODE 5 to MODE 4. In this plant condition, it is capable of accessing to the NaTB ph adjustment baskets and hence COMPLETION TIME in MODE 4 does make sense. Regarding COMPLETION TIMEs in MODE 1 through 3, they may not be realistic with the current SRs, but we don't feel the necessity to restrict MODE for the applicability of ACTIONS because it is not considered to cause any misoperation or any other problem.

Impact on DCD

There is no impact on the DCD.

Impact on COLA

There is no impact on the COLA.

Impact on PRA

There is no impact on the PRA.