Justification for Deviations between NUREG-1431 Rev. 3.1 and US-APWR Technical Specifications

Non Proprietary

November 2009

Prepared: Takafumi Noda — Nov. 30, '09
Takafumi Noda, Acting Manager
APWR Promoting Department
Date

Prepared: _____ _____
Date

Prepared: _____ _____
Date

Reviewed: Atsushi Kumaki — Nov. 30, '09
Atsushi Kumaki, Engineering Manager
APWR Promoting Department
Date

Approved: _____ _____
Date

Approved: Y. Ogata — Nov. 30, '09
Yoshiki Ogata, General Manager
APWR Promoting Department
Date

Revision History

Revision	Page	Description
0	All	Original issue
1	(Affected portions)	Reflected the contents of DCD Revision 1.
2	(Affected portions)	Reflected the contents of DCD Revision 2.

Mitsubishi Heavy Industries, Ltd.
16-5, Konan 2-chome, Minato-ku
Tokyo 108-8215 Japan

ABSTRACT

The US-APWR Technical Specifications contents are described by reference to U.S. Nuclear Regulatory Commission, NUREG-1431, Rev. 3.1. The explanations of justification for deviations between NUREG-1431 and the US-APWR Technical Specifications are helpful in understanding the contents of the US-APWR Technical Specifications.

This report describes the justification for deviation between NUREG-1431 Rev. 3.1 and the US-APWR Technical Specification according to the reviewing procedures in NUREG-0800.

Table of Contents

List of Tables

List of Acronyms

ADV	atmospheric dump valve
AEES	annulus emergency exhaust system
AFW	auxiliary feed water
BIT	boron injection tank
BDPS	boron dilution protection system
CCW	component cooling water
CAOC	constant axial offset control
COLA	combined license application
COLR	core operating limits report
COT	channel operational test
CREATCS	control room emergency air temperature control system
CREFS	control room emergency filtration system
CRMP	configuration risk management program
CS/RHR	containment spray/residual heat removal
CST	condensate storage tank
CT	completion time
DG	diesel generator
DNB	departure from nucleate boiling
ECCS	emergency core cooling system
EFP	emergency feedwater pit
EFW	emergency feedwater
EFWS	emergency feedwater system
FBACS	fuel building air cleanup system
ESFAS	engineered safety features actuation system
ESWS	emergency service water system
GTG	gas turbine generator
HPI	high pressure injection
HVAC	heating, ventilation, and air conditioning
HZP	hot zero power
LCO	limiting condition for operation
LPI	low pressure injection
LOP	loss of power
LTOP	low temperature overpressure protection
MCR	main control room
MCRATCS	main control room air
MCREFS	main control room emergency filtration system
MCRVS	main control room HVAC system
MFBRV	main feedwater bypass regulation valve
MFIV	main feedwater isolation valve
MFRV	main feedwater regulation valve
MSDV	main steam depressurization valve
MSIV	main steam isolation valve
MSSV	main steam safety valve
MTC	moderator temperature coefficient

PAM	post accident monitoring
PIV	pressure isolation valve
PORV	power operated relief valve
PREACS	pump room exhaust air cleanup system
PSMS	protection and safety monitoring system
PTLR	pressure and temperature limits report
RAOC	relaxed axial offset control
RCCA	rod cluster control assembly
RCS	reactor coolant system
RHR	residual heat removal
RICT	risk-informed completion time
RMTS	risk-managed technical specifications
RSC	remote shutdown console
RTB	reactor trip breaker
RTD	resistance temperature detector
RTDP	revised thermal design procedure
RTS	reactor trip system
RWSP	refueling water storage Pit
RWST	refueling water storage tank
SDV	safety depressurization valve
SDM	shutdown margin
SFCP	surveillance frequency control program
SG	steam generator
SGWFCV	steam generator water filling control valve
SI	safety injection
SR	surveillance requirement
SSPS	solid state protection system
STB	staggered test basis
STS	standard technical specification
SWS	service water system
TADOT	trip actuating device operational test
TS	technical specification
UF-RCP	under frequency reactor coolant pump
UHS	ultimate heat sink
UV-RCP	under voltage reactor coolant pump
VDU	visual display unit
VFTP	ventilation filter testing program

1.0 INTRODUCTION

The US-APWR Technical Specifications content meets the 10CFR50.36 requirements. NUREG 1431, Rev. 3.1, Standard Technical Specifications Westinghouse Plants (STS, Reference 1) was selected as the most appropriate guidance for developing the US-APWR Technical Specifications for consistency with the Technical Specification Improvement Program. The US-APWR Technical Specifications differ from STS as necessary to reflect technical differences between the Westinghouse Owner's Group Standard Technical Specifications design and the US-APWR design. The other major difference from STS is that the US-APWR Technical Specifications provide the framework for Risk-Managed Technical Specifications (RMTS, Reference 2) and Surveillance Frequency Control Program (SFCP, Reference 3). A COL applicant can choose whether to adopt RMTS and/or SFCP.

The explanations of justification for deviations between STS and the US-APWR Technical Specifications are helpful in understanding the contents of the US-APWR Technical Specifications.

This report describes the justification for deviation between STS and Technical Specification for US-APWR according to the reviewing procedures in NUREG-0800.

2.0 JUSTIFICATION FOR DEVIATIONS

All deviations between STS and The US-APWR Technical Specification except for RMTS and SFCP are described in Table 2-1. The description for RMTS and SFCP are explained in the following sections and are not included in Table 2-1. First and second column in Table 2-1 show deviations underlined. Third column shows explanations of justification for deviations. This table and the following descriptions show that all deviations are valid.

2.1 DESCRIPTION FOR RMTS AND ITS JUSTIFICATION

Three major deviations from STS were brought by incorporating the framework for RMTS into US-APWR Technical Specifications as follows:

1) In Section 1.3, the example of Risk-Informed Completion Time (RICT) is provided as EXAMPLE 1.3-8.

2) In Section 3, the alternative REQUIRED ACTION to evaluate RICT is allowed for a certain CONDITION of LCO to which RMTS is applied. It is described as “Apply the requirements of Specification 5.5.18”, where 5.5.18 provides the procedure to evaluate and apply RICT as Configuration Risk Management Program (CRMP).

3) In Section 5.5, the description of CRMP is provided as Subsection 5.5.18.

All of these items mentioned above are bracketed to indicate that the adoption of RMTS is a choice of a COL applicant.

Reference 2, which was approved by NRC, provides guidance for the implementation of a generic Technical Specification improvement that establishes RMTS and US-APWR Technical Specifications utilized this guidance to develop the relevant descriptions mentioned above.

The following list shows LCOs and associated CONDITIONs to which RMTS is applied.

LCO	CONDITION	LCO	CONDITION
3.3.1	N, Q and R	3.7.2	A
3.3.2*	J, Q* and S	3.7.4	A and B
3.3.3	C	3.7.6	A
3.4.11	B and C	3.7.7*	A
3.5.1	A and B	3.7.8*	A
3.5.2	A	3.8.1*	A, B, C, D and F
3.5.4*	A	3.8.4*	A
3.6.2*	A, B and C	3.8.7*	A
3.6.3*	C	3.8.9*	A
3.6.6*	A		

It should be noticed that even if APPLICABILITY includes MODE 4 in the above LCO (marked by *), REQUIRED ACTION for RMTS (that is “Apply the requirements of Specification 5.5.18”) is not applicable and a note is provided to indicate this restriction with each corresponding REQUIRED ACTION.

2.2 DESCRIPTION FOR SFCP AND ITS JUSTIFICATION

Two major deviations from STS were brought by incorporating the framework for SFCP into US-APWR Technical Specifications as follows:

1). In Section 3, Surveillance Frequencies to which SFCP is applied are described as “(deterministic value) OR In accordance with the Surveillance Frequency Control Program”.

2). In Section 5.5, the description of SFCP is provided as Subsection 5.5.19.

All of these items mentioned above are bracketed to indicate that the adoption of SFCP is a choice of a COL applicant.

Reference 3 and Reference 4, the former was approved and the latter will soon be approved both by NRC, provide guidance for the implementation of a generic Technical Specification improvement that establishes SFCP and US-APWR Technical Specifications utilized these guidances to develop the relevant descriptions mentioned above.

The following list shows LCOs and associated Surveillance Requirements (SRs) to which SFCP is applied.

LCO	SR	LCO	SR
3.1.1	3.1.1.1	3.5.5	3.5.5.1, 3.5.5.2
3.1.2	3.1.2.1	3.6.2	3.6.2.2
3.1.4	3.1.4.1, 3.1.4.2	3.6.3	3.6.3.1 – 3.6.3.3, 3.6.3.6
3.1.5	3.1.5.1	3.6.4	3.6.4.1
3.1.6	3.1.6.2, 3.1.6.3	3.6.5	3.6.5.1
3.1.9	3.1.9.2 – 3.1.9.4	3.6.6	3.6.6.1, 3.6.6.3 - 3.6.6.5
3.2.1	3.2.1.1, 3.2.1.2	3.7.2	3.7.2.2
3.2.2	3.2.2.1	3.7.3	3.7.3.2
3.2.3	3.2.3.1 – 3.2.3.3	3.7.4	3.7.4.1, 3.7.4.2
3.2.4	3.2.4.1, 3.2.4.2	3.7.5	3.7.5.1, 3.7.5.3, 3.7.5.4
3.3.1	3.3.1.1 – 3.3.1.11, 3.3.1.13	3.7.6	3.7.6.1
3.3.2	3.3.2.1 – 3.3.2.8	3.7.7	3.7.7.1 – 3.7.7.3
3.3.3	3.3.3.1, 3.3.3.2	3.7.8	3.7.8.1 – 3.7.8.3
3.3.4	3.3.4.1 – 3.3.4.3	3.7.10	3.7.10.1, 3.7.10.3, 3.7.10.5
3.3.5	3.3.5.1 -3.3.5.5	3.7.11	3.7.11.1, 3.7.11.3, 3.7.11.4

3.3.6	3.3.6.1 – 3.3.6.6	3.7.12	3.7.12.1
3.4.1	3.4.1.1 – 3.4.1.4	3.7.13	3.7.13.1
3.4.2	3.4.2.1	3.7.14	3.7.14.1
3.4.3	3.4.3.1	3.8.1	3.8.1.1 – 3.8.1.19
3.4.4	3.4.4.1	3.8.3	3.8.3.1, 3.8.3.2, 3.8.3.4, 3.8.3.5
3.4.5	3.4.5.1 – 3.4.5.3	3.8.4	3.8.4.1 – 3.8.4.3
3.4.6	3.4.6.1 – 3.4.6.3	3.8.6	3.8.6.1 – 3.8.6.6
3.4.7	3.4.7.1 – 3.4.7.3	3.8.7	3.8.7.1
3.4.8	3.4.8.1, 3.4.8.2	3.8.8	3.8.8.1
3.4.9	3.4.9.1, 3.4.9.2	3.8.9	3.8.9.1
3.4.11	3.4.11.1, 3.4.11.2	3.8.10	3.8.10.1
3.4.12	3.4.12.1 – 3.4.12.5, 3.4.12.7	3.9.1	3.9.1.1
3.4.13	3.4.13.1, 3.4.13.2	3.9.2	3.9.2.1
3.4.14	3.4.14.1, 3.4.14.2	3.9.3	3.9.3.1, 3.9.3.2
3.4.15	3.4.15.1 – 3.4.15.5	3.9.4	3.9.4.1 – 3.9.4.3
3.4.16	3.4.16.1, 3.4.16.2	3.9.5	3.9.5.1
3.5.1	3.5.1.1 – 3.5.1.5	3.9.6	3.9.6.1, 3.9.6.2
3.5.2	3.5.2.1, 3.5.2.2, 3.5.2.4, 3.5.2.5	3.9.7	3.9.7.1
3.5.4	3.5.4.1 – 3.5.4.3		

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (1/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
16.0				
1.0	USE AND APPLICATION			
1.1	Definitions	Description of digital system component tests is added. -ACTUATION LOGIC TEST -CHANNEL CALIBRATION -CHNNEL CHECK -CHANNEL OPERATIONAL TEST (COT) -TADOT	Unique features of US-APWR	
1.2	Logical Connectors	Same as STS		
1.3	Completion Times	Same as STS except for the description of RICT		
1.4	Frequency	Same as STS		
2.0	SAFETY LIMITS			
2.1	SLs	-	-	
	DNBR ≥ 1.17 for the WRB-1/WRB-2 DNB correlations.	DNBR ≥ 1.35 for typical hot channel ≥ 1.33 for thimble hot channel With WRB-2 correlation and RTDP.	Reflecting US-APWR design. (The limit DNBR value for US-APWR is determined by using revised thermal design procedure (RTDP), in which the uncertainties of DNB correlation and other key parameters are statistically combined into the DNBR limit, and are not separable.)	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (2/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	Peak centerline temperature <5080	Peak centerline temperature<5072	Reflecting US-APWR design. (The maximum value of fuel melting point for US-APWR design is defined as 5072ºF (2800ºC).)	
	RCS Pressure ≤ 2735 psig	RCS Pressure ≤ 2733.5 psig	Reflecting US-APWR design.	
2.2	SL Violations	Same as STS	-	
3.0	LIMITING CONDITION FOR OPERATION APPLICABILITY			
	Test Exception LCO [3.1.8 and 3.4.19 allow specified Technical Specification (TS) requirements to be changed to permit performance of special tests and operations.	Test Exception LCOs 3.1.8, 3.1.9 and 3.4.18 allow specified Technical Specification (TS) requirements to be changed to permit performance of special tests and operations.	PHYSICS TESTS Exceptions for MODE "1" is added as LCO 3.1.8. It is necessary to suspend some limitations related to control rod position and power distribution (LCOs 3.1.4, 3.1.5, 3.1.6, 3.2.3 and 3.2.4). LCO 3.1.8 provides all the necessary LCO exceptions to perform MODE 1 PHYSICS TESTS.	
3.0	-	LCO Applicability LCO 3.0.9	Adoption of TSTF-427, Rev.2, “Allowance for Non Technical Specification Barrier Degradation on Supported System OPERABILITY,” May 03, 2006.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (3/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	SURVEILLANCE REQUIREMENT APPLICABILITY SR 3.01, SR 3.03	-	-	
	SR3.01 SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3.	Failure to meet a Surveillance for the required equipment, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance for the required equipment within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.	LCO of 4 train safety system is 3. SR is required for not all four trains.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (4/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	SR 3.03 If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater.	If it is discovered that a Surveillance was not performed within its specified Frequency for the required equipment, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater.	LCO of 4 train safety system is 3. SR is required for not all four trains.	
	SR 3.04 Entry into a MODE or other specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency, except as provided by SR 3.0.3. When an LCO is not met due to Surveillances not having been met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with LCO 3.0.4.	Entry into a MODE or other specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency for the required equipment, except as provided by SR 3.0.3. When an LCO is not met, due to Surveillances not having been met for the required equipment, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with LCO 3.0.4.	LCO of 4 train safety system is 3. SR is required for not all four trains.	
3.1	REACTIVITY			

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (5/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	CONTROL SYSTEMS			
3.1.1	SHUTDOWN MARGIN (SDM)	Same as STS except for the description of SFCP	-	
3.1.2	3.1.2 Core Reactivity	Same as STS except for the description of SFCP	-	
3.1.3	3.1.3 Moderator Temperature Coefficient (MTC)	(LCO3.1.3) The maximum upper limit, which is power dependent, is not shown in the LCO.	Safety analyses use bounded method.	Chapter 4.3, Chapter 15.0
3.1.4	3.1.4 Rod Group Alignment Limits	Same as STS except for the description of SFCP	-	
3.1.5	3.1.5 Shutdown Bank Insertion Limits	Same as STS except for the description of SFCP	--	
3.1.6	3.1.6 Control Bank Insertion Limits	Same as STS except for the description of SFCP	-	
3.1.7	3.1.7 Rod Position Indication	Same as STS	-	
3.1.8	-	3.1.8 PHYSICS TESTS Exceptions - MODE 1 (Same as NUREG-1431 Rev.1)	Availability for MODE-1 PHYSICS TEST.	
3.1.9	3.1.8 PHYSICS TESTS Exceptions - MODE 2	3.1.9 PHYSICS TESTS Exceptions - MODE 2	-	
	LCO a RCS lowest loop average temperature is ≥ [531]°F,	RCS lowest loop average temperature is ≥ 541°F.	RCS HZP Temperature is 10°F higher than NUREG-1431. Reflection of US-APWR Design.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (6/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	LCO 3.1.8 …"RTS Instrumentation," Functions 2, 3, 6 and 18.e, may be…	LCO 3.1.9 …"RTS Instrumentation," Functions 2, 3__ and 15.c, may be…	Reflection of US-APWR Design.	
3.2	3.2 POWER DISTRIBUTION LIMITS			
3.2.1 A	3.2.1A Heat Flux Hot Channel Factor (FQ(Z)) (FXY Methodology)	N/A	-	
3.2.1 B	3.2.1B Heat Flux Hot Channel Factor (FQ(Z)) (RAOC-W(Z) Methodology)	N/A	-	
3.2.1 C	3.2.1C Heat Flux Hot Channel Factor (FQ(Z)) (CAOC-W(Z) Methodology)	-	-	
	"K(Z)" is defined in SR3.2.1.2	"K(Z)" is not defined in SR3.2.1.2	US-APWR does not use K(Z) curve for safety analysis	Chapter 4.3, Chapter 15.6
3.2.2	Nuclear Enthalpy Rise Hot Channel Factor (N FΔH)	Same as STS except for the description of SFCP	-	
3.2.3 A	3.2.3A AXIAL FLUX DIFFERENCE (Constant Axial Offset Control Methodology)	Same as STS except for the description of SFCP	-	
3.2.3 B	3.2.3B AXIAL FLUX DIFFERENCE (Relaxed Axial Offset Control Methodology)	N/A	-	
3.2.4	3.2.4 QUADRANT POWER TILT RATIO	Same as STS except for the description of SFCP	-	
3.3	3.3 INSTRUMENTATION			

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (7/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
3.3.1	All Functions	STS Functions reflected the US-APWR Functions	Reflected the US-APWR Functions	
	3.3.1 Reactor Trip System (RTS) Instrumentation	-	-	
	Condition B	Condition B Completion time longer (72 vs 48 hrs)	4 trains. Diverse means for actuating manual trip – remaining two OPERABLE trains and software manual trip functions from VDU screens.	
	Condition C	Condition C Applicable to Manual Reactor Trip only in MODES 3, 4, & 5. Other Functions applicable in STS per new Condition D. Completion time longer (72 vs 48 hrs)	4 trains. Diverse means for actuating manual trip – remaining two OPERABLE trains and software manual trip functions from VDU screens.	
	Condition C	Condition D Condition specific to RTBs, RTB trip mechanism, and automatic logic in MODES 3, 4, & 5. And change to "required train" .	Formatting Completion time based on the STS.	
	Condition D, E, K, L and M [NOTE The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels.]	Condition D, E, F,L, M, R and T [NOTE One (one) channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment.]	Digital platform characteristics.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (8/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	Conditions E	Change to "required" channel.	Completion time based on the STS.	
	Conditions L,M	Condition L (STS Condition M deleted)	STS Condition M applies to Reactor Coolant Pump Breaker trip channels which does not apply to USAPWR.	
	Conditions N	NA (STS Condition N deleted)	Turbine trip channel Actions moved to Condition L due to 4 train redundancy of turbine trip channels	
	Conditions O	Condition M Change to "required" channel.	Completion time based on the STS.	
	Conditions P	Condition N Change to "required" channel.	Turbine trip channel Actions moved to Condition L due to 4 train redundancy of turbine trip channels	
	-	Added Condition T	Main Turbine Stop Valve Position function in the US-APWR.	
	Condition's General	Renumbered	Formatting	
	SR 3.3.1.4	NOTE deleted.	No the reactor trip bypass breaker in the US-APWR.	
	SR 3.3.1.5	Actuation Logic Test Frequency increased from 92 days STB to 24 months.	Digital platform characteristics.	
	SR 3.3.1.7	COT Frequency increased from 182 days to 24 months.	Digital platform characteristics.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (9/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	SR 3.3.1.8	Changed COT to CHANNEL CHECK.	COT is performed same as other parameters in US-APWR. SR3.31.8 is revised to cover SR3.3.1.1 against requirement of SR3.3.1.8 in STS.	
	SR 3.3.1.9	TADOT deleted	No UV-RCP and UF-RCP function in the US-APWR.	
	SR 3.3.1.12	NOTE deleted.	No bypass loop RTD in the US-APWR.	
	SR 3.3.1.13	Deleted.	Reflect fuel cycle for US-APWR and integrate other COT.	
	SR 3.3.1.14	Deleted.	Reflect fuel cycle for US-APWR and integrate other TADOT.	
	SRs General	STS SRs for Master and Slave Relay Testing Deleted	Digital Platform replaced relay scheme used in STS SSPS	
	SR's General	Frequency for conducting TADOT, CHANNEL CALIBRATION, and RTS RESPONSE TIME TESTS increased to 24 months from 18 months.	Reflect longer fuel cycle for US-APWR	
	SR's General	Renumbered	Formatting	
	Table 3.3.1-1 Item 3.a and 3.b	Added SR 3.3.3.1	Digital platform characteristics.	
	Table 3.3.1-1 Item 3.a, 4, 9 and 19	Added SR 3.3.3.13	Digital platform characteristics.	
	Table 3.3.3-1 footnote (j)	Changed footnote (j) description	Digital platform characteristics.	
	Table 3.3.1-1 Item 13.a	Added SR 3.3.1.1 and SR 3.3.1.7	Digital platform characteristics.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (10/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	Table 3.3.1-1 General	Changed Allowable Value.	Digital platform characteristics.	
3.3.2	3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation	-	-	
	Condition B	Completion time longer	Diverse means for actuating manual ESFAS actuation – remaining two OPERABLE trains and software manual trip functions from VDU screens.	
	Condition D	Added "For Containment Pressure and Main Steam Line Pressure" in NOTES	These functions have actually 4 channel.	
	Condition D, [NOTE The inoperable channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment of other channels.]	Condition D [NOTE One (one) channel may be bypassed for up to 12 hours for surveillance testing and setpoint adjustment.]	Digital platform characteristics.	
	Condition E	Failed Containment Pressure channel is not placed in Bypass. Shutdown required if channel cannot be restored within completion time.	3 channels required versus STS 4. Operation with only 2 containment channels OPERABLE for an indefinite period of time is not acceptable.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (11/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	Condition F	Completion time longer	Diverse means for actuating manual ESFAS actuation – remaining two OPERABLE trains and software manual trip functions from VDU screens. And completion time based on the STS.	
	Condition H,I	Deleted.	Condition G and D	
	NA	New Condition unique to EFW actuation logic train inoperability. Longer completion time than STS	4 train system. Capability of system to satisfy functional requirements and reliability of PSMS due to continuous self-testing and diagnostics.	
	NA	New Condition for Containment Purge Isolation Instrumentation.	Reflect inclusion of STS LCO 3.3.6 into LCO 3.3.2. Increased Completion Time due to 4 train system. Capability of system to satisfy functional requirements and reliability of PSMS due to continuous self-testing and diagnostics.	
	NA	New Condition for Containment Purge Isolation Instrumentation.	Reflect inclusion of STS LCO 3.3.6 into LCO 3.3.2.	
	NA	New Condition for MCR HVAC Instrumentation.	Reflect inclusion of STS LCO 3.3.6 into LCO 3.3.2.	
	Condition's General	Change to "required" channel.	Completion time based on the STS.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (12/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	Condition's General	Renumbered	Formatting	
	SR 3.3.2.2	Actuation Logic Test Frequency increased from 92 days STB to 24 months.	Digital platform characteristics.	
	SR 3.3.2.3	Deleted.	This is used by conventional system. (Actuation Relays)	
	SR 3.3.2.4	Deleted.	This is used by conventional system. (SSPS)	
	SRs General	STS SRs for Master and Slave Relay Testing Deleted	Digital Platform replaced relay scheme used in STS SSPS	
	SRs General	Frequency for conducting COT and TADOT increased to 24 months.	Reliability of digital platform	
	SRs General	Frequency for conducting CHANNEL CALIBRATION, and ESF RESPONSE TIME TESTS increased to 24 months.	Reflect longer fuel cycle for US-APWR	
3.3	3.3.3 Post Accident Monitoring (PAM) Instrumentation	-	-	
	Condition B and C	Added NOTE for pair function.	Reflected the US-APWR Functions	
	SR 3.3.3.2	Frequency changed from 18 months to 24 months	Reflect longer fuel cycle for US-APWR	
	Table 3.3.3-1 Functions	Table Functions differ in some cases from that listed in STS	Not all Functions listed in STS table are applicable for US-APWR or are used in different scheme.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (13/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	Table 3.3.3-1 footnote	Added footnote (d) for pair function	Reflected the US-APWR Functions	
3.3.4	3.3.4 Remote Shutdown System	-	-	
	LCO	LCO statement changed to requiring specific Functions to be OPERABLE to requiring the console to be OPERABLE.	The RSC has the same capability for control of equipment as the MCR and therefore, not restricted to a select set of Functions.	
	SRs General	SRs for the RSC are not based on verifying OPERABILITY of specific Functions as done in STS. For US-APWR the SRs verifies the capability of the transfer switches to transfer control from the MCR to the RSC and communicate properly with the PSMS.	RSC uses Safety VDUs to communicate with digital platform PSMS rather than a set of hard wired functions routed to the remote shutdown panel.	
	STS Table 3.3.4-1	Not used in US-APWR LCO 3.3.4	The RSC has the same capability for control of equipment as the MCR and therefore, not restricted to a select set of Functions.	
3.3.5	3.3.5 Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation	3.3.5 Loss of Power (LOP) Class 1E Gas Turbine Generator (GTG) Start Instrumentation Refers to Class 1E gas turbine generators and reflects 4 train design.	Unique features of US-APWR	
	-	Add SRs 3.3.5.4 and 3.3.5.5	Reflect interface with digital platform	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (14/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
3.3.6	3.3.6 Containment Purge and Exhaust Isolation Instrumentation	Remove this column.	This section is included to 3.3.2	
	-	3.3.6 Diverse Actuation System (DAS)	The DAS is considered to meet 10 CFR 50.36(d) (2)(ii) criteria	
3.3.7	3.3.7 Control Room Emergency Filtration System (CREFS) Actuation Instrumentation	Delete this column.	This section is included to 3.3.2	
3.3.8	3.3.8 Fuel Building Air Cleanup System (FBACS) Actuation Instrumentation	Delete this column.	US-APWR has no relevant system. The effect of purification by Iodine filter is not expected..	
3.3.9	3.3.9 Boron Dilution Protection System (BDPS)	Delete this column.	For US-APWR, boron dilution is detected by Source Range NIS.	
3.4	**REACTOR COOLANT SYSTEM**			
3.4.1	RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling Limits	-	-	
	LCO 3.4.1 c RCS total flow rate ≥[284000]gpm	LCO 3.4.1 c RCS total flow rate ≥460,000gpm	Due to high reactor thermal power	
	SR 3.4.1.4 Frequency 18 months	SR 3.4.1.4 Frequency 24 months	24 month refueling cycle.	
3.4.2	RCS Minimum Temperature for Criticality	-	-	
	Each RCS loop average temperature is ≥ [541]°F	Each RCS loop average temperature is ≥ 551°F	RCS HZP Temperature is 10°F higher than NUREG-1431.	Chapter 16 BASES B3.4.2
3.4.3	RCS Pressure and Temperature Limits	Same as STS except for the description of SFCP	-	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (15/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
3.4.4	RCS Loops - MODES 1 and 2	Same as STS except for the description of SFCP	-	
3.4.5	RCS Loops - MODE 3	-	-	
	Verify steam generator secondary side water levels are ≥ 17% for required RCS loops.	Verify steam generator secondary side water levels are ≥ 13% for required RCS loops.	13% is set point of low steam generator water level.	
3.4.6	RCS Loops - MODE 4	-	-	
	LCO 3.4.6 Two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops shall be OPERABLE, and one loop shall be in operation.	Two RCS loops shall be OPERABLE and one RCS loop shall be in operation. OR Three Residual Heat Removal (RHR) loops shall be OPERABLE and two RHR loops shall be in operation.	Sufficient redundancy of trains.	
	Condition A Required Action A.2 NOTE Only required if RHR loop is OPERABLE.	Only required if two RHR loops are OPERABLE.	ditto	
	Condition B Two required loops inoperable. OR Required loop not in operation.	Two or more required loops inoperable. OR Required loop(s) not in operation.	ditto	
	SR 3.4.6.1 Verify required RHR or RCS loop is in operation.	Verify required RHR or RCS loops are in operation.	ditto	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (16/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	SR3.4.6.2 RHR pumps SG secondary side water levels are ≥ 17% for required RCS loops	CS/RHR pumps SG secondary side water levels are ≥ 13% for required RCS loops	13% is set point of low steam generator water level.	
3.4.7	RCS Loops - MODE 5, Loops Filled	-	-	
	LCO 3.4.7 One residual heat removal (RHR) loop	Two residual heat removal (CS/RHR) loop	Sufficient redundancy of trains CS/RHR pump capacity is 50% x 4.	
	Condition A "One required RHR loop inoperable. AND One RHR loop OPERABLE."	One required RHR loop inoperable. OR One or more required SG's with secondary side water level not within limit AND Two RHR loops OPERABLE and in Operation.	SG with secondary side water level within limit is applicable to remove heat from RCS. Two RHR loops in operation are necessary.	
		Deviation associated with above in Condition B and SR	ditto	
	SG secondary side water level is ≥ 17% for required RCS loops	SG secondary side water level is ≥ 13% for required RCS loops	13% is set point of low steam generator water level.	
3.4.8	RCS Loops - MODE 5, Loops Not Filled	-	-	
		Deviations associated with 3.4.7 are involved.	Sufficient redundancy of trains	
3.4.9	Pressurizer			

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (17/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	LCO b."Two groups of pressurizer heaters OPERABLE with the capacity of each group ≥ 125 kW"	LCO b."Three groups of pressurizer heaters OPERABLE with the capacity of each group ≥ 120 kW"	Three groups of pressurizer heaters have sufficient capacity.	
3.4.10	Pressurizer Safety Valves	-	-	
	LCO Three pressurizer safety valves shall be OPERABLE with lift settings ≥ 2460 psig and ≤ 2510 psig.	Four pressurizer safety valves shall be OPERABLE with lift settings ≥ 2435 psig and ≤ 2485 psig.	Four Pressurizer Safety Valves have sufficient capacity.	
	Note This exception is allowed for 54 hours following entry into MODE 3 provided a preliminary cold setting	This exception is allowed for 72 hours following entry into MODE 3 provided a preliminary cold setting	Outage time for each safety valve is 18 hours. 4 valves need 72 hours. 72 hr outage time does not have large impact from the point of view of risk.	
3.4.11	Pressurizer Power Operated Relief Valves	3.4.11 Safety Depressurization Valves (SDVs)	-	
	PORV	SDV	SDVs have function to decrease RCS pressure during accident and are operated with only manual. On the other hand, PORVs are controlled automatically and operated with manual. The LCO of PORV is modified according to this difference to apply SDV.	
3.4.12	Low Temperature Overpressure Protection System	-	-	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (18/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	LCO An LTOP System shall be OPERABLE with a maximum of [one] [high pressure injection (HPI)] pump [and one charging pump] capable of injecting into the RCS and the accumulators isolated and one of the following pressure relief capabilities:	An LTOP System shall be OPERABLE with a maximum of two Safety Injection (SI) pumps and one charging pump capable of injecting into the RCS and the accumulators isolated and one of the following pressure relief capabilities	Modified configuration of LTOP system. PORVs is not credited in US-APWR.	
	a. Two power operated relief valves (PORVs) with lift settings within the limits specified in the PTLR, [b. Two residual heat removal (RHR) suction relief valves with set points ≥ [436.5] psig and ≤ [463.5] psig,] [c. One PORV with a lift setting within the limits specified in the PTLR and one RHR suction relief valve with a set point ≥ [436.5] psig and ≤ [463.5] psig,] or d. The RCS depressurized and an RCS vent of ≥ [2.07] square inches.	a. Two residual heat removal (RHR) suction relief valves with setpoints ≥ 456 psig and ≤ 484 psig, or b. The RCS depressurized and an RCS vent of ≥ 4.7 square inches.	ditto	
	Condition A Two or more [HPI] pumps capable of injecting into the RCS.	Three or more SI Pumps capable of injecting into the RCS.	ditto	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (19/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	Required Action A1 Initiate action to verify a maximum of [one] [HPI] pump is capable of injecting into the RCS.	Initiate action to verify a maximum of two SI pumps is capable of injecting into the RCS.	ditto	
	Condition E One required RCS relief valve inoperable in MODE 4.	One required RHR suction relief valve inoperable in MODE 4, 5, 6	ditto	
	Required Action E1 Restore required RCS relief valve to OPERABLE status.	Restore required RHR suction relief valve to OPERABLE status. OR E.2 Depressurize RCS and establish RCS vent of ≥ 4.7 square inches	ditto	
	Condition F, G	N/A	ditto	
	SR 3.4.12.1 Verify a maximum of [one] [HPI] pump is capable of injecting into the RCS.	Verify a maximum of two SI pumps is capable of injecting into the RCS.	ditto	
	SR 3.4.12.5 Verify required RCS vent ≥ [2.07] square inches open.	NOTE: Only required to be performed when complying with LCO 3.4.12.b ---------- Verify required RCS vent ≥ 4.7 square inches open.	Modified configuration of LTOP system. PORVs is not credited in US-APWR.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (20/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	SR 3.4.12.6 Verify PORV block valve is open for each required PORV.	Verify RHR suction relief valves lift setting.	ditto	
	SR 3.4.12.6 Frequency 72 hours	In accordance with the In-service Testing Program	ditto	
	SR 3.4.12.8, SR 3.4.12.9	N/A	ditto	
3.4.13	RCS Operational LEAKAGE	-	-	
	LCO 3.4.13 b "1 gpm unidentified LEAKAGE"	"0.5 gpm unidentified LEAKAGE"	Reflection of US-APWR design.	
3.4.14	RCS Pressure Isolation Valve (PIV) Leakage	-	-	
	REQUIRED ACTION A2. "Restore RCS PIV to within limits"	The description in the left column is deleted.	Reflection of US-APWR design.	
	Condition C " RHR System auto closure interlock function inoperable."	"RHR suction valve interlock function inoperable."	US-APWR doesn't have auto closure function of RHR suction valves.	
	SR 3.4.14.1, SR 3.4.14.2 Test Frequency 18 months	Test Frequency 24 months	24 month refueling cycle.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (21/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	SR 3.4.14.2 NOTE---------- Not required to be met when the RHR System auto closure interlock is disabled in accordance with SR 3.4.12.7. ------ Verify RHR System auto closure interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ [425] psig.	NOTE---------- Not required to be met when the RHR System suction valve interlock is disabled in accordance with SR 3.4.12.7. ------ Verify RHR System suction valve interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ 425 psig.	US-APWR doesn't have auto closure function of suction valves.	
	SR 3.4.14.3 Verify RHR System auto closure interlock causes the valves to close automatically with a simulated or actual RCS pressure signal ≥ [600] psig.	N/A	ditto	
3.4.15	RCS Leakage Detection Instrumentation	-	-	
	LCO 3.4.15 b “One containment atmosphere radioactivity monitor (gaseous or particulate)”	“One containment atmosphere radioactivity monitor (particulate)”	Reflection of US-APWR design.	
	SR 3.4.15.3, 4, 5 Frequency 18 months	24 months	24 month refueling cycle.	
3.4.	RCS Specific Activity			

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (22/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
16	Condition and SR	・Revise the definition of DOSE EQUIVALENT I-131. ・Add a new TS definition for DOSE EQUIVALENT XE-133. ・Other modification in TSTF-490.	Refection to TSTF-490 (Reference 5) approved by NRC	
3.4.17	RCS Loop Isolation Valves	N/A	US-APWR has no relevant system.	
3.4.18	RCS Isolated Loop Startup	N/A	US-APWR has no relevant system.	
3.4.19	RCS Loops - Test Exceptions	Same as STS	-	
3.4.20	Steam Generator (SG) Tube Integrity	The description of tube repair is deleted	All SG tubes that satisfy the repair criteria are plugged.	
3.5	EMERGENCY CORE COOLING SYSTEMS (ECCS)			
3.5.1	3.5.1 Accumulators	-	-	
	SR3.5.1.2 Verify borated water volume in each accumulator is ≥ 7853 gallons and ≤ 8171 gallons	Verify borated water volume in each accumulator is ≥ 19,338 gallons and ≤ 19,734 gallons	Safety Analyses confirm validity of these numerical values.	Chapter 15
	SR3.5.1.3 Verify nitrogen cover pressure in each accumulator is ≥ 385psig and ≤ 481 psig	Verify nitrogen cover pressure in each accumulator is ≥ 586psig and ≤ 695 psig	Safety Analyses confirm validity of these numerical values.	Chapter 15

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (23/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	SR3.5.1.4 Verify boron concentration in each accumulator is ≥ 1900 ppm and ≤ 2100 ppm.	Verify boron concentration in each accumulator is ≥ 4000 ppm and ≤ 4200 ppm.	Safety Analyses confirm validity of these numerical values.	Chapter 15
	SR3.5.1.5 Verify power is removed from each accumulator isolation valve operator when RCS pressure is ≥ 2000 psig	Verify power is removed from each accumulator isolation valve operator when RCS pressure is ≥ 1920 psig	1920psig is set point of permissive (P-11).	
3.5.2	ECCS - Operating	Safety Injection System(SIS)-Operating	US-APWR doesn't have Low Pressure Injection System.	
	LCO, CONDITION A Two ECCS trains shall be OPERABLE.	Three SIS trains shall be OPERABLE.	Reflection of highly redundancy of trains	
	Condition C "Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available."	Deletion of the condition in the left column.	Simplified and conservative specification	
	SR3.5.2.4, SR3.5.2.5 18months	SR 24 months	24 month refueling cycle.	
	SR3.5.2.3 Verify ECCS piping is full of water	Deletion of the SR in the left column.	System configuration of SIS prevent to generate gas accumulation. Full Flow Test can remove gas accumulation in flow path.	Chapter 6.3

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (24/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	SR3.5.2.5 Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	Deletion of the SR in the left column.	Motor operated valves in the flow path (Accumulator discharge valves) are locked open.	
	SR3.5.2.7 [Verify, for each ECCS throttle valve listed below, each position stop is in the correct position.	Deletion of the SR in the left column.	There is no ECCS throttle valve actuated on SI signal.	Chapter 6
3.5.3	ECCS - Shutdown	Safety Injection System (SIS) - Shutdown.	-	
	NOTE that explain realignment of RHR.	Deletion of the note in the left column.	US-APWR doesn't have Low Pressure Injection (LPI) function.	
	Condition and requirement for LPI function.	Deletion of the description in the left column.	US-APWR doesn't have Low Pressure Injection (LPI) function.	
3.5.4	Refueling Water Storage Tank (RWST)	3.5.4 Refueling Water Storage Pit (RWSP)	US-APWR has RWSP in Containment Vessel instead of RWST.	
	SR3.5.4.1 Verify RWST borated water temperature is ≥ 35°F and ≤ 100°F.	Verify RWSP borated water temperature is ≥ 32°F and ≤ 120°F.	120 degF is Containment maximum temperature during normal operation. 32 degF is the freezing point. These temperatures are used in safety analyses.	Chapter 6
	SR3.5.4.2 RWST borated water minimum vol. 466,200 gallons	SR3.5.4.2 RWSP borated water minimum vol. 583,340 gallons	Safety Analyses confirm validity of these numerical value.	Chapter 15

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (25/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	SR3.5.4.3 RWST boron concentration ≥2000 ppm and ≤ 2200 ppm	SR3.5.4.3 RWSP boron concentration ≥ 4000 ppm and ≤ 4200 ppm	Safety Analyses confirm validity of these numerical value.	Chapter 15
3.5.5	Seal Injection Flow	N/A	US-APWR has no relevant system.	
	N/A	pH Adjustment	Reflection of US-APWR design.	Chapter 6
3.5.6	Boron Injection Tank (BIT)	N/A	US-APWR has no relevant system.	
3.6	CONTAINMENT SYSTEMS			
3.6.1	Containment (Atmospheric, Subatmospheric, Ice Condenser, and Dual)	Same as STS	-	
3.6.2	Containment Air Locks (Atmospheric, Subatmospheric, Ice Condenser, and Dual)	Same as STS except for the description of RMTS and SFCP	-	
3.6.3	Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual)	Containment Isolation Valves	-	
	Note 1. SR3.6.3.1 Penetration flow path(s) 42 inch	Penetration flow path(s) 36 inch	Reflection of US-APWR design.	
	Conditions D for Shielding Building	Deletion of the description in the left column.	Reflection of US-APWR design.	
	SR3.6.3.1, SR3.6.3.2 [42] inch purge valve, [8] inch purge valve	Add "high volume" and "low volume" in front of purge valve.	Reflection of US-APWR design.	
	SR3.6.3.6, SR3.6.3.9 Cycle each weight or spring loaded check valve testable during operation	Deletion of the description in the left column.	US-APWR has no weight or spring loaded check valve	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (26/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
3.6.4 A	Containment Pressure (Atmospheric, Dual, and Ice Condenser)	-	-	
	LCO 3.6.4 Containment pressure shall be ≥ [-0.3] psig and ≤ [+1.5] psig	Containment pressure shall be ≥ -0.3 psig and ≤ +2.0 psig	Safety Analyses confirm validity of these numerical value.	
3.6.4 B	Containment Pressure (Subatmospheric)	N/A	-	
3.6.5 A	Containment Air Temperature (Atmospheric and Dual)	Same as STS except for the description of SFCP	-	
3.6.5 B	Containment Air Temperature (Ice Condenser)	N/A	-	
3.6.5 C	Containment Air Temperature (Subatmospheric)	N/A	-	
3.6.6 A	Containment Spray and Cooling Systems (Atmospheric and Dual) (Credit taken for iodine removal by the Containment Spray System)	3.6.6 Containment Spray System	-	
	LCO, CONDITION A Two containment spray trains and [two] containment cooling trains shall be OPERABLE.	Three containment spray trains shall be OPERABLE	Reflection of highly redundancy of trains	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (27/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	-	Note CS train may be considered OPERABLE during alignment and operation for decay heat removal as RHRS if capable of being manually realigned to the CS mode of operation.	Reflection of US-APWR design. CS/RHR pumps have both function of RHR and CS.	
	SR3.6.6A2, SR3.6.6A.7 Description about [required] containment cooling train fan unit.	Deletion of the description in the left column.	US-APWR doesn't have containment cooling train unit.	
	SR3.6.6A.5, SR3.6.6A.6 18months	SR 24months	24 month refueling cycle.	
	SR3.6.6A.3 Verify each [required] containment cooling train cooling water flow rate is ≥ [700] gpm.	Deletion of the description in the left column.	US-APWR doesn't have containment cooling system.	
3.6.6 B	Containment Spray and Cooling Systems (Atmospheric and Dual) (Credit not taken for iodine removal by the Containment Spray System)	N/A	-	
3.6.6 C	3.6.6C Containment Spray System (Ice Condenser)	N/A	-	
3.6.6 D	3.6.6D Quench Spray (QS) System (Subatmospheric)	N/A	-	
3.6.6 E	3.6.6E Recirculation Spray (RS) System (Subatmospheric)	N/A	-	
3.6.7	3.6.7 Spray Additive System (Atmospheric, Subatmospheric, Ice	N/A	US-APWR has no relevant system.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (28/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	Condenser, and Dual)			
3.6.8	3.6.8 Shield Building (Dual and Ice Condenser)	N/A	US-APWR has no relevant system.	
3.6.9	3.6.9 Hydrogen Mixing System (HMS) (Atmospheric, Ice Condenser, and Dual)	N/A	US-APWR has no relevant system.	
3.6.10	3.6.10 Hydrogen Ignition System (HIS) (Ice Condenser)	N/A	US-APWR has no relevant system.	
3.6.11	3.6.11 Iodine Cleanup System (ICS) (Atmospheric and Subatmospheric)	N/A	US-APWR has no relevant system.	
3.6.12	3.6.12 Vacuum Relief Valves (Atmospheric and Ice Condenser)	N/A	US-APWR has no relevant system.	
3.6.13	3.6.13 Shield Building Air Cleanup System (SBACS) (Dual and Ice Condenser)	N/A	US-APWR has no relevant system.	
3.6.14	3.6.14 Air Return System (ARS) (Ice Condenser)	N/A	US-APWR has no relevant system.	
3.6.15	3.6.15 Ice Bed (Ice Condenser)	N/A	US-APWR has no relevant system.	
3.6.16	3.6.16 Ice Condenser Doors (Ice Condenser)	N/A	US-APWR has no relevant system.	
3.6.17	3.6.17 Divider Barrier Integrity (Ice Condenser)	N/A	US-APWR has no relevant system.	
3.6.18	3.6.18 Containment Recirculation Drains (Ice Condenser)	N/A	US-APWR has no relevant system.	
3.7	3.7 PLANT SYSTEMS			
3.7.1	3.7.1 Main Steam Safety Valves (MSSVs)	-	-	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (29/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	LCO 3.7.1 [Five] MSSVs per steam generator shall be OPERABLE.	Six MSSVs per steam generator shall be OPERABLE.	Reflection of US-APWR design.	
	Condition A "One or more steam generators with one MSSV inoperable"	Deletion of the condition in the left column.	STS defines specifics condition in case of one MSSV inoperable. US-APWR apply same procedure regardless the number of inoperable MSSV.	
	Condition C Required Action and associated Completion Time not met. OR One or more steam generators with ≥ [4] MSSVs inoperable.	Condition B Required Action and associated Completion Time not met. OR One or more steam generators with ≥ 5 MSSVs inoperable.	Reflection of US-APWR design.	
	Table 3.7.1-1 Maximum allowable power depending on number of operable MSSVs per steam generator.	[Number of operable MSSVs per SG, Maximum allowable power] [5, 59], [4, 45], [3, 31], [2, 18]	Maximum allowable power for US-APWR is decided with corresponding equations in STS	
	Table 3.7.1-2(page 1 of 1) Main Steam Safety Valve Life Settings: LIFE SETTING (psig ±[3]%)	LIFE SETTING (psig ± 1 %)	Consistency with the life setting of the STS 3.4.10 pressurizer safety valves.	
3.7.2	3.7.2 Main Steam Isolation Valves (MSIVs)	-	-	
	APPLICABILITY: MODE 1,MODES 2 and 3 except when all MSIVs are closed [and de-activated].	APPLICABILITY: MODE 1,MODES 2 and 3 except when all MSIVs are closed	MSIV used in US-APWR doesn't close by de-activation.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (30/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
3.7.3	Main Feedwater Isolation Valves (MFIVs) and Main Feedwater Regulation Valves (MFRVs) [and Associated Bypass Valves]	Main Feedwater Isolation Valves (MFIVs), Main Feedwater Regulation Valves (MFRVs), Main Feedwater Bypass Regulation Valves (MFBRVs), and Steam Generator Water Filling Control Valves (SGWFCVs)	Section title is changed based on system design.	
	APPLICABILITY: MODES 1, [and 2] [2, and 3] except when MFIV, MFRV, [or associated bypass valve] is closed and [de-activated] [or isolated by a closed manual valve].	APPLICABILITY: MODES 1, [and 2] [2, and 3] except when MFIV, MFRV, Main Feedwater Bypass Regulation Valves (MFBRVs), and Steam Generator Water Filling Control Valves (SGWFCVs)] are closed.	Reflection of US-APWR design.	
	SR 3.7.3.2 Frequency 18 months	SR Frequency 24 months	24 month refueling cycle.	
3.7.4	Atmospheric Dump Valves (ADVs)	Main Steam Depressurization Valves (MSDVs)	-	
	[Three] ADV lines shall be OPERABLE.	Four MSDV lines shall be OPERABLE.	Reflection of US-APWR design. MSDVs are motor operated valves with manual control. These valves are safety components. Minimum number expected against accidents is two.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (31/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	APPLICABILITY: MODES 1, 2, and 3, MODE 4 when steam generator is relied upon for heat removal.	APPLICABILITY: MODES 1, 2, and 3.	The MODE 4 applicability is deleted because the SG heat removal is not assumed in any safety analysis at MODE 4.	
	Condition C CONPLETION TIME Be in MODE 3 within 6 hours and be in MODE 4 within 24 hours	Condition C CONPLETION TIME Be in MODE 3 within 6 hours and be in MODE 4 within 12 hours	Reflection of response to RAI No.162-1821 REVISION 0, QUESTION 16-157.	
	SR 3.7.4.2 Frequency 18 months	SR Frequency 24 months	24 month refueling cycle.	
3.7.5	Auxiliary Feedwater (AFW) System	Emergency Feedwater (EFWS) System	-	
	LCO [Three] AFW trains shall be OPERABLE.	Four EFW trains shall be OPERABLE with all EFW pump discharge cross-connect line isolation valves in all trains closed.	Each Injection line from EFW pump to Steam Generator is separated. Two train is inoperable due to accident and single failure criterion. Safety analyses expect two trains. Therefore LCO is four.	
	--NOTE-- [Only one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4.]	Deleted the left column.	The MODE 4 applicability is deleted because the SG heat removal is not assumed in any safety analysis at MODE 4.	
	APPLICABILITY: MODES 1, 2, and 3, MODE 4 when steam generator is relied upon for heat removal.	APPLICABILITY: MODES 1, 2, and 3.	The MODE 4 applicability is deleted because the SG heat removal is not assumed in any safety analysis at MODE 4.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (32/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	-	A.2 and B2 Open all EFW pump discharge cross-connect line isolation valves and LCO 3.7.5 is to be applied.	At least two SGs are necessary to mitigate DBA or transients and each pump has 50 percent capacity. To supply EFW to two intact SGs in the condition with another faulty SG, it is necessary to open all EFW pump discharge cross-connect line isolation valve considering single failure of the EFW pump during OLM of the other pump. The condition with one inoperable pump during OLM is not distinguished from the condition with one pump failure.	
	Condition C CONPLETION TIME Be in MODE 3 within 6 hours and be in MODE 4 within 18 hours	Condition C CONPLETION TIME Be in MODE 3 within 6 hours and be in MODE 4 within 12 hours	Reflection of response to RAI No.162-1821 REVISION 0, QUESTION 16-157.	
3.7.6	3.7.6 Condensate Storage Tank (CST)	3.7.6 Emergency Feedwater Pit (EFW Pit)	Modified configuration of EFWS	
	LCO The CST shall be OPERABLE.	Two EFW pits shall be OPERABLE.	US-APWR has two 50% EFP.	
	Condition A. CST inoperable.	One or both EFW pits inoperable.	US-APWR has two 50% EFP.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (33/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	APPLICABILITY: MODES 1, 2, and 3, MODE 4 when steam generator is relied upon for heat removal.	APPLICABILITY: MODES 1, 2, and 3.	The MODE 4 applicability is deleted because the SG heat removal is not assumed in any safety analysis at MODE 4.	
	SR 3.7.6.1 Verify the CST level is ≥ [110,000 gal].	Verify each EFP level is ≥ 204,850 gallons	Reflection of US-APWR design.	
	Condition B CONPLETION TIME Be in MODE 3 within 6 hours and be in MODE 4 within 24 hours	Condition B CONPLETION TIME Be in MODE 3 within 6 hours and be in MODE 4 within 12 hours	Reflection of response to RAI No.162-1821 REVISION 0, QUESTION 16-157.	
3.7.7	3.7.7 Component Cooling Water (CCW) System	-	-	
	LCO Two CCW trains shall be OPERABLE.	Three CCW trains shall be OPERABLE	Reflection of highly redundancy of trains	
	Condition A One CCW train inoperable.	One required CCW train inoperable.	Reflection of highly redundancy of trains	
	Condition A REQUIRED ACTION Restore CCW train to OPERABLE status.	Restore three CCW trains to OPERABLE status.	Reflection of highly redundancy of trains	
	SR 3.7.7.2, 3.7.7.3 Frequency 18 months	24 months	24 month refueling cycle.	
3.7.8	3.7.8 Service Water System (SWS)	3.7.8 Essential Service Water System (ESWS)	-	
	LCO Two SWS trains shall be OPERABLE.	Three ESWS trains shall be OPERABLE	Reflection of highly redundancy of trains	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (34/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	Condition A One SWS train inoperable.	One required ESWS train inoperable.	Reflection of highly redundancy of trains	
	A1 NOTES Enter applicable and Required Actions of LCO 3.8.1, "AC Sources - Operating," for emergency diesel generator made inoperable by SWS	Enter applicable and Required Actions of LCO 3.8.1, "AC Sources - Operating," for emergency Class 1E gas turbine generator made inoperable by ESWS.	Unique features of US-APWR	
	A1 Restore SWS train to OPERABLE status.	Restore three ESWS trains to OPERABLE status	Reflection of highly redundancy of trains	
	SR 3.7.8.2, 3.7.8.3 Frequency 18 months	24 months	24 month refueling cycle.	
3.7.9	3.7.9 Ultimate Heat Sink (UHS)	N/A	COLA	
3.7.10	3.7.10 Control Room Emergency Filtration System (CREFS)	3.7.10 Main Control Room HVAC System (MCRVS)	-	
	-	NOTE The MCRVS consists of two trains of main control room emergency filtration system (MCREFS) and four trains of main control room air temperature control system (MCRATCS).	Rename the section title due to combination with 3.7.10 and 3.7.11. MCRVS of US-APWR has both function of Filtration and air temperature control.	
	SR 3.7.10.3, 3.7.10.4 Frequency [18 months]	24 months	24 month refueling cycle.	
3.7.11	3.7.11 Control Room Emergency Air Temperature Control System (CREATCS)	Described in 3.7.10	The requirement in 3.7.11 is combined with 3.7.10.	
	Two CREATCS trains shall be OPERABLE.	Three MCRATCS trains OPERABLE	Reflection of highly redundancy of trains	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (35/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	Condition A. One CREATCS train inoperable.	Condition B. One required MCRATCS train inoperable	The requirement in 3.7.11 is combined with 3.7.10. Reflection of highly redundancy of trains	
	Required Action Restore CREATCS train to OPERABLE status.	Restore three MCRATCS trains to OPERABLE status.	Reflection of highly redundancy of trains	
	SR 3.7.11.1 Frequency [18] months	SR 3.7.10.5 24 months	24 month refueling cycle.	
3.7.12	Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)	3.7.11 Annulus Emergency Exhaust System	Section number changed from 3.7.12 to 3.7.11. "3.7.12 ECCS Pump Room Exhaust Air Cleanup System" and "3.7.14 Penetration Room Exhaust Air Cleanup System" are combined.	
3.7.13	Fuel Building Air Cleanup System (FBACS)	N/A	US-APWR has no relevant system. The effect of purification by Iodine filter is not expected.	
3.7.14	Penetration Room Exhaust Air Cleanup System (PREACS)	3.7.11 Annulus Emergency Exhaust System	-	
	LCO, Condition	Same as the left column except system name.	Only changing of system name. Reflection of US-APWR design.	
	SR 3.7.14.3, 3.7.14.4 Frequency [18] months	24 months	24 month refueling cycle.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (36/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	SR 3.7.14.5 [Verify one PREACS train can maintain a pressure ≤ [-0.125] inches water gauge relative to atmospheric pressure during the [post accident] mode of operation at a flow rate of ≤ [3000] cfm.	SR 3.7.11.4 Verify the associated room can be maintained at a pressure -0.125 inches water gauge relative to atmospheric pressure using one Annulus Emergency Exhaust System train during the accident condition at a flow rate of ≤ 5600 cfm within 240 seconds after a start signal.	Reflection of US-APWR design.	
3.7.15	Fuel Storage Pool Water Level	3.7.12 Fuel Storage Pit Water Level	Only changing of system name.	
	SR 3.7.15.1 Frequency 7 days	SR 3.7.12.1 Added “at the start of any spent fuel movement campaign” and the description of SFCP	Reflection of US-APWR design.	
3.7.16	Fuel Storage Pool Boron Concentration]	3.7.13 Fuel Storage Pit Boron Concentration	Only changing of system name.	
3.7.17	[Spent Fuel Pool Storage]	N/A	US-APWR has no region 2 of Fuel Pool Storage.	
3.7.18	Secondary Specific Activity	3.7.14 Secondary Specific Activity Same as STS	-	
-	N/A	3.7.15 Main Steam Line Leakage	US-APWR applies LBB criteria to the Main Steam Line inside the containment.	
3.8	3.8 ELECTRICAL POWER SYSTEMS			

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (37/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
3.8.1	3.8.1 AC Sources - Operating	-	-	
	LCO	Written for 4 train Gas Turbine Generators instead of 2 train Diesel Generators	Sufficient redundancy of trains Modified configulation of ECCS	Chapter 8.3.1 Technical Report, MUAP-07024-P, Rev.1 (Reference 6)
	Condition E Two required DGs inoperable.	Two or more required Class 1E GTGs inoperable.	Reflection of highly redundancy of trains	
	Condition H Three or more required ac sources inoperable.	Two offsite circuits and one or more required GTGs inoperable. OR One offsite circuit and two or more required GTGs inoperable.	Reflection of highly redundancy of trains	
	SR3.8.1.2, 10, 11, 14, 18, 19	Modified for GTG with longer start time (100s) than DG and GTG doesn't require slow starting test.	Modified configuration of ECCS	Chapter 8.3.1
	SR3.8.1.2, 8, 10, 11, 14, 18, 19	Tolerances of steady state voltage and frequency are modified.	Results from Safety Analysis	
	SR3.8.1.4	Volume of day tank is changed.	Modified configuration of ECCS	
	SR3.8.1.7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18	SR Frequency is changed to 24 months	24 month refueling cycle.	
3.8.2	3.8.2 AC Sources - Shutdown	-	-	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (38/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
		Reflects GTG instead of DG	Modified configuration of ECCS	Chapter 8.3.1
3.8.3	3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air	3.8.3 Gas-Turbine generator Fuel Oil, Lube Oil	-	
		Reflects GTG instead of DG	Modified configuration of ECCS	Chapter 9.5.4, 6, 7
3.8.4	3.8.4 DC Sources - Operating	-	-	
	LCO	Allows outage of one train without limitations	Sufficient redundancy of trains	
	Condition A	Frequency of Acton A.2 is changed to 24h	Design of US-APWR	Chapter 8.3.2
	SR3.8.4.2, 3	SR Frequency is changed to 24 months	24 month refueling cycle.	
3.8.5	3.8.5 DC Sources - Shutdown	-	-	
	Condition A	Frequency of Acton A.2 is changed to 24h	Design of US-APWR	Chapter 8.3.2
3.8.6	3.8.6 Battery Parameters	-	-	
	LCO	Reflect 4 trains vs 2	Sufficient redundancy of trains	Chapter 8.3.2
	Condition B	Frequency of Acton B.2 is changed to 24h	Design of US-APWR	
3.8.7	3.8.7 Inverters - Operating	-	-	
	LCO	Reflect 4 trains vs 2	Sufficient redundancy of trains	Chapter 8.3.1
	--	--NOTE-- Train A and B or Train C and D ac vital buses shall not be supplied from Class 1E transformer concurrently.	Reflection of US-APWR design.	
3.8.8	3.8.8 Inverters - Shutdown	Same as 3.8.8	-	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (39/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
3.8.9	3.8.9 Distribution Systems - Operating	-	-	
	LCO	Refers to new table developed to identify the buses required (There are distribution systems for 4 train syatem and 2 train system) for different Conditions	Sufficient redundancy of trains	Chapter 8.3
3.8.10	3.8.10 Distribution Systems - Shutdown	-	-	
		NA	NA	
3.9	REFUELING OPERATIONS			
3.9.1	Boron Concentration	Same as STS except for the description of SFCP		
3.9.2	[Unborated Water Source Isolation Valves]	Unborated Water Source Isolation Valves		
		Same as STS except for the description of SFCP	US-APWR doesn't have analyzed a boron dilution event in MODE 6 due to strict isolation control.	
3.9.3	Nuclear Instrumentation	Nuclear Instrumentation	-	
	SR 3.9.3.2 Frequency 18 months	24 months	24 month refueling cycle.	
3.9.4	Containment Penetrations	-	-	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (40/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	LCO a. The equipment hatch is closed and held in place by [four] bolts,	The equipment hatch is closed and held in place by four bolts, or if open, capable of being closed,	This change doesn't influence safety analyses about fuel handling accidents. Administrative controls described in BASES ensure that the equipment hatch is capable of being closed.	
	LCO b. One door in each air lock is [capable of being] closed, and	One door in the emergency air lock is closed and one door in the personnel airlock capable of being closed, and	This change doesn't influence safety analyses about fuel handling accidents. Administrative controls described in BASES ensure that the equipment hatch is capable of being closed.	
	LCO c. and SR 3.9.4.3 Containment Purge and Exhaust Isolation System.	Containment Purge Isolation System.	Changing of system name. Reflection of US-APWR design.	
	APPLICABILITY and Condition A Suspend movement of [recently] irradiated fuel assemblies within containment	Suspend movement of irradiated fuel assemblies within containment	Reflection of US-APWR design.	
	-	SR 3.9.4.2 Verify the capability to install the equipment hatch.	Based on the LCO a (The equipment hatch is capable of being closed.)	
	SR 3.9.4.2 Frequency 18 months	24 months	24 month refueling cycle.	
3.9.5	Residual Heat Removal (RHR) and Coolant Circulation - High Water Level	-	-	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (41/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	LCO One RHR loop shall be OPERABLE and in operation.	Two RHR loops shall be OPERABLE and in operation.	Reflection of US-APWR design.	
	SR 3.9.5.1 Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ [2800] gpm.	Verify two RHR loops are in operation and circulating reactor coolant at a flow rate of ≥ 2645 gpm per pump.	Reflection of RHR system capacity of US-APWR.	
3.9.6	Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level	-	-	
	LCO Two RHR loops shall be OPERABLE, and one RHR loop shall be in operation.	Three RHR loops shall be OPERABLE, and in operation.	Reflection of RHR system capacity of US-APWR.	
	Condition B Requirement B2 Initiate action to restore one RHR loop to operation.	Initiate action to restore two RHR loops to operation.	ditto	
	SR 3.9.6.1 Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ [2800] gpm.	Verify two RHR loops are in operation and circulating reactor coolant at a flow rate of ≥ 2645 gpm per pump.	Reflection of RHR system capacity of US-APWR.	
3.9.7	Refueling Cavity Water Level	Same as STS except for the description of SFCP	-	
3.9.8	No specification for decay time.	The specification for decay time is added.	The specification is added to assure decay	Chapter 15.7

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (42/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
			time in DCD chapter 15.7.	
4.0	DESIGN FEATURES			
4.1	Site Location	Same as STS	-	
4.2	Reactor Core	-	-	
	The reactor shall contain [157] fuel assemblies.	The reactor shall contain 257 fuel assemblies.	Reflection of US-APWR design.	Chapter 4.3
	[Zircalloy or ZIRLO]	ZIRLO™	Reflection of US-APWR design.	Chapter 4.2
	4.2.2 [Control Rod] Assemblies	4.2.2 Rod Cluster Assemblies	" Rod Cluster Control Assemblies" is used in Chapter 4.2.	Chapter 4.2
	4.2.2 Number of Control rod assemblies is 48.	Number of Rod Cluster Control Assemblies is 69.	Reflection of US-APWR design.	Chapter 4.3
4.3	Fuel Storage	-	-	
	4.3.1.1 a maximum U-235 enrichment of [4.5] weight percent,	5.0 weight percent	Improvement of Core operation flexibility.	Chapter 4.2
	4.3.1.1 [c. A nominal [9.15] inch center to center distance between fuel assemblies placed in [the high density fuel storage racks],]	c. A nominal 11.1 inch center to center distance between fuel assemblies placed in spent fuel storage racks.	Spent fuel storage pit of US-APWR has only one region.	Chapter 9.1.2
	Description from d to f	-	Spent fuel storage pit of US-APWR has only one region.	Chapter 9.1.2
	4.3.1.2 a [4.5] weight percent,	5.0 weight percent,	Improvement of Core operation flexibility.	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (43/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	4.3.1.2 d A nominal [10.95] inch center to center distance between fuel assemblies placed in the storage racks.	A nominal 16.9 inch center distance between fuel assemblies placed in the storage racks.	Reflection of US-APWR design.	Chapter 9.1.2
	4.3.3 a storage capacity limited to no more than [1737] fuel assemblies.	900 fuel assemblies	Reflection of US-APWR design.	Chapter 9.1.1
5	ADMINISTRATIVE CONTROLS			
5.1	Responsibility	-	-	
	-	Specify COLA scope.	-	
5.2	Organization	-	-	
	-	Specify COLA scope.	-	
5.3	Unit Staff Qualifications	-	-	
	-	Specify COLA scope.	-	
5.4	Procedures	Same as STS	-	
5.5	Programs and Manuals	-	-	
5.5.1	Offsite Dose Calculation Manual (ODCM)	-	-	
	-	Specify COLA scope.	-	
5.5.2	5.5.2 Primary Coolant Sources Outside Containment	-	-	
	The systems include [Recirculation Spray, Safety Injection, Chemical and Volume Control, gas stripper, and Hydrogen Recombiner].	The systems include Containment Spray, Safety Injection, Chemical and Volume Control, and Sampling System.	Reflection of US-APWR design	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (44/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	b. Integrated leak test requirements for each system at least once per [18] months	Integrated leak test requirements for each system at least once per 24 months	24 month refueling cycle.	
5.5.3	Post Accident Sampling	Same as STS	-	
5.5.4 - 5.5.8		Same as STS	-	
5.5.9	Steam Generator (SG) Program	The description of tube repair is deleted	All SG tubes that satisfy the repair criteria are plugged.	
5.5. 10	Secondary Water Chemistry Program	Same as STS	-	
5.5. 11	Ventilation Filter Testing Program (VFTP)	-	-	
	a. and b. Table ESF Ventilation System and Flow rate are blank.	Numerical data of Flow rates of Main Control Room Emergency Filtration System (MCREFS) and Annulus Emergency Exhaust System (AEES) are described.	-	
	c. Table ESF Ventilation System, Penetration, RH and Face Velocity (fps) are blank.	The parameters in the left column are described.	-	
	d. Table ESF Ventilation System, Delta P and Flow rate are blank.	The parameters in the left column are described.	-	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (45/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
5.5. 12	[Waste Gas Holdup System], [gas storage tanks or fed into the offgas treatment system].	Gaseous Waste Management System gas storage tanks	Reflection of US-APWR design	
5.5. 13	Diesel Fuel Oil Testing Program	Gas Turbine Generator Fuel Oil Testing Program	US-APWR unique design	
5.5. 14	Technical Specifications (TS) Bases Control Program	Same as STS	-	
5.5. 15	Safety Function Determination Program (SFDP)	Same as STS	-	
5.5. 16	Containment Leakage Rate Testing Program	-	-	
	Some options are described.	Option B is selected.	-	
	b. Pa, is [45 psig]. The containment design pressure is [50 psig]	b. Pa, is 57.5 psig The containment design pressure is 68 psig.	Numerical values are from Chapter 6.	Chapter 6
	c. La at Pa shall be [ ] % of containment air weight per day.	, La, at Pa, shall be 0.10 % of containment air weight per day.	Safety Analyses confirm suitability.	Chapter 15
5.5. 17	Battery Monitoring and Maintenance Program	Same as STS	-	
5.5. 18	N/A	Configuration Risk Management Program	Description for RMTS is justified in section 2.1.	
5.5. 19	N/A	Surveillance Control Frequency Program	Description for SFCP is justified in section 2.2.	
5.5. 20	N/A	Control Room Envelope Habitability Program	Application of TSTF-448 (Reference 7)	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (46/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
5.6	Reporting Requirements			
5.6.1	Annual Radiological Environmental Operating Report	Same as STS	-	
5.6.2	Radioactive Effluent Release Report	Same as STS	-	
5.6.3	CORE OPERATING LIMITS REPORT (COLR)	-	-	
	The individual specifications and relevant reports are not described.	The individual specifications and relevant reports are referenced.	Reflection of US-APWR design	
5.6.4	Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)	-	-	
	a. LTOP arming, and PORV lift settings	"LTOP arming, and PORV lift settings" is deleted.	US-APWR doesn't have PORV.	
	The individual specifications that address RCS pressure and temperature limits are not described.	The individual specifications are referred.	Reflection of US-APWR design	
	b. The documents that describe the analytical methods.	Chapter 5 is referred.	Reflection of US-APWR design	
5.6.5	Post Accident Monitoring Report	-	-	

Table 2-1 Justification for Deviations between STS and US-APWR Technical Specifications (47/47)

	STS (NUREG-1431)	US-APWR	Justification	Reference (US-APWR DCD Chapter Number)
	When a report is required by Condition B or F of LCO 3.3.[3], "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days.	When a report is required by Condition B of LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days.	Reflection of US-APWR design	
5.6.7	Steam Generator Tube Inspection Report	The description of tube repair is deleted	All SG tubes that satisfy the repair criteria are plugged.	
5.7	[High Radiation Area]	Same as STS.	-	

3.0 CONCLUSIONS

The deviations between STS and the US-APWR Technical Specifications are described and justification of the deviations is explained.

4.0 REFERENCES

1. U.S. Nuclear Regulatory Commission, NUREG 1431, Rev. 3.1 December, 2005, “Standard Technical Specifications Westinghouse Plants”.

2. Nuclear Energy Institute, NEI 06-09 (Revision 0), “Risk-Managed Technical Specifications (RMTS) Guidelines” issued in November 2006.

3. Nuclear Energy Institute, NEI 04-10 (Revision 1), “Risk-Informed Method for Control of Surveillance Frequencies” issued in April 2007.

4. Technical Specification Task Force, TSTF-425, Rev. 3, “Relocate Surveillance Frequencies to Licensee Control”.

5. Technical Specification Task Force, TSTF-490, Rev. 0, “Deletion of E Bar definition and revision to RCS specific activity”.

6. Technical Report, MUAP-07024-P, Rev.1, “Qualification and Test Plan of Class 1E Gas Turbine Generator System”.

7. Technical Specification Task Force, TSTF-448, Rev. 3, “Control Room Habitability”.