Deviation Report between NUREG-1432 Rev. 4.0 and APR1400 Technical Specifications

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ABSTRACT

The APR1400 Technical Specifications presented in Chapter 16 of the DCD are based on NUREG-1432, Rev. 4.0, “Standard Technical Specifications Combustion Engineering Plants,” by reference.

This report provides the justification for the technical deviations from NUREG-1432 and the APR1400 Technical Specifications.

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Acronyms and Abbreviations

AC	Alternating Current
ADV	Atmospheric Dump Valve
AFW(S)	Auxiliary Feedwater (System)
AFWST	Auxiliary Feedwater Storage Tank
AMI	Accident Monitoring Instrumentation
APC-S	Auxiliary Process Cabinet - Safety
ASI	Axial Shape Index
CCW	Component Cooling Water
CEA(C)	Control Element Assembly (Calculator)
COLR	Core Operating Limits Report
COLSS	Core Operating Limit Supervisory System
CPC	Core Protection Calculator
CPCS	Core Protection Calculator System
CPIS	Containment Purge Isolation System
CPIAS	Containment Purge Isolation Actuation System
CREACS	Control Room Emergency Air Cleanup System
CREATCS	Control Room Emergency Air Temperature Control System
CREVAS	Control Room Emergency Ventilation Actuation System
CRIS	Control Room Isolation
CS(P)	Containment Spray (Pump)
CST	Condensate Storage Tank
DC	Direct Current
DCD	Design Control Document
DE	DOSE EQUIVALENT
DG	Diesel Generator
DNB(R)	Departure from Nucleate Boiling (Ratio)
DPS	Diverse Protection System
DRCS	Digital Rod Control System
ECCS	Emergency Core Cooling System
ECW	Essential Chilled Water
EDG	Emergency Diesel Generator
ENFMS	Ex-core Neutron Flux Monitoring System
ESFAS	Engineered Safety Features Actuation System
ESF-CCS	Engineered Safety Features – Component Control System

FBACS	Fuel Building Air Cleanup System
FHEVAS	Fuel Handling Area Ventilation Actuation System
FHIS	Fuel Handling Isolation Signal
FSAR	Final Safety Analysis Report
HMS	Hydrogen Mixing System
ICS	Iodine Cleanup System
IRWST	In-Containment Refueling Water Storage Tank
KHNP	Korea Hydro & Nuclear Co.,Ltd
LCO	Limiting Condition for Operation
LHR	Linear Heat Rate
LOCA	Loss Of Coolant Accident
LOVS	Loss of Voltage Start
LTOP	Low Temperature Overpressure Protection
MCR	Main Control Room
MFIV	Main Feedwater Isolation Valve
MSIV	Main Steam Isolation Valve
MSSV	Main Steam Safety Valves
MTC	Moderator Temperature Coefficient
PAM	Post Accident Monitoring
PIV	Pressure Isolation Valve
PORV	Power Operated Relief Valves
POSRV	Pilot Operated Safety Relief Valve
PPS	Plant Protection System
PREACS	Pump Room Exhaust Air Cleanup System
PTLR	Pressure and Temperature Limits Report
PZR	Pressurizer
RCGV	Reactor Coolant Gas Vent
RCS	Reactor Coolant System
RG	Regulatory Guide
RHR	Residual Heat Removal
RPCS	Reactor Power Cutback System
RPS	Reactor Protection (Protective) System

RTCB	Reactor Trip Circuit Breaker
RTP	Rated Thermal Power
RTS	Reactor Trip System
RTSG	Reactor Trip Switch Gear
RTSS	Reactor Trip Switchgear System
RWT	Refueling Water Tank
SBEACS	Shield Building Exhaust Air Cleanup System
SC(P)	Shutdown Cooling (Pump)
SCS	Shutdown Cooling System
SDC	Shutdown Cooling
SDM	Shutdown Margin
SG	Steam Generator
SI(P)	Safety Injection (Pump)
SIS	Safety Injection System
SIT	Safety Injection Tank
SL	Safety Limit
SR	Surveillance Requirement
STE	Special Test Exceptions
SWS	Service Water System
TS	Technical Specifications
TSP	Trisodium Phosphate
UHS	Ultimate Heat Sink

I. INTRODUCTION

The APR1400 Technical Specifications satisfy 10 CFR 50.36 (Reference 1), "Technical specifications" and applies NUREG-1432, Rev. 4.0 (Reference 2) as the Standard Technical Specifications (STS). The difference between the STS and the APR1400 Technical Specifications exists only as necessary to reflect advanced design features of APR1400 and to incorporate operational experience into the APR1400.

This report provides the justification for the deviations of APR1400 Technical Specifications compared to the Standard Technical Specification (NUREG-1432, Rev. 4.0).

II. GENERAL DEVIATIONS AND JUSTIFICATION

1 Use of Conservative Values

The APR1400 design has been developed based on operating and licensing experiences in Korea. Such experiences are reflected in the APR1400 Technical Specifications. The APR1400 Technical Specifications are not considered to be risk informed technical specification (RITS). Thus, some values such as completion times and frequencies are more conservative than those in NUREG-1432. Table II-1 below shows the difference in values for surveillances (such as frequencies) and Table II-2 shows the difference in LCO values (such as completion times). The values of APR1400 TS that are different from NUREG-1432 are conservative and therefore do not require justification. Though the section listed for the APR1400 might have a different number from that of NUREG 1432, it is considered to be the equivalent specification. These lists are not repeated in Table III-1.

Table II-1 Conservative values in TS SRs that are different from NUREG-1432

NUREG-1432		APR1400 TS		Remark
SR Section	Value	SR Section	Value	
3.1.7	N/A	3.1.8.2	24 hours	RITS not applied
N/A	N/A	3.1.9.1	8 hours	RITS not applied
3.1.8.2	7 days	3.1.10.2	24 hours	RITS not applied
N/A	N/A	3.1.10.3	2 hours	APR1400 specific condition for STE
N/A	N/A	3.1.10.4	12 hours	APR1400 specific condition for STE
N/A	N/A	3.1.12.1	continuously	APR1400 specific condition for STE
3.3.1.12	70% RTP	3.3.1.11	80% RTP	APR1400 specific condition
3.3.1.13	92 days	3.3.1.12	31 days	RITS not applied
3.3.2.2	92 days	3.3.2.2	31 days	RITS not applied
3.3.2.3	92 days	3.3.2.3	31 days	RITS not applied
3.3.3.3	92 days	3.3.3.3	31 days	RITS not applied
3.3.4.2	92 days	3.3.4.1	31 days	RITS not applied
3.3.4.4	Once within 7 days prior to each reactor startup	3.3.4.3	31 days	RITS not applied
3.3.5.2	92 days	3.3.5.2	31 days	RITS not applied
3.3.5.5	92 days	3.3.5.5	31 days	RITS not applied

3.3.6.1	92 days	3.3.6.1	31 days	RITS not applied
3.3.6.2	184 days	3.3.6.2	31 days on a STAGGERED TEST BASIS	RITS not applied
3.3.6.3	18 months for ESFAS manual trip channel	3.3.6.1	31 days for ESFAS manual trip channel	RITS not applied
3.3.13.2	92 days	3.3.13.2	31 days	RITS not applied
3.4.1.4	18 months	3.4.1.4	31 days	RITS not applied
3.4.9.2	18month	3.4.9.2	92days	RITS not applied
3.4.14.2	92days	3.4.14.2	31days	
3.6.2.1	N/A	3.6.2.1	Acceptance for air lock testing are: a. Overall air lock leakage rate is ≤ 0.05 La when tested at ≥ Pa [3.592 kg/cm2G (51.09 psig)]. b. For each door seal, leak rate is ≤ 0.01 La when tested at ≥ Pa [3.592 kg/cm2G (51.09 psig)].	APR1400 specific condition are considered
3.8.1	2 DG	3.8.1	4 EDG	
3.8.1.2 3.8.1.7 3.8.1.9 3.8.1.11 3.8.1.12 3.8.1.15 3.8.1.19 3.8.1.20	[3740] V [4580] V	3.8.1.2 3.8.1.7 3.8.1.9 3.8.1.11 3.8.1.12 3.8.1.15 3.8.1.19 3.8.1.20	3,744 V 4,576 V	
3.8.1.3 3.8.1.10 3.8.1.1 3.8.1.15	[4500] kW [5000] kW [5250] kW [5500] kW	3.8.1.3 3.8.1.10 3.8.1.1 3.8.1.15	90% rating 100% rating 105% rating 110% rating	Different ratings between Train A and Train C, and Train B and D
3.9.3.1	None 7 days	3.9.3.1	72 hours Once per 7 days	

Table II-2 Conservative values in LCOs that are different from NUREG-1432

NUREG-1432		APR1400 TS		Remark
LCO Section	Value	LCO Section	Value	
N/A	N/A	3.1.12 A	15 minutes	APR1400 specific condition for STE
N/A	N/A	3.1.12 B	1 hour	APR1400 specific condition for STE
3.2.3 B2	16 hours	3.2.3 B2	8 hours	CTS value used
3.5.1 B.1	24hrs	3.5.1 B.1	1hrs	RITS not applied
3.5.2 A.1	7days	3.5.2 A.1	72hrs	RITS not applied
3.4.13 b	1 gpm	3.4.13 b	0.5 gpm	APR1400 specific condition for STE (DCD 15.1.5)
3.7.12	30 days	3.7.11	7 days	

2 Use of Additional Definition

In the APR1400 TS, the following terminologies are defined to provide a clearer understanding relative to its application to the APR1400 design.

2.1 CORE ALTERATION

In NUREG-1432, CORE ALTERATION is not included in the Definitions section of TS. Instead, following statement is used:

“movement of [recently] irradiated fuel assemblies within containment”.

In the APR1400 TS, CORE ALTERATION is defined as follows to provide a more precise definition:

“CORE ALTERATION shall be the movement or manipulation of any fuel, sources, reactivity control components, or other components (excluding control element assemblies [CEAs] withdrawn into the upper guide structure) affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position”.

APR1400 TS 3.3.8, 3.3.9, 3.9.3 and 3.9.6 are related to this deviation.

2.2 DOSE EQUIVALENT I-131 and XE-133

In NUREG-1432, DOSE EQUIVALENT I-131 (DE I-131) and Ē-AVERAGE DISINTEGRATION ENERGY are defined as follows;

DOSE EQUIVALENT I-131 shall be that concentration of I-131(microcuries/gram) that alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in [Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites,"or those listed in Table E-7 of Regulatory Guide 1.109, Rev.1, NRC, 1977, or ICRP 30, Supplement to Part 1, page or Tissues per Intake of Unit 192-212, Table titled, "Committed Dose Equivalent in Target Organs Activity"].

E shall be the average (weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling) of the sum of the average beta and gamma energies per disintegration (in MeV) for isotopes, other than iodines, with half lives > [15] minutes, making up at least 95% of the total noniodine activity in the coolant.

In the APR1400 TS, the definition of DE I-131 is consistent with the TSTF-490, Rev.0, "Deletion of E Bar Definition and Revision to RCS Specific Activity Tech Spec". TSTF-490 recommends the following changes: 1) revises the definition of DE I-131, 2) deletes the definition of E-Bar, "Average Disintegration Energy," 3) adds a new definition for DE Xe-133, and 4) revises LCO 3.4.16, "RCS Specific Activity."

DOSE EQUIVALENT I-131 and XE-133 are defined as follows in the APR1400 TS;

DOSE EQUIVALENT I-131 shall be that concentration of I-131 (Bq/g) that alone would produce the same dose when inhaled as the combined activities of iodine isotopes I-131, I-132, I-133, I-134, and I-135 actually present. The determination of DOSE EQUIVALENT I-131 shall be performed using thyroid dose conversion factors from Table 2.1 of EPA Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion,"EPA-520/1-88-020, September 1988.

DOSE EQUIVALENT XE-133 shall be that concentration of Xe-133 (Bq/g) that alone would produce the same acute dose to the whole body as the combined activities of noble gas nuclides Kr-85m,

Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135 and Xe-138 actually present. The determination of DOSE EQUIVALENT Xe-133 shall be performed using effective dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12, "External Exposure to Radionuclides in Air, Water, and Soil,"EPA 402-R-93-081, September 1993.

2.3 LCO SELECTION CRITERIA

In NUREG-1432, LCO SELECTION CRITERIA has not been defined. In the APR1400 TS, LCO SELECTION CRITERIA is defined as follows for a clearer understanding:

LCO (Limiting Conditions for Operation) is the lowest functional capability and performance level required for the safe operation of the nuclear facility. The selection criteria for LCO are classified as the following four categories per 10 CFR 50: CRITERIA 1, 2, 3 and 4.

2.4 MAXIMUM ALLOWABLE CONTAINMENT LEAK RATE(La)

In NUREG-1432, MAXIMUM ALLOWABLE CONTAINMENT LEAKAGE RATE (La) has not been defined. In the APR1400 TS, MAXIMUM ALLOWABLE CONTAINMENT LEAKAGE RATE (La) is defined as follows for clearer understanding:

MAXIMUM ALLOWABLE CONTAINMENT LEAKAGE RATE (La) shall be 0.1 % of containment air weight per day at the calculated peak containment pressure (Pa).

2.5 MIDLOOP

In NUREG-1432, MID-LOOP has not been defined. In the APR1400 TS, MID-LOOP is defined as follows:

"the plant condition with the fuel in the reactor vessel and the reactor coolant level below the top of the hot legs at their junction with the reactor vessel."

APR1400 TS 3.1.9 is related to this deviation. During MID-LOOP operation, charging flow should be limited for reactivity control.

2.6 REDUCED RCS INVENTORY

In NUREG-1432, REDUCED RCS INVENTORY has not been defined. In the APR1400 TS, REDUCED RCS INVENTORY is defined as follows:

REDUCED RCS INVENTORY is the plant condition when the RCS level is below the 38.72 m (127 ft-1/4 in) elevation and fuel is in the reactor vessel. The 38.72 m (127 ft-1/4 in) elevation corresponds to 91.44 cm (3 ft) below the reactor vessel flange.

APR1400 TS 3.6.7 and 3.9.5 are related to this deviation.

3 Use of current Tech. Spec.

There are 24 operating NPPs in Korea which use Current Technical Specifications (CTS). When CTS is considered with the STS, some definitions, statements, and classifications were kept in accordance with CTS to maintain consistency with the operating experience of those plants.

3.1 Operational mode classification

When an operational mode is defined, NUREG-1432 uses RCS average temperature, whereas the APR1400 TS uses RCS cold leg temperature. Table 1.1-1, Section 3.4.1 and 3.4.2 are related to this deviation.

3.2 Days of 1 month

NUREG-1432 uses 30 days as a definition of 1 month, whereas the APR1400 TS uses 31 days. Section 3.4.15 is related on this deviation.

3.3 End States

TSTF-422 “Risk informed modification to selected action end states for CEOG PWR” is not applied because the APR1400 design-specific analysis for modification of end state was not performed. Therefore, Mode 5 is defined as the safe end state in the APR1400 TS.

4 COL Requirements

In the APR1400 TS, some parameters are described based on input parameters of DCD Ch. 15 safety analysis, whereas NUREG-1432 defines these parameters as being provided in the COLR or are bracketed ([ ]). These deviations are listed below and will be listed in the COLR later.

- LCO 3.1.1 SHUTDOWN MARGIN (SDM) - Tcold > 99 °C (210 °F)
- LCO 3.1.2 SHUTDOWN MARGIN (SDM) - Tcold ≤ 99 °C (210 °F)
- LCO 3.1.3 MTC limits and associated surveillance requirements
- LCO 3.4.1 DNB parameters and associated surveillance requirements
- LCO 3.4.9 Pressurizer water level ranges
- LCO 3.4.10 Pressurizer safety valve setpoints

5 Different Name of Systems/Components

The APR1400 TS uses some different system or component names from NUREG-1432, though the meaning is the same. The following list shows these items which are not included in Table III-1.

Table II-3 Name of system/components that are different than NUREG-1432

NUREG-1432	APR1400 TS	Related Sections	Remark
Full/Part length CEA	Full/Part Strength CEA	1.1, 3.1.4, 3.1.7~3.1.9, 3.3.3	
Part length CEA	Part Strength CEA	3.1.5, 3.1.8, 3.3.3, 4.0	
CPIS	CPIAS	3.3.8	Containment Purge Isolation Actuation System
CRIS	CREVAS	3.3.9	Control Room Emergency Ventilation Actuation System
FHIS	FHEVAS	3.3.10	Fuel Handling Area Ventilation Actuation System
Remote Shutdown	Remote Shutdown	3.3.11	

System	Display and Control		
PAM	AMI	3.3.11	
RWT	IRWST	3.5.4, 3.5.5	
Containment Spray and Cooling System	Containment Spray System	3.6.6	Containment Cooling function is included in the Containment Spray System
Service Water System	Essential Service Water System	3.7.8	
ECW	ECWS	3.7.10	
ECCS PREACS	ABCAEES	3.7.12	
PREACS	ABCAEES	3.7.12	
FBACS	FHAEES	3.7.13	
DG	EDG	3.3.6, 3.3.7, 3.8.1, 3.8.2, 3.8.3	
Battery Parameters	Battery Cell Parameters	3.8.6	

III. SYSTEM LEVEL DEVIATIONS AND JUSTIFICATION

STS are generally applicable to the APR1400 design. However, system level differences between STS and the APR1400 Technical Specification exist to reflect design features that are different to the reference plant of NUREG-1432. In this section, the differences and technical justification of those systems are described.

1 Instrumentation

1.1 Major Design Features

The reactor trip system (RTS) is a safety system which initiates reactor trips. The RTS consists of four channels of sensors, auxiliary process cabinet-safety (APC-S), ex-core neutron flux monitoring system (ENFMS) cabinets, core protection calculator system (CPCS) cabinets, the reactor protection system (RPS) portion of plant protection system (PPS) cabinets, and reactor trip switchgear system (RTSS) cabinets.

The RPS function is performed through measurement channels, bistable logics, RPS logics, and reactor trip switch gear (RTSG). Measurement channels consist of the sensor and transmitter providing a process value to bistable logics. Bistable logics provide trip signal to RPS logic comparing the process value with predetermined setpoint. There are two bistable racks (including separate input and output modules, data links, one bistable processor, etc.) per channel. The RPS logic provides trip signal to RTSG after performing 2/4 logic based on bistable trip status of four channels. There are two local coincidence logic racks (including separate input and output modules, data links, four local coincidence logic processors, etc.) per channel. The RTSG opens trip switchgear based on trip signal from RPS logic. The RTSG consists of undervoltage trip equipment and shunt trip equipment. The PPS interfaces with the undervoltage trip device of RTSG. The diverse protection system (DPS) interfaces with the shunt trip device of the RTSG.

The ESFAS function is performed through measurement channels, bistable logics, and ESFAS logics. Measurement channels consist of the sensor and transmitter providing a process value to bistable logics. Bistable logics provide trip signal to ESFAS logic comparing the process value with predetermined setpoint. There are two bistable racks (including separate input and output modules, data links, one bistable processor, etc.) per channel. The ESFAS logic consists of coincidence logic, initiation logic, and actuation logic. The four initiation logics in the PPS actuate a two-out-of-four logic in the ESF-CCS. In the actuation logic, each signal also sets a latch when the two-out-of-four logic actuates to assure that the signal is not automatically reset once it has been initiated.

1.2 Major differences and its justification

1.2.1 In the APR1400, the “Loss of Load” RPS trip function is not used so the related contents are deleted.

1.2.2 In the APR1400, the “Recirculation Actuation Signal,” “Containment Cooling Actuation Signal,” and the “Emergency Feedwater Actuation Signal” ESFAS trip functions are not used so the related contents are deleted. However, the “Auxiliary Feedwater Actuation Signal” ESFAS trip function that considers only Steam Generator Level - Low is used instead of the “Emergency Feedwater Actuation Signal.” In addition, the “Containment Cooling Actuation Signal” ESFAS trip function is included in the “Containment Spray Actuation Signal” function.

1.2.3 Logarithmic Power Level – High

As described in DCD Tier 2, Table 7.2-1, “Reactor Protection System Operating Bypass Permissive,” the operating bypass permissive and removal setpoints for Logarithmic Power Level – High are ≥ 10^{-3} % RTP and < 10^{-3} % RTP, respectively. According to NUREG-1432 BASES SR 3.3.1.7, the CHANNEL FUNCTIONAL TEST (CFT) for the logarithmic power level channels is allowed to be performed 2 hours after reducing THERMAL POWER below 1E-4% RTP and is required to be performed only if the RTCBs are closed. This means that the CFT is not required until 2 hours after reducing THERMAL POWER below 1E-4% RTP or if the RTCBs are open. Therefore, the Note 2 of DCD Tier 2 SR 3.3.1.7 shall be changed to “Not required to be performed for Logarithmic Power Level – High until 2 hours after reducing THERMAL POWER below 1E-3% RTP or if the RTSGs are open.

1.2.4 Pressurizer Pressure – Low

The minimum setpoint for Pressurizer Pressure – Low is 100 psia as shown in DCD Tier 2, Table 7.2-4, Note (5). As described in DCD Tier 2, Table 7.2-1, “Reactor Protection System Operating Bypass Permissive,” the operating bypass permissive and removal setpoints for Pressurizer Pressure – Low are 400 psia and 500 psia, respectively.

1.2.5 Coincidence Logic

APR1400 RPS has four Coincidence Logic channels instead of six Matrix Logic channels.

1.2.6 Actuation Logic

Some components cannot be tested at power operation since their actuation might lead to a plant trip or equipment damage. The actuation logic subgroup is not tested during power operation and must be tested in accordance with the Note in DCD Tier 2, SR 3.3.6.2. The subgroup test of each actuation logic channel A, C and B, D is performed every 31 days on a staggered test basis. The 31-day frequency on a staggered test basis is consistent with the operating experience of Korean NPPs. The APR1400 ESF-CCS does not have subgroup relays, but contains the logic for subgroup control.

1.2.7 Diverse Manual ESF Actuation Signal

The APR1400 I&C systems provide Diverse Manual ESF Actuation controls and indications to provide protection against accidents and concurrent common cause failure of PPS and/or ESF-CCS.

1.2.8 Control Element Assembly Calculator (CEAC)

In the APR1400, there are two CEACs in each CPCS channel. This change has come from the APR1400 CPCS configuration. In the CPCS configuration in STS, there had been two CEACs total, one at channel B and the other in channel C. In the APR1400 CPCS configuration, there are two (2) CEACs in each channel and a total of eight (8) CEACs for the four channels, (see DCD Tier 2 Figure 7.2-4).

2 Reactor Coolant System

2.1 Major Design Features

The reactor coolant system (RCS) is a safety related system which removes the heat generated in the reactor core and transfers the heat to the steam generators. The reactor vessel, steam generators, reactor coolant pumps, pressurizer, and associated piping are the major components of the RCS. Two parallel heat transfer loops, each containing one steam generator and two reactor coolant pumps, are connected to the reactor vessel, and one pressurizer is connected to one of the hot legs. All RCS components are located inside the containment building. Overpressure protection for the reactor coolant pressure boundary is provided by four pilot operated safety relief valves

(POSRVs) connected to the top of the pressurizer. These valves discharge to the in-containment refueling water storage tank (IRWST).

2.2 Major differences and its justification

2.2.1 In the APR1400, RCS specific activity specification is revised in accordance with TSTF-490, Rev. 0, “Deletion of E Bar Definition and Revision to RCS Specific Activity Tech Spec.”

2.2.2 Pressurizer Pilot Operated Safety Relief Valves (POSRVs) are used in the APR1400. The POSRV setpoint range for this valve type is different. The opening time is specified in the Design Specification and will be verified by test for the APR1400 plant. In the APPLICABILITY section, the 72 hours exception is based on 18 hours of outage time for each of the four valves (APR1400 adopts 4 POSRVs). The 18-hour period is determined based on operating experience.

3 Emergency Core Cooling System

3.1 Major Design Features

The SIS consists of four mechanically separated trains. Each train contains one SI pump and associated suction and discharge paths. The SI pumps take suction from the IRWST, which is located in the containment, and inject borated water into the RCS through a DVI nozzle to flood and cool the core following a LOCA. The SIS is initiated automatically upon an SIAS or manually. The SIAS is produced by a two-out-of-four low pressurizer pressure or high containment pressure signal.

The primary function of the SI pumps is to inject borated water into the RCS if a break occurs in the RCPB. For small break LOCA, the RCS pressure remains high for a long period following the accident, and the SI pumps provide reasonable assurance that the injected flow is sufficient to meet the criteria given in DCD Section 6.3.1. If necessary, SI pump flow is throttled to reduce RCS pressure to conditions that allow the initiation of shutdown cooling system operation for long-term mode. During shutdown cooling operations following a small break, the SI pumps continue injecting into the reactor vessel downcomer to provide makeup for spillage out the break.

3.2 Major differences and its justifications

3.2.1 Safety injection tank (SITs) (LCO 3.5.1)

In the APR1400, the SITs are available in MODE 4 with pressurizer pressure ≥ 50.3 kg/cm^{2}A (715 psia) which is assumed in the Chapter 15 safety analysis. To implement the applicable range, the EOG and system design is changed. The detailed information is written in DCD Section 6.2 and APR1400-E-N-NR-14003-P, Rev. 0 (Section 4.3).

3.2.2 Safety Injection System (SIS) – Operating (LCO 3.5.2)

Safety analyses assume four SI trains operable in Mode 1, 2 and 3, but two SI trains operable in Mode 4, 5 and Mode 6 with vessel water level < 39.7 m (130 ft).
Full flow from two pumps diagonally positioned in the reactor vessel and four SITs are used in the safety analysis for a break in an RCP discharge leg. Full flow from one SI pump and three SITs is used in the safety analysis for a break in a DVI line. Therefore, four trains of SIS operable during Modes 1, 2 & 3 provides sufficient margin considering a failure of an EDG to start.

NUREG 1432 Rev. 4 is based on ECCS consisting of two HPSIPs and two LPSIPs. The APR1400 is based on ECCS consisting of four SIPs supported by four EDGs. Two trains located diagonal direction with respect to the reactor vessel or three trains are assumed operable in the safety analysis.

For CONDITION A, two inoperable SI trains are allowable only if diagonally positioned in the reactor vessel. SI train #1 is diagonally positioned to SI train #3. SI train #2 is diagonally positioned to SI train #4. If the two inoperable injection lines are in a diagonal position in the reactor vessel, the two injection trains meet the flow requirements (100%) due to the small bypass through the break in the cold leg.

The safety analysis assumes that at least two diagonally located SI trains are operable considering the bypass flow through the break.

3.2.3 In-Containment Refueling Water Storage Tank (IRWST) (LCO 3.5.4)

- The IRWST is the water source of SIS during an accident and the applicable modes for SIS are extended to the modes specified in LCO 3.5.3. Therefore, the applicable modes for the IRWST are extended for providing water to SIS.
- Both CONDITION A & C in NUREG-1432 are integrated into CONDITION A in the APR1400.
- Both CONDITIONS B & E, which have similar purpose, are integrated into CONDITION C in the APR1400. There is no difference between NUREG-1432 and the APR1400 except for the extension of applicable modes.
- IRWST water volume is used in the applicable safety analyses and the condition for IRWST volume is considered as an operability condition as specified in the BASES of CONDITION D in 3.5.4 of NUREG-1432.
- Due to the extension of the applicable modes, a CONDITION for the modes is added.
- The REQUIRED ACTION of the APR1400 TS is determined based on the conservative approach. There is no difference between NUREG-1432 and the APR1400 because the REQUIRED ACTION B.1, E.1 AND E.2 for CONDITION A and C or D in NUREG-1432 are integrated into the CONDITION A or C which is not met for the APR1400.
- Due to the extension of the applicable modes, REQUIRED ACTIONs for the modes are added.
- The NOTE is not necessary for the APR1400 since the IRWST is located in reactor containment building and is not affected by changing of the ambient air temperature.
- Due to the integrations of the CONDITIONS, related REQUIRED ACTIONs and COMPLETION TIMEs are changed.

4 Electrical power systems

4.1 Major Design Features

4.1.1 AC Electric Power Distribution System

The AC electric power distribution system consists of the transmission system, the plant switchyard, main transformer (MT), two unit auxiliary transformers (UATs), two standby auxiliary transformers (SATs), a main generator (MG), a generator circuit breaker (GCB), isolated phase bus, switchgears, load centers (LCs), and motor control centers (MCCs). The electric power distribution system also includes the power, control, instrumentation cables and raceways, and electrical protection devices, such as circuit breakers and fuses.

The Class 1E AC electric power distribution system consists of two independent, redundant divisions. Each division consists of two independent trains.

Four emergency diesel generators (EDGs) provide Class 1E power to the four independent Class 1E trains respectively, during a LOOP or a LOOP concurrent with DBA. One AAC generator provides power to the permanent non-safety buses during a LOOP or to one Class 1E train during SBO.

During plant normal operation, the MG supplies power through the GCB and MT to the transmission system, and to the UATs. When the GCB is open, power is backed from the transmission system through the MT to the UATs. In the event of a loss of preferred power supply through the UATs, medium voltage (non-Class 1E 13.8 kV and Class 1E & non-Class 1E 4.16 kV) buses are powered from the SATs after performing an automatic bus transfer from the normal offsite preferred power supply to the alternate offsite preferred power supply.

4.1.2 DC Power System

The Class 1E 125 Vdc system consists of four independent subsystems, trains A, B, C, and D, each corresponding to one of the four reactor protection instrumentation channels A, B, C, and D. The non-Class 1E DC power system is also comprised of two separate subsystems, divisions I and II. Each Class 1E and non-Class 1E DC power system is provided with its own battery, two battery chargers (normal and standby), a DC control center, and dc distribution panels. The Class 1E dc

power system supplies reliable continuous power to the plant safety system dc loads and the Class 1E I&C system.

4.1.3 Instrumentation and Control Power System

The instrumentation and control (I&C) power system consists of Class 1E and non-Class 1E power systems. The Class 1E 120 Vac I&C power system is separated into four subsystems, trains A, B, C, and D that supply power to the plant protection system channels A, B, C, and D. The Class 1E I&C power system includes four separate and independent 120 Vac power distribution panel, and each system is powered from a 125 Vdc control center via a 125 Vdc/120 Vac static inverter.

4.2 Major differences and its justification

4.2.1 The APR1400 adopts four EDGs (two redundant and independent divisions I and II, but four independent trains A, B, C, and D). Each division of EDGs provides Class 1E power to its respective Class 1E redundant loads. For each EDG, one automatic load sequencer is provided.
The unavailability of either one or two EDGs on one division disables one load group to perform its partial or all of the safety functions.
Because of the divisional approach of the four EDGs in the APR 1400 design, the condition with three or more AC sources inoperable is divided into two different cases.

4.2.2 Risk informed technical specification is not applied for the APR1400, (refer to the justification of LCO 3.0.4).

4.2.3 The term "Train A" and “Train B” used in Standard Technical Specifications (NUREG-1432, Rev.4) is replaced by "Division I" and “Division II.” Between divisions, independence and redundancy are maintained.
For DC systems, the term “subsystem(s)” used in Standard Technical Specifications (NUREG-1432, Rev.4) is replaced by “Division(s).” These changes are not included in Table III-3.

4.2.4 For the following LCOs and SRs, the specific values of the STS enclosed in brackets are changed to the APR1400 design values.

- SR 3.8.1.4, 3.8.1.7, 3.8.1.11, 3.8.1.12, 3.8.1.15, 3.8.1.19, 3.8.1.20, 3.8.3.4 and 3.8.4.2
- LCO 3.8.3

5 Refueling Operation

5.1 Major Design Features

The shutdown cooling system(SCS) is a safety-related system that is used to reduce the temperature of the reactor coolant system(RCS) in post shutdown periods from the hot shutdown operating temperature to the refueling temperature. The initial phase of a cooldown is accomplished by heat rejection from the steam generators(SGs) to the condenser or atmosphere. After the reactor coolant temperature and pressure have been reduced to approximately 176.7 °C (350 °F) and 31.6 kg/cm^{2}A (450 psia), the SCS is put into operation for normal shutdown cooling to reduce the RCS temperature to the refueling temperature, and to maintain this temperature during refueling. Additionally, the SCS is used in conjunction with the atmospheric dump valves (ADVs) and the auxiliary feedwater system to cooldown the RCS following a small break loss of coolant accident (LOCA). The SCS is also used subsequent to steam and feedwater line breaks, steam generator tube ruptures, and is used during plant startup prior to RCP restart to maintain flow through the core. After an accident, the SCS can be put into operation when the RCS temperature and pressure are below approximately 193.3 °C (380 °F) and 28.1 kg/cm^{2}A (400 psia), respectively. The plant refueling cavity is equipped with devices that monitor the level of the refueling water in the refueling cavity. If the monitoring devices detect an inappropriate decrease in the level of refueling water during the refueling operation, the operator in the main control room (MCR) is alerted, and the operator takes immediate action to prevent water leakage.

5.2 Major differences and its justification

5.2.1 RCS Loops – MODE 5, Loops Filled (LCO 3.4.7)

A Containment Spray Pump (CSP) can be realigned to be used as a Shutdown Cooling Pump (SCP) because an SCP and CSP are interchangeable.

5.2.2 RCS Loops – MODE 5, Loops Not Filled (LCO 3.4.8)

A CSP can be realigned to be used as an SCP because an SCP and CSP are interchangeable.

5.2.3 Low Temperature Overpressure Protection (LTOP) System (LCO 3.4.12)

- SCS suction isolation valves are sized to accommodate mass addition from four SIPs and one charging pump. The flow rates from two charging pumps during pump switchover are limited by a flow restrictor. Therefore, there is no need to limit charging pump operation.
- SIT operating pressure is 610 psig and SIT discharge cannot pressurize the RCS higher than the LTOP limit pressure of 625 psia because RCS pressure can be assumed to be less than 450 psia (SCS cut in pressure), and RCS volume is larger than SIT. Therefore, there is no need to include SIT isolation in the APR1400 Technical Specification.
- Relief valves for LTOP function are used in the APR1400 instead of PORVs. These relief valves have full capacity each and are considered a passive device. A risk assessment for passive relief valves is not required. Therefore, the NOTE for 3.0.6.b is deleted.

5.2.4 Shutdown Cooling (SDC) and Coolant Circulation – Low Water Level (LCO 3.9.5)

A CSP can be realigned to be used as an SCP because an SCP and CSP are interchangeable. CSP operability during reduced inventory operation is required.

5.2.5 Refueling Water Level (LCO 3.9.6)

The recently irradiated fuel assemblies in NUREG-1432 are included in the irradiated fuel assemblies described in the APR1400. The REQUIRED ACTION is added to escape the LCO condition.

6 Containment System

6.1 Major Design Features

The CS System (CSS) reduces containment pressure and temperature and removes fission products from the containment atmosphere following a DBA, and has two independent divisions

including two containment spray (CS) pumps, two CS heat exchangers, two CS mini-flow heat exchangers, two independent spray headers, associated piping, valves, and instrumentation. The spray flow is provided by the CSPs, which start on the receipt of a safety injection actuation signal (SIAS) or containment spray actuation signal (CSAS), and take suction from the IRWST. The CSPs discharge through the CSHXs and the spray header isolation valves to their respective spray nozzle headers and then into the containment atmosphere. Spray flow to the CS nozzle headers is not provided until a CSAS automatically opens the containment spray header isolation valves.

6.2 Major differences and its justification

6.2.1 Containment Spray and Cooling System (LCO 3.6.6)

In the APR1400, a 72 hour Completion Time applies for one containment spray division being inoperable instead of the 7 day Completion Time, because the APR1400 has not adopted CE NPSD-1045-A and does not meet the requirements of the topical report and the associated safety evaluation.

6.2.2 Spray Additive System (LCO 3.6.7)

Since post-accident pH control of the sprayed fluid is provided using tri-sodium phosphate (TSP), which is stored in the holdup volume tank (HVT), the Spray Additive System is not applicable to the APR1400.

6.2.3 Hydrogen Mixing System (HMS) (LCO 3.6.9)

Since hydrogen mixing is accomplished by the Containment Spray System, the Hydrogen Mixing System is not applicable to the APR1400.

6.2.4 Iodine Cleanup System (ICS) (LCO 3.6.10)

The removal of fission product (e.g. iodine) is accomplished by the Containment Spray System. Therefore, the Iodine Cleanup System is not applicable to the APR1400.

7 Plant System

7.1 Major Design Features

7.1.1 Component Cooling Water System

The Component Cooling Water System (CCWS) consists of two safety-related divisions that are separate, independent, redundant, and closed-loop. Either division of the CCWS is capable of supporting 100 percent of the cooling requirements of a safe shutdown following a postulated accident coincident with LOOP. Each CCWS division includes three CCW heat exchangers, a CCW surge tank, two CCW pumps, a CCW chemical addition tank, and CCW radiation monitor, piping, valves, controls, and instrumentations. The CCWS provides cooling water to the essential (Safety Class 3) and nonessential components (non-nuclear safety class).

7.1.2 Essential Service Water System

The Essential Service Water System (ESWS) consists of two independent, redundant, once-through, safety related divisions. Each division of the ESWS consists of two pumps, three debris filters, and associated piping, valves, controls, and instrumentations. The ESW pumps take suction from the ultimate heat sink (UHS) basin, circulate cooling water through the CCW heat exchangers, and return cooling water back to the UHS.

7.1.3 Ultimate Heat Sink (UHS)

The function of the UHS is to dissipate the heat rejected from ESWS during all modes of operation including accident conditions. The UHS is a site-specific system that interfaces with the ESWS. Based on the conceptual design, the UHS consists of two independent, redundant, safety related divisions. Each division consists of two 100 percent capacity UHS cooling towers, one common UHS cooling tower basin, piping, valves, controls and instrumentation.

7.1.4 Spent Fuel Pool

The Spent Fuel Pool (SFP) is approximately 7.31 m (42 ft) deep and made of reinforced concrete lined with stainless steel plate. The SFP is sufficiently deep that when a spent fuel assembly is being carried over the spent fuel storage racks by the spent fuel handling machine (SFHM) at its maximum lift height, there is sufficient water coverage to provide reasonable assurance that

personnel on the SFHM or on the operating floor around the pool are not exposed to radiation levels exceeding 0.025 mSv per hour. Two safety related SFP water level transmitters are installed in the SFP to measure the SFP water level from a 100 percent water level to the top level of the spent fuel assemblies. The SFP water level transmitters annunciate high water level, low water level, and low-low water level of the SFP to the MCR, RSR, and local cabinet. The SFP is initially filled with water that has a boron concentration range of 4,000 to 4,400 ppm. The SFP receives normal borated makeup water from the boric acid storage tank (BAST) from the boric acid makeup pump (BAMP). The SFP boron concentration is checked at local sample points. Local sample connections are provided in the spent fuel pool cooling and cleanup system (SFPCCS) purification return line to check the effectiveness of either the filter and the demineralizer or one of them, as well as the boron concentration.

7.2 Major differences and its justification

7.2.1 Ultimate Heat Sink (UHS) (LCO 3.7.9)

Based on the conceptual design, the APR1400 UHS consists of two independent, redundant, safety related divisions. Each division has 100 percent capacity cooling tower. CONDITION B of the APR1400 is described comprehensively to include CONDITION B, C, and D of NUREG-1432.

Table III-1 Deviations and Justification between Standard Technical Specifications and the APR1400 Technical Specifications

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
1.0 USE AND APPLICATION				
1.1 Definitions	None	CORE ALTERATION	See II.2.1	
	DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 Modified	See II.2.2	
	Ē-AVERAGE DISINTEGRATION ENERGY	DOSE EQUIVALENT XE-133	See II.2.2	
	None	LCO SELECTION CRITERIA	See II.2.3	
	None	MAXIMUM ALLOWABLE CONTAINMENT LEAKAGE RATE (L_a)	See II.2.4	
	MID-LOOP None	MID-LOOP	See II.2.5	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	REACTOR PROTECTION SYSTEM (RPS) RESPONSE TIME The RPS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RPS trip setpoint at the channel sensor until electrical power to the CEAs drive mechanism is interrupted. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.	REACTOR PROTECTION SYSTEM (RPS) RESPONSE TIME The RPS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RPS trip setpoint at the channel sensor until electrical power to the CEAs drive mechanism is interrupted. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.	APR1400 has no NRC approved methodology.	
	REDUCED RCS INVENTORY None	REDUCED RCS INVENTORY	See II.2.6	
	SHUDOWN MARGIN (SDM) [b. There is no change in part length CEA position.]	SHUDOWN MARGIN (SDM) b. There is no change in part strength CEA position.	There is no part length CEA in the APR1400. The meaning of length and strength is the same.	
1.2 Logical Connectors	-	Same as NUREG-1432		
1.3 Completion Times	-	Same as NUREG-1432		
1.4 Frequency	-	Same as NUREG-1432		
2.0 SAFETY LIMITS				
2.1 SLs	2.1.1.2 In MODES 1 and 2, the peak fuel centerline temperature shall be maintained < [5080] °F,	2.1.1.2 In MODES 1 and 2 the peak fuel centerline temperature	Ref. CENPD-382-P-A is related to Erbium BA. Only Gd BA is considered in the APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	decreasing by [58 °F per 10,000 MWD/MTU] and adjusted for burnable poison per [CENPD-275-P, Revision 1-P-A or CENPD-382-P-A].	shall be maintained at < 2,804.4 ℃ (5,080 °F), decreasing by 32.2 ℃ (58 °F) per 10,000 MWD/MTU for burnup and adjusted for burnable poison per CENPD-275-P, Revision 1-P-A.		
2.2 SL Violations	-	Same as NUREG-1432		
3.0 LIMITING CONDITIONS FOR OPERATION APPLICABILITY				
LCO 3.0.1	-	Same as NUREG-1432		
LCO 3.0.2	-	Same as NUREG-1432		
LCO 3.0.3	-	Same as NUREG-1432		
LCO 3.0.5	-	Same as NUREG-1432		
LCO 3.0.6	-	Same as NUREG-1432		
LCO 3.0.7	-	Same as NUREG-1432		
LCO 3.0.8	-	Same as NUREG-1432		
3.0 SURVEILLANCE REQUIREMENT APPLICABILITY				
SR 3.0.1	-	Same as NUREG-1432		
SR 3.0.3	-	Same as NUREG-1432		
SR 3.0.4	When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made: a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time; b. After performance of a risk assessment addressing inoperable systems and	When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with	Risk informed Technical Specification is not applied for the APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or c. When an allowance is stated in the individual value, parameter, or other Specification. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.	ACTIONS or that are part of a shutdown of the unit. Exceptions to this Specification are stated in the individual Specifications. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time. LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.		
SR 3.0.4	None	SR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.	SR 3.0.4 is only applicable for MODE change.	
3.1 REACTIVITY CONTROL SYSTEMS				
3.1.1 SHUTDOWN MARGIN (SDM)	3.1.1 SHUTDOWN MARGIN (SDM) LCO 3.1.1 SDM shall be within the limits specified in the COLR.	3.1.1 SHUTDOWN MARGIN (SDM) – Tcold > 99 °C (210 °F) LCO 3.1.1 a. SDM shall be within the limits specified in the COLR.	SDM specifications are divided into 2 sections according to the applicable mode dependent shutdown margin in the APR1400. It complies with the formats of conventional TS. Also, The SDM specifications according to RTCB condition	LCO 3.1.1 is divided into LCO 3.1.1 and LCO 3.1.2 for the APR1400. k_{N-1} is the k effective calculated by considering the

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	APPLICABILITY MODES 3, 4, and 5.	b. k_N-1 shall be < 0.99. c. With reactor trip circuit breakers (RTCBs) closed: Reactor criticality shall not be achieved with shutdown group CEA movement. APPLICABILITY MODES 3 and 4.	reflect the assumptions of the safety analyses. The function of k_{N-1} is to maintain sufficient subcriticality to preclude inadvertent criticality following ejection of a single control element assembly. And the requirement prohibiting criticality due to shutdown group CEA movement is associated with the assumptions used in the analysis of uncontrolled CEA withdrawal from subcritical condition. Due to the high differential reactivity worth of the shutdown CEA groups, the analysis assumes that the initial shutdown reactivity is such that the reactor will remain subcritical in the event of unexpected or uncontrolled shutdown group withdrawal.	actual CEA configuration and assuming that the fully or partially inserted full strength CEA of highest worth is fully withdrawn.
	None	3.1.2 SHUTDOWN MARGIN (SDM) – Tcold ≤ 99 °C (210 °F) LCO 3.1.2 a. SDM shall be within the limits specified in the COLR. b. k_{N-1} shall be < 0.99. c. With reactor trip circuit breakers (RTCBs) closed: Reactor criticality shall not be achieved with shutdown group CEA movement. APPLICABILITY MODES 5.		
3.1.2 Reactivity Balance	-	Same as NUREG-1432		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
3.1.3 Moderator Temperature Coefficient (MTC)	LCO 3.1.3 The MTC shall be maintained within the limits specified in the COLR, and a maximum positive limit as specified below: a. [0.5 E-4 Δk/k/°F] when THERMAL POWER is ≤ 70% RTP and b. [0.0 Δk/k/°F] when THERMAL POWER is > 70% RTP.	LCO 3.1.4 The MTC shall be maintained within the limits specified in the COLR, and a maximum positive limit that varies linearly from 0.9 x 10^{-4} Δk/k/°C (0.5 x 10^{-4} Δk/k/°F) at 0% RTP to 0.0 Δk/k/°C (0.0 Δk/k/°F) at 100% RTP.	See II.4 The actual value of the MTC is dependent on core characteristics such as fuel loading and reactor coolant soluble boron concentrations. Since positive MTC limits assumed in the safety analysis are not to be challenged or must be met using burnable absorbers for both initial and the reload cores, thus, those are not classified as COLR item in the APR1400.	
	SURVEILLNACE SR 3.1.3.1 Verify MTC is within the upper limit specified in the COLR.	SURVEILLANCE SR 3.1.4.1 Verify MTC is within the upper limit.	See II.4	
3.1.4 Control Element Assembly Alignment (CEA)	SURVEILLANCE SR 3.1.4.5 Verify each full length CEA drop time ≤ [3.5] seconds and the arithmetic average of all full length CEA drop times ≤ [3.2] seconds.	SURVEILLANCE SR 3.1.5.5 Verify each full strength CEA drop time at 90 % inserted position ≤ 4 seconds.	This SR confirms the required CEA drop time assumed in the safety analysis This CEA drop time is in Figure 4.2-14 of DCD Tier2.	
	Figure 3.1.4-1 Specified in COLR	Figure 3.1.5-1 Specified in TS	See II.4 Figure 3.1.4-1 (NUREG-1432) is treated non-COLR item in the APR1400. It is not cycle-dependent item.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
3.1.5 Shutdown Control Element Assembly (CEA) Insertion Limits	FREQUENCY SR 3.1.5.1 None	FREQUENCY SR 3.1.6.1 ----------NOTE---------- SR 3.1.6.1 shall be performed within 15 minutes prior to withdrawal of any CEAs in regulating groups during an approach to reactor criticality. ----------	A NOTE is added to assure that required SDM is maintained by verifying each shutdown CEA is withdrawn greater than or equal to 367.7 cm (144.75 in) (SR 3.1.6.1) within 15 minutes prior to withdrawal of any CEA in regulating groups during an approach to reactor criticality. Typo.	
	FREQUENCY 12 hours	FREQUENCY 24 hours		The SR Frequency of “24 hours” in the DCD will be changed as “12 hours”.
3.1.6 Regulating Control Element Assembly (CEA) Insertion Limits	SURVEILLANCE SR 3.1.6.1 ----------NOTE---------- Not required to be performed until 12 hours after entry into MODE 2. ----------	SURVEILLANCE SR 3.1.7.1 ----------NOTE---------- This Surveillance is not required to be performed prior to entry into MODE 2. ----------	The time frame, “prior to entry into MODE 2” is determined by considering more restrictive operational strategy, based on the STS. That is, this SR requires the surveillance right after entry into MODE 2. Therefore, from the safety point of view, it is judged that there is no deviation from the STS.	
3.1.7 Part Length Control Element Assembly (CEA) Insertion Limits	CONDITION A. Part length CEA groups inserted beyond the transient insertion limit.	CONDITION None	The CONDITION is not needed for the APR1400 since the transient insertion of part strength CEA is not restricted up to the full insertion in the APR1400.	
	SURVEILLANCE None	SURVEILLANCE SR 3.1.8.2 Verify the accumulated times during which the part strength CEA	The surveillance requirement for the verification of the accumulated time beyond the long term steady state insertion	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
		groups are inserted beyond the long term steady state insertion limits.	limits is added to be consistent with CONDITION A. of ACTIONS.	
	None	LCO 3.1.9 Charging flow shall be maintained below 567.8 L/min (150 gpm) by closing charging flow restriction orifice bypass valves (CV-576, CV-577) and removing the power to the charging flow restriction orifice bypass valves. APPLICABILITY MODE 5 during MID-LOOP operation for maintenance	Charging flow restriction during MODE 5 (MID-LOOP operation) is an assumption of initial condition for safety analysis as described in the APR1400 DCD Tier2, Section 15.4.6.	Related ACTIONS and SURVEILLANCE REQUIREMENT are added.
3.1.8 Special Test Exceptions (STE) - SHUTDOWN MARGIN (SDM)	LCO 3.1.8 During performance of PHYSICS TESTS, the requirements of:	LCO 3.1.10 During performance of criticality test or measurement of CEA worth and SDM, the requirements of:	RPS bypass setpoint change was determined as a STE during a previous plant startup test. RPS bypass setpoint changes need to prevent unnecessary reactor trip by RPS during criticality test. The criticality test and related SR are added.	
	LCO 3.1.1, "SHUTDOWN MARGIN (SDM),"	LCO 3.1.1, “SHUTDOWN MARGIN (SDM): T_{cold} > 99 °C (210 °F)”	See II.3.1	
	LCO 3.1.5, "Shutdown Control Element Assembly (CEA) Insertion Limits," and	LCO 3.1.6, “Shutdown Control Element Assembly (CEA) Insertion Limits”		
	LCO 3.1.6, "Regulating Control Element Assembly (CEA) Insertion Limits,"	LCO 3.1.7, “Regulating Control Element Assembly (CEA) Insertion Limits”		
	None	LCO 3.3.1, “Reactor Protection System (RPS) Instrumentation - Operating”(Only applied to Trip		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
		Functions 2, 14, and 15 in Table 3.3.1-1)		
	None	LCO 3.3.2, “Reactor Protection System (RPS) Instrumentation - Shutdown”(Only applied to Trip Function 1 in Table 3.3.2-1)		
	may be suspended for measurement of CEA worth, provided shutdown reactivity equivalent to at least the highest estimated CEA worth (of those CEAs actually withdrawn) is available for trip insertion.	may be suspended, provided shutdown reactivity equivalent to at least the highest estimated CEA worth (of those CEAs actually withdrawn) is available for trip insertion or the reactor is subcritical by at least the reactivity equivalent of the highest CEA worth.	The last sentence after ‘or’ is added due to criticality test and dynamic rod worth measurement.	
	None	SR 3.1.10.3 ----------NOTE---------- Applicable to operation in MODE 3 only. ---------- Verify that when all full strength CEAs are fully inserted, the reactor is subcritical by more than the above required shutdown reactivity equivalent.	The SR 3.1.10.3 is added due to the criticality test.	
	None	SR 3.1.10.4 Perform CHANNEL FUNCTIONAL TESTS of each logarithmic and variable overpower neutron flux monitoring channel.	The SR 3.1.10.4 is added due to the application of STE for RPS Instrumentation LCO 3.3.1 and 3.3.2.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
3.1.9 Special Test Exceptions (STE) - MODES 1 and 2 (Digital)	LCO 3.1.9 None	LCO 3.1.11 LCO 3.2.5, “AXIAL SHAPE INDEX (ASI)”	The STE for LCO 3.2.5 of ASI is added for initial startup test. (ex. CPC power distribution test)	
	None	LCO 3.1.12 During performance of PHYSICS TESTS, the requirements of: LCO 3.1.7, “Regulating Control Element Assembly (CEA) Insertion Limits” LCO 3.1.8, “Part Strength CEA Insertion Limits” LCO 3.4.1, “RCS Pressure, Temperature and Flow limits”(LCO 3.4.1.b, RCS Cold Leg Temperature only) may be suspended, provided LHR and DNBR do not exceed the limits specified in their LCOs. APPLICABILITY MODE 1 with Thermal Power > 20 % RTP. ACTIONS CONDITION A. LHR or DNBR outside the limits specified in their LCOs. B. Required Action and associated Completion Time not met. REQUIRED ACTION A.1 Reduce THERMAL POWER to restore LHR and DNBR to within limits.	The STE for LCO 3.1.7 and LCO 3.1.8 are added for initial core startup test. The LCO for cold leg temperature is narrow for the APR1400, so the LCO 3.4.1.b may be suspended.	Related ACTIONS and SURVEILLANCE REQUIREMENT are added.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
		B.1 Suspend PHYSICS TESTS. COMPLETION TIME 15 minutes 1 hours SURVEILLANCE REQUIREMENTS SURVEILLANCE SR 3.1.12.1 Verify LHR and DNBR do not exceed limits by performing SR 3.2.1.1 and SR 3.2.4.1. FREQUENCY Continuously		
3.2 POWER DISTRIBUTION LIMITS				
3.2.1 Linear Heat Rate (LHR)	CONDITION B. LHR not within region of acceptable operation when the COLSS is out of service.	CONDITION B. One OPERABLE core protection calculator (CPC) calculated LHR not within region of acceptable operation when the COLSS is out of service.	Additional description is inserted to clarify the condition for the LHR. If the COLSS is not available the OPERABLE CPC channels are monitored to ensure that the LHR limit is not exceeded.	
3.2.2 Planar Radial Peaking Factors (Fxy)	FREQUENCY SR 3.2.2.1 Once after each fuel loading with THERMAL POWER > 40 % RTP but prior to operations above 70 % RTP	FREQUENCY SR 3.2.2.1 Once after each fuel loading with THERMAL POWER > 40 % RTP but prior to operations above 80 % RTP	Power ascension test plateaus for the verification of the planar radial peaking factors are 20, 50, 80, and 100% for the APR1400.	
3.2.4 Departure From	LCO 3.2.4	LCO 3.2.4	COLSS calculated core power	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
Nucleate Boiling Ratio (DNBR)	b. Maintaining COLSS calculated core power less than or equal to COLSS calculated core power operating limit based on DNBR decreased by the allowance specified in the COLR (when COLSS is in-service and neither CEAC is OPERABLE)	b. Maintaining COLSS calculated core power less than or equal to COLSS calculated core power operating limit based on DNBR decreased by the allowance specified in Figure 3.2.4-1 of the COLR (when COLSS is in-service and neither CEAC is OPERABLE)	operating limit is specified as a function of thermal power in Figure 3.2.4-1 for the APR1400. Thus, figure index is increased compared to NUREG-1432.	
	c. Operating within the region of acceptable operation of Figure 3.2.4-1 specified in the COLR using any operable core protection calculator (CPC) channel (when COLSS is out of service and either one or both CEACs are OPERABLE), or	c. Operating within the region of acceptable operation of Figure 3.2.4-2 specified in the COLR using any operable core protection calculator (CPC) channel (when COLSS is out of service and either one or both CEACs are OPERABLE), or		
	d. Operating within the region of acceptable operation of Figure 3.2.4-2 specified in the COLR using any operable CPC channel (when COLSS is out of service and neither CEAC is OPERABLE).	d. Operating within the region of acceptable operation of Figure 3.2.4-3 specified in the COLR using any operable CPC channel (when COLSS is out of service and neither CEAC is OPERABLE)		
	SURVEILLANCE SR 3.2.4.1 Verify DNBR, as indicated on all OPERABLE DNBR channels, is within the limit of Figure 3.2.4-1 or 3.2.4-2 of the COLR, as applicable.	SURVEILLANCE SR 3.2.4.1 Verify DNBR, as indicated on all OPERABLE DNBR channels, is within the limit of Figure 3.2.4-2 or 3.2.4-3 of the COLR, as applicable.		
3.3 INSTRUMENTATION				

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
3.3.1 Reactor Protective System (RPS) Instrumentation - Operating	LCO 3.3.1 Four RPS trip and bypass removal channels for each Function in Table 3.3.1-1 shall be OPERABLE.	LCO 3.3.1 Four RPS trip and associated operating bypass removal channels for each Function in Table 3.3.1-1 shall be OPERABLE.	The LCO is changed to clarify the bypass function and clarify the meaning of the bypass removal.	
	ACTIONS None	ACTIONS ----------NOTE---------- 2. When one channel is bypassed and the bypassed condition exceeds 7 days, whether the operation with bypass state in one channel is allowed during Completion Times identified in Required Action A.2 or C.2.2 shall be reviewed within the next 24 hours in accordance with administrative controls. ----------	The NOTE is described to add the administrative control when one channel is bypassed. This is a conservative approach to verify whether it is adequate to maintain one channel in bypass state.	
	REQUIRED ACTION of CONDITION B None	REQUIRED ACTION of CONDITION B ----------NOTE---------- Only required to be met when COLSS is out of service. With COLSS in service, LHR is continuously monitored. ----------	The NOTE shall be changed to “LCO 3.0.4 is not applicable”. The above Note is added to allow the changing of MODES, even though two trip channels are inoperable, with one trip channel bypassed and one tripped. In this configuration, the protection system is in a one-out-of-two logic, which is adequate to ensure that no random failure will prevent protection system operation.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	CONDITION C. One or more Functions with one automatic bypass removal channel inoperable. REQUIRED ACTION C.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	CONDITION C. One or more Functions with one operating bypass removal channel inoperable. REQUIRED ACTION C.2.2 Restore operating bypass removal channel and associated automatic trip channel to OPERABLE status.	The Condition and Required Action are changed to clarify the bypass function and clarify the meaning of the bypass removal.	
	REQUIRED ACTION None	REQUIRED ACTION of CONDITION D ----------NOTE---------- LCO 3.0.4 is not applicable. ----------	The Note is added to allow the changing of MODES, even though two trip channels are inoperable, with one trip channel bypassed and one tripped. In this configuration, the protection system is in a one-out-of-two logic, which is adequate to ensure that no random failure will prevent protection system operation.	
	CONDITION E. One or more core protection calculator (CPC) channels with a cabinet high temperature alarm.	None	Due to the platform change, channel function test is not performed in APR 1400, when high temperature alarm of CPC is generated. The Common-Q platform has the compensation feature for temperature changes. For example, the analog module which is used in APR1400 has auto-calibration features against the temperature changes. Even if the high temperature alarm occurs, the system in the CPCS is able to perform its safety	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
			functions.	
	F. One or more CPC channels with three or more autorestarts during 1 12 hour period.	None	Due to the platform change, there is no auto restart function in APR 1400. If processor has severe failure, the processor will be shut down and this will initiate the watchdog timer to generate the DNBR and LPD trips. Instead of the check for auto restart, the CPC System Event Log is checked every 12 hours to monitor the CPCS channel performance.	
	SURVEILLANCE SR 3.3.1.1 Perform a CHANNEL CHECK of each RPS instrument channel except Loss of Load.	SURVEILLANCE SR 3.3.1.1 Perform CHANNEL CHECK of each RPS instrument channel.	See III.1.2.1 The function is not contained in DCD Tier 2, Table 7.2-4, “Reactor Protective System Design Input”.	Tier 2, Table 7.2-4
	SR 3.3.1.2 & SR 3.3.1.5 ----------NOTE---------- Not required to be performed until 12 hours after THERMAL POWER ≥ 70% RTP. ----------	SR 3.3.1.2 & SR 3.3.1.5 ----------NOTE---------- The performance shall be completed within 12 hours after THERMAL POWER ≥ 80% RTP. ----------	THERMAL POWER for heat balance calibration is considered.	
	SR 3.3.1.3 Check the CPC auto restart count.	SR 3.3.1.3 Check CPC system event log.	Due to the platform change, there is no auto restart function in APR 1400. Instead of the check for auto restart, the CPC System Event Log is checked every 12 hours to monitor the CPCS channel performance.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SR 3.3.1.4 ----------NOTE---------- 1. Not required to be performed until 12 hours after THERMAL POWER ≥ 20% RTP. ---------- Perform calibration (heat balance only) and adjust the linear power level signals and the CPC addressable constant multipliers to make the CPC ΔT power and CPC nuclear power calculations agree with the calorimetric, if the absolute difference is ≥ [2]%.	SR 3.3.1.4 ----------NOTE---------- 1. The performance shall be completed within 12 hours after THERMAL POWER ≥ 15% RTP. ---------- Perform calorimetric calculation and adjust linear power, CPC ΔT, and CPC neutron flux power to agree with calorimetric calculation if any of the linear power, CPC ΔT, and CPC neutron flux power is less than calorimetric calculation by more than 0.5%.	The SR is changed to clarify the meaning, considering operability and safety.	
	SR 3.3.1.6 ----------NOTE---------- Not required to be performed until 12 hours after THERMAL POWER ≥ 15% RTP. ----------	SR 3.3.1.6 ----------NOTE---------- The performance shall be completed within 12 hours after THERMAL POWER ≥ 15% RTP. ----------	The SR is changed to clarify the meaning.	
	SR 3.3.1.7 ----------NOTE---------- 1. The CPC CHANNEL FUNCTIONAL TEST shall include verification that the correct values of addressable constants are installed in each OPERABLE CPC. 2. Not required to be performed for logarithmic power level channels until 2 hours after reducing logarithmic power below 1E-4% and only if reactor trip circuit breakers (RTCBs) are closed.	SR 3.3.1.7 ----------NOTE---------- 1. The CPC CHANNEL FUNCTIONAL TEST includes verification that correct values of addressable constants are installed in each OPERABLE CPC. 2. Not required to be performed for Logarithmic Power Level – High until 2 hours after reducing THERMAL POWER below 1E-3% RTP and only if Reactor Trip Switch Gears (RTSGs) are	See III.1.2.3	Tier 2, Table 7.2-1

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	---------- Perform CHANNEL FUNCTIONAL TEST on each channel except Loss of Load and power range neutron flux in accordance with the Setpoint Control Program.	open. ---------- Perform CHANNEL FUNCTIONAL TEST for each RPS instrumentation channel in accordance with the Setpoint Control Program.	See III.1.2.1 The function is not contained in DCD Tier 2, Table 7.2-4, “Reactor Protective System Design Input”.	Tier 2, Table 7.2-4
	Table 3.3.1-1 Note (a) Bypass may be enabled when logarithmic power is > [1E-4]% and shall be capable of automatic removal whenever logarithmic power is > [1E-4]%. Bypass shall be removed prior to reducing logarithmic power to a value [1E-4]%. Trip may be manually bypassed during physics testing pursuant to LCO 3.4.17, "RCS Loops - Test Exceptions."	Table 3.3.1-1 Note (a) Trip may be bypassed when THERMAL POWER is ≥ 10^{-3} % RTP. Operating bypass shall be automatically removed when THERMAL POWER is < 10^{-3} % RTP. Trip may be manually bypassed during PHYSICS TESTS pursuant to LCO 3.1.10, “Special Test Exception (STE) – SHUTDOWN MARGIN (SDM).”	See III.1.2.3 LCO 3.1.10 states that trip function 2, “Logarithmic Power Level – High”, in Table 3.3.1-1 is applied to the special test exception.	
3.3.2 Reactor Protective System (RPS) Instrumentation – Shutdown	Note (b) The setpoint may be decreased to a minimum value of [300] psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained [400] psi. Bypass may be enabled when pressurizer pressure is < [500] psia and shall be capable of automatic removal whenever pressurizer	Note (b) Pressurizer Pressure – Low trip setpoint may be decreased as pressurizer pressure is reduced to 7.0 kg/cm^{2}A (100 psia). The margin between pressurizer pressure and the setpoint shall be maintained at ≤ 28.1 kg/cm^{2}A (400 psia). The operating bypass shall be removed automatically at ≥ 35.2 kg/cm^{2}A (500 psia). The setpoint shall be	See III.1.2.4	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	pressure is < [500] psia. Bypass shall be removed prior to raising pressurizer pressure to a value [500] psia. The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased.	increased automatically to normal setpoint as pressurizer pressure is increased.		
	Note (c) During testing pursuant to LCO 3.4.17, bypass may be enabled when THERMAL POWER is < [5]% RTP and shall be capable of automatic removal whenever THERMAL POWER is < [5]% RTP. Bypass shall be removed above 5% RTP.	Note (c) pursuant to LCO 3.1.10, trip may be bypassed below 5 % RTP. Operating bypass shall be automatically removed when THERMAL POWER is > 5 % RTP.	LCO 3.1.10 states that trip function 2, “Logarithmic Power Level – High”, in Table 3.3.1-1 is applied to the special test exception.	
	LCO 3.3.2 Four RPS Logarithmic Power Level - High trip channels and associated instrument and bypass removal channels shall be OPERABLE.	LCO 3.3.2 Four RPS trip and bypass removal channels for each Function in Table 3.3.2-1 shall be OPERABLE.	The LCO is changed to reflect the functions listed in Table 3.3.2-1.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	APPLICABILITY MODES 3, 4, and 5, with any reactor trip circuit breakers (RTCBs) closed and any control element assembly capable of being withdrawn. ----------NOTE---------- Bypass may be enabled when logarithmic power is > [1E-4]% and shall be capable of automatic removal whenever logarithmic power is > [1E-4]%. Bypass shall be removed prior to reducing logarithmic power to a value ≤ [1E-4]%. ----------	APPLICABILITY According to Table 3.3.2-1	Since Table 3.3.2-1 includes corresponding trip functions, applicability modes or other specified conditions, and surveillance requirements, the applicability is simplified.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	ACTIONS None	ACTIONS ----------NOTE---------- 1. Separate Condition entry is allowed for each RPS Function. 2. When one channel is bypassed and the bypassed condition exceeds 7 days, whether the operation with bypass state in one channel is allowed during Completion Times identified in Required Action A.2 or C.2.2 shall be reviewed within the next 24 hours in accordance with Administrative Control. ----------	NOTE 1 is added to clarify the application of the Completion Time rules. The Conditions of this Specification may be entered independently for each function. The Completion Times of each inoperable function will be tracked separately for each function starting from the time the Condition was entered for that function. 2. The NOTE is described to add the administrative control when one channel is bypassed.	
	CONDITION A. One RPS logarithmic power level trip channel inoperable. B. Two RPS logarithmic power level trip channels inoperable.	CONDITION A. One or more Functions with one automatic RPS trip channel inoperable. B. One or more Functions with two trip channels inoperable.	Trip functions are described in detail as shown in Table 3.3.2-1.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	REQUIRED ACTION E.1 Open all RTCBs	REQUIRED ACTION E.1 Open all RTSGs	In the APR1400, RTSG is used instead of RTCB since one trip circuit breaker is located in each RTSG and Technical Specifications are composed of channel-based LCO and ACTIONS	
	SURVEILLANCE None	SURVEILLANCE ----------NOTE---------- Refer to Table 3.3.2-1 to determine which SR shall be performed for each RPS Function.	Note is added to refer to table 3.3.2-1 for each SR.	Table 3.3.2-1 is added.
3.3.3 Control Element Assembly Calculators (CEACs)	LCO 3.3.3 Two CEACs shall be OPERABLE.	LCO 3.3.3 Two CEACs shall be OPERABLE in each Core Protection Calculator System (CPCS) channel.	See III.1.2.8	
	ACTIONS None	ACTIONS ----------NOTE---------- Separate Condition entry is allowed for each CPCS channel. ----------	See III.1.2.8 The NOTE is added to allow CEAC inoperable in each channel.	
	CONDITION A. One CEAC inoperable.	CONDITION A. One CEAC inoperable in one or more CPCS channels.		
	REQUIRED ACTION A.1 Perform SR 3.1.4.1	REQUIRED ACTION A.1 Declare affected CPCS channel(s) inoperable OR	See III.1.2.8 A.1 action is added to declare the affected channel inoperable.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
		A.2.1 Verify indicated position of each full and part strength CEA is within 16.8 cm (6.6 in) of all other CEAs in its group.		
	CONDITION B. Both CEACs inoperable.	CONDITION B. Both CEACs inoperable in one or more CPCS channels.	See III.1.2.8	
	REQUIRED ACTION None B.1 Verify the departure from nucleate boiling ratio requirement of LCO 3.2.4, "Departure from nucleate boiling ratio (DNBR)", is met [and the Reactor Power Cutback System is disabled]. AND B.2 Verify all full strength and part strength CEA groups are fully withdrawn and maintained fully withdrawn, except during Surveillance testing pursuant to SR 3.1.4.3[or for control, when CEA group #6 may be inserted to a maximum of 127.5 inches.	REQUIRED ACTION B.1 Declare affected channel(s) inoperable. OR B.2.1 Verify departure from nucleate boiling ratio requirement of LCO 3.2.4 is met and Reactor Power Cutback System (RPCS) is disabled. AND B.2.2 Verify all full strength and part strength CEA groups are fully withdrawn and maintained fully withdrawn, except during Surveillance testing pursuant to SR 3.1.5.3, or for power control, when CEA group #5 may be inserted to a maximum of 323.9 cm (127.5 in).	See III.1.2.8. B.1 is added to specify the case both CEACs inoperable in one or more CPCS channels. See II.5 #6 is changed into #5 which is the last control group in the APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	AND B.3 Verify the "RSPT/CEAC Inoperable" addressable constant in each core protection calculator(CPC) is set to indicate that both CEACs are inoperable. AND B.4 Verify the Control Element Drive Mechanism Control System is placed in "OFF" and maintained in "OFF", except during CEA motion permitted by Required Action B.2. AND B.5 Perform SR 3.1.4.1	AND B.2.3 Verify addressable constant in each affected CPC is set to indicate that all two CEACs are inoperable and "RSPT/CEAC inoperable" status is indicated. AND B.2.4 Verify Digital Rod Control System (DRCS) is placed in "standby" and maintained in "standby", except during CEA motion permitted by Required Action B.2.2. AND B.2.5 Verify indicated position of each full and part strength CEA is within 16.8 cm(6.6 in) of all other CEAs in its group.	See III.1.2.8 "Standby" in the APR1400 is "OFF" in CEDMCS of STS. Same action as in SR3.1.4.1. Current TS value 6.6 inches and completion time 4 hours used instead of 7 inches and 12 hours	Current TS value used
	CONDITION C. Receipt of a CPC channel B or C cabinet high temperature alarm. D. One or two CEACs with three or more auto restarts during a 12 hour period.	CONDITION None	Same as in TS 3.3.2, it is not necessary to include high temperature alarm. Auto restart function has been removed.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	REQUIRED ACTION C.1 Perform CHANNEL FUNCTIONAL TEST on affected CEAC(s).	REQUIRED ACTION C.1 Be in MODE 3.	Due to the platform change, channel function test is not performed in APR 1400, when high temperature alarm of CPC is generated. Due to the platform change, there is no auto restart function in APR 1400. Instead of the check for auto restart, the CPC System Event Log is checked every 12 hours to monitor the CPCS channel performance.	
	COMPLETION TIME C.1 12 hours	COMPLETION TIME C.1 6 hours	Due to the platform change, channel function test is not performed in APR 1400, when high temperature alarm of CPC is generated. Due to the platform change, there is no auto restart function in APR 1400. Instead of the check for auto restart, the CPC System Event Log is checked every 12 hours to monitor the CPCS channel performance.	
	CONDITION D. One or two CEACs with three or more auto restarts during a 12 hour period. REQUIRED ACTION D.1 Perform CHANNEL FUNCTIONAL TEST on affected CEAC. COMPLETION TIME 24 hours	CONDITION None		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SURVEILLANCE SR 3.3.3.2 Check the CEAC auto restart count. FREQUENCY 12 hours OR In accordance with the Surveillance Frequency Control Program	SURVEILLANCE SR 3.3.3.2 Check CPC system event log. FREQUENCY 12 hours	Due to the platform change, there is no auto restart function in APR 1400. Instead of the check for auto restart, the CPC System Event Log is checked every 12 hours to monitor the CPCS channel performance.	
	SR 3.3.3.5 Perform a CHANNEL FUNCTIONAL TEST in accordance with the Setpoint Control Program.	SR 3.3.3.5 Perform CHANNEL FUNCTIONAL TEST in accordance with the Setpoint Control Program (including annunciation and trip function test).	The contents are clarified.	
	SR 3.3.3.6 Verify the isolation characteristics of each CEAC isolation amplifier and each optical isolator for CEAC to CPC data transfer in accordance with the Setpoint Control Program.	None	Due to the platform change, there is no amplifier and optical isolator for CEAC to CPC. Fiber optic high speed datalink is used to interface for CEAC to CPC	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
3.3.4 Reactor Protective System (RPS) Logic and Trip Initiation	LCO 3.3.4 Six channels of RPS Matrix Logic, four channels of RPS Initiation Logic, [four channels of reactor trip circuit breakers (RTCBs),] and four channels of Manual Trip shall be OPERABLE.	LCO 3.3.4 Four RPS logic channels (Coincidence, Initiation Logic), four channels of Reactor Trip Switch Gears (RTSGs), and four manual trip channels shall be OPERABLE.	See III.1.2.5	
	CONDITION A. One Matrix Logic channel inoperable. OR Three Matrix Logic channels inoperable due to a common power source failure de-energizing three matrix power supplies.	CONDITION None	See III.1.2.5	
	B. One channel of manual Trip, RTCBs, or Initiation Logic inoperable in MODE 1 or 2.	A. ----------NOTE---------- RTSGs associated with one inoperable channel may be closed for up to 1 hour for the performance of an RPS CHANNEL FUNCTIONAL TEST. ---------- One channel of RTSGs, one manual trip channel, or one RPS logic channel inoperable in MODE 1 or 2.	The RTSG condition for channel function test is added. Testing on the OPERABLE channels cannot be performed without causing a reactor trip, unless the RTSGs in the inoperable channels are closed to permit testing. Therefore, the Note has been added specifying that the RTSGs associated with one inoperable channel may be closed for up to 1 hour for the	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
			performance of an RPS CHANNEL FUNCTIONAL TEST.	
	C. One channel of manual Trip, RTCBs, or Initiation Logic inoperable in MODE 3, 4, or 5.	B. ----------NOTE---------- RTSGs associated with one inoperable channel may be closed for up to 1 hour for the performance of an RPS CHANNEL FUNCTIONAL TEST. ---------- One channel of RTSGs, one manual trip channel, or one RPS logic channel inoperable in MODE 3,4, or 5.	The RTSG condition for channel function test is added. Testing on the OPERABLE channels cannot be performed without causing a reactor trip, unless the RTSGs in the inoperable channels are closed to permit testing. Therefore, the Note has been added specifying that the RTSGs associated with one inoperable channel may be closed for up to 1 hour for the performance of an RPS CHANNEL FUNCTIONAL TEST. .	
	E. Required Action and associated Completion Time of Condition A, B,or D not met. OR One or more Functions with more than one Manual Trip, Matrix Logic, Initiation Logic, or RTCB channel inoperable for reasons other than Condition A or D.	D. Required Action and associated Completion Time of Condition A or C not met. OR One or more Functions with more than two RPS logic channels, manual trip channels, or RTSG channels inoperable for reasons other than Condition C.	See III.1.2.5	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SURVEILLANCE SR 3.3.4.1 Perform a CHANNEL FUNCTION TEST on each RTCB channel. SR 3.3.4.2 Perform a CHANNEL FUNCTION TEST on each RPS Logic channel	SURVEILLANCE SR 3.3.4.1 Perform a CHANNEL FUNCTION TEST on each RPS logic channel and RTSG channel.	The SRs for RPS logic channel and RTSG channel are merged into SR 3.3.4.1.	
	None	SR 3.3.4.4 Perform CHANNEL FUNCTIONAL TEST on each RPS logic channel and RTSG channel.	APR1400 SR 3.3.4.4 shall be deleted since SRs 3.3.4.1 and 3.3.4.4 are identical.	
3.3.5 Engineered Safety Features Actuation System (ESFAS) Instrumentation	ACTIONS None	ACTIONS ----------NOTE---------- When one channel is bypassed and the bypassed condition exceeds 7 days duration, it shall be reviewed in 24 hours whether to maintain the operation in bypassed condition within the specified Completion Time of the Required Action 1.2 or administrative control. ----------	The NOTE is described to add the administrative control when one channel is bypassed.	
	REQUIRED ACTION None	REQUIRED ACTION (For Item B & D) ----------NOTE---------- LCO 3.0.4 is not applicable ----------	Operational mode can be changed after action. The Note was added to allow the changing of MODES, even though two trip channels are inoperable, with one trip channel bypassed and one tripped. In this configuration, the protection system is in a one-out-of-two	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
			logic, which is adequate to ensure that no random failure will prevent protection system operation.	
	None	(For Item E.1) ----------NOTE---------- Only applicable to the functions 3, 5 and 6 of Table 3.3.5-1. ----------	Applicable Modes for ESFAS functions such as SIAS, CSAS, and MSIS are extended from Modes 1, 2, and 3 to Modes 1, 2, 3, and 4 in order to enhance the safety of nuclear power plants.	
	None	(For Item F.1) ----------NOTE---------- Only applicable to the functions 1,2 and 4 of Table 3.3.5-1 ----------	Applicable Modes for ESFAS functions such as SIAS, CSAS, and MSIS are extended from Modes 1, 2, and 3 to Modes 1, 2, 3, and 4 in order to enhance the safety of nuclear power plants.	Tier 2, Table 7.2-4, Note (5) Tier 2, Table 7.2-1
	Table 3.3.5-1 1. Safety Injection Actuation Signal 2. Containment Spray Actuation Signal 4. Main Steam Isolation Signal APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS : 1,2,3	Table 3.3.5-1 1. Safety Injection Actuation Signal 2. Containment Spray Actuation Signal 4. Main Steam Isolation Signal APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS : 1,2,3,4	Applicable Modes for ESFAS functions such as SIAS, CSAS, and MSIS are extended from Modes 1, 2, and 3 to Modes 1, 2, 3, and 4 in order to enhance the safety of nuclear power plants.	
	Table 3.3.5-1 5. Recirculation Actuation Signal	Table 3.3.5-1 None	See III.1.2.2	
	Table 3.3.5-1 6. Emergency Feedwater Actuation Signal SG #1 (EFAS-1) 7. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)	Table 3.3.5-1 5. Auxiliary Feedwater Actuation Signal SG #1 (AFAS-1) 6. Auxiliary Feedwater Actuation Signal SG #2 (AFAS-2)	See III.1.2.2	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	Table 3.3.5-1 Note (a) Automatic SIAS also initiates a Containment Cooling Actuation Signal (CCAS).	N/A	See III.1.2.2	Tier 2, Table 7.2-4, Note (5) Tier 2, Table 7.2-1
	Table 3.3.5-1 Note (b) The setpoint may be decreased to a minimum value of [300] psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained [400] psia. Trips may be bypassed when pressurizer pressure is < [400] psia. Bypass shall be automatically removed when pressurizer pressure is [500] psia. The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased.	Table 3.3.5-1 Note (1) The setpoint may be manually decreased to a minimum value of 7.0 kg/cm^{2}A (100 psia), as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ 28.1 kg/cm^2 (400 psi). Trips may be bypassed when pressurizer pressure is < 28.1 kg/cm^{2}A (400 psia). Bypass shall be automatically removed when pressurizer pressure is ≥ 35.2 kg/cm^{2}A (500 psia). The setpoint shall be automatically increased to the normal setpoint as pressurizer pressure is increased.	See III.1.2.2	
3.3.6 Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip	LCO 3.3.6 Six channels of ESFAS Matrix Logic, four channels of ESFAS Initiation Logic, two channels of Actuation Logic, and two channels of Manual Trip shall be OPERABLE for each Function in Table 3.3.6-1.	LCO 3.3.6 Four channels of ESFAS Coincidence Logic, four channels of ESFAS Initiation Logic, four channels of Actuation Logic, and four channels of Manual Trip shall be OPERABLE for each Function in Table 3.3.6-1.	See III.1.2.5	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	CONDITION A. ----------NOTE---------- This action also applies when three Matrix Logic channels are inoperable due to a common power source failure de-energizing three matrix power supplies. ---------- One or more Functions with one Matrix Logic channel inoperable. B. One or more Functions with one Manual Trip or Initiation Logic channel inoperable	CONDITION A. One or more Functions with one Coincidence Logic channel, Initiation Logic channel, or Manual Trip channel inoperable.	See III.1.2.5 CONDITION A and B of NUREG-1432 are integrated into CONDITION A of APR1400.	
	E. Two Actuation Logic channels inoperable. OR Required Action and associated Completion Time no met.	D. One or more Functions with one Diverse Manual ESF Actuation Channels inoperable E. Required Action and associated Completion Time not met. F. Required Action and associated Completion Time not met.	When two Actuation Logic channels are inoperable, the action for this condition is taken in accordance with Condition C that covers one Actuation Logic channel inoperable status. Therefore, APR1400 Tech. Spec. does not address specifically the Condition of two Actuation Logic channels inoperable.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SURVEILLANCE SR 3.3.6.1 SR 3.3.6.3	SURVEILLANCE SR 3.3.6.1 (merged)	NUREG-1432 SR 3.3.6.1 and SR 3.3.6.3 are merged into APR1400 SR 3.3.6.1.	
	SURVEILLANCE SR 3.3.6.2 ----------NOTE---------- Relays exempt from testing during operation shall be tested during each MODE 5 entry exceeding 24 hours unless tested during the previous 6 months. ---------- Perform a subgroup relay test of each Actuation Logic channel, which includes the de-energization of each subgroup relay and verification of the OPERABILITY of each subgroup relay.	SURVEILLANCE SR 3.3.6.2 ----------NOTE---------- Components exempt from testing during operation shall be tested once every 18 month (MODE 6) or in MODE 5 if not tested until the previous 62 days. Subgroup of Actuation Logic channel A, C and B, D shall be tested on a staggered basis. ---------- Perform a verification of the OPERABILITY of subgroup for Actuation signal of each Actuation Logic channel	See III.1.2.6	
	SR 3.3.6.3 Perform a CHANNEL FUNCTIONAL TEST on each ESFAS Manual Trip channel.	SR 3.3.6.3 Perform a CHANNEL FUNCTIONAL TEST on each Diverse Manual ESFAS Actuation channel.	See III.1.2.7 SR 3.3.6.3 does not include a Channel Functional Test on each ESFAS manual trip channel because CONDITION A and B of NUREG-1432 are integrated into CONDITION A of APR1400	
	APPLICABILITY MODES 1, 2, 3, and 4,	APPLICABILITY MODES 1, 2, 3, and 4,		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	During movement of [recently] irradiated fuel assemblies within containment.	During CORE ALTERATIONS, During movement of irradiated fuel assemblies within containment.		
3.3.7 Diesel Generator (DG) - Loss of Voltage Start (LOVS)	-	Same as NUREG-1432		
3.3.8 Containment Purge Isolation Signal (CPIS)	REQUIRED ACTION B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	REQUIRED ACTION B.2 Be in MODE 5.	See II.3.3	Related COMPLETION TIME is changed.
3.3.8 Containment Purge Isolation Signal (CPIS)	CONDITION C. CPIS Manual Trip, Actuation Logic, or one or more required channels of radiation monitors inoperable during movement of [recently] irradiated fuel assemblies within containment.	CONDITION C. CPIAS Manual Actuation, Actuation Logic, or one or more required channels of radiation monitors inoperable during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment.	See II.2.1	
	REQUIRED ACTION None	REQUIRED ACTION C.2.1 Suspend CORE ALTERATIONS. AND	See II.2.1	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SURVEILLANCE SR 3.3.8.4 ----------NOTE---------- Only required to be met during movement of irradiated fuel assemblies within containment. ----------	SURVEILLANCE ----------NOTE---------- This SR is only applicable during CORE ALTERATIONS or during movement of irradiated fuel assemblies within containment. ----------	See II.2.1	
3.3.9 Control Room Isolation Signal (CRIS)	APPLICABILITY MODES 1, 2, 3, 4, [5, and 6], During movement of [recently] irradiated fuel assemblies.	APPLICABILITY MODES 1, 2, 3, and 4, During CORE ALTERATIONS, During movement of irradiated fuel assemblies.	See II.2.1	
	REQUIRED ACTION A.1 ----------NOTE---------- Place Control Room Emergency Air Cleanup System (CREACS) in toxic gas protection mode if automatic transfer to toxic gas protection mode inoperable. ----------	REQUIRED ACTION None	The REQUIRED ACTION reflects APR1400 design feature. The APR1400 does not have toxic gas protection mode.	
	B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	B.2 Be in MODE 5.	See II.3.3	Related COMPLETION TIME is changed.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	CONDITION C. CRIS Manual Trip, Actuation Logic, or required particulate/iodine or gaseous radiation monitors inoperable [in MODE 5 or 6], or during movement of [recently] irradiated fuel assemblies.	CONDITION C. CREVAS Manual Actuation, Actuation Logic, or Radiation Monitors channels inoperable, during CORE ALTERATIONS, or during movement of irradiated fuel assemblies.	See II.2.1	
	REQUIRED ACTION C.2.2 ----------NOTE---------- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. ----------	REQUIRED ACTION None	The REQUIRED ACTION reflects APR1400 design feature.	
	None	C.2.3 Suspend CORE ALTERATIONS.	See II.2.1	
	SURVEILLANCE SR 3.3.9.3 ----------NOTE---------- 2. Relays associated with plant equipment that cannot be operated during plant operation are required to be tested during each MODE 5 entry exceeding 24 hours unless tested within the previous 6 months. ----------	SURVEILLANCE None	The SR reflects APR1400 design feature.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
3.3.10 Fuel Handling Isolation Signal (FHIS)	ACTION ----------NOTE---------- LCO 3.0.3 is not applicable. A. [Actuation Logic, Manual Trip, or [one or more required channels of particulate/iodine and gaseous] radiation monitors inoperable in MODE 1, 2, 3, or 4.] B. [Required Action and associated Completion Time of Condition A not met.]	ACTION None	The deviations reflect APR1400 design feature. Area radiation monitor is designed for the APR1400. Particulate/iodine or gaseous radiation monitors is not applicable to APR1400. FHEVAS is not applicable to Modes 1,2,3, and 4.	Tier 2, 7.3.1.3 Item name is changed. See II.5
3.3.11 Post Accident Monitoring (PAM) Instrumentation	ACTION None	ACTION ----------NOTE---------- 1. LCO3.0.4 is not applicable.	Note 1 has been added in the ACTIONS to exclude the MODE change restriction of LCO 3.0.4. This exception allows entry into the applicable MODE while relying on the ACTIONS, even though the ACTIONS may eventually require plant shutdown. This exception is acceptable due to the passive function of the instruments, the operator's ability to monitor an accident using alternate instruments and methods, and the low probability of an event requiring these instruments.	Tier 2, 7.5.1.1 Item name is changed. See II.5
	COMPLETION TIME A.1 30 days	COMPLETION TIME A.1 31 days	See II.3.2	Tier 2, 7.5.1.1

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
3.3.12 Remote Shutdown System	LCO 3.3.12 The Remote Shutdown System Functions shall be OPERABLE.	LCO 3.3.12 The Remote Shutdown Display and Control Functions in Table 3.3.12-1 shall be OPERABLE.	The deviations reflect APR1400 design feature. Table 3.3.12-1 is added to describe the list for Remote Shutdown Display and Control in the APR1400	Tier 2, 7.5.1.1
	ACTION ----------NOTE---------- Separate Condition entry is allowed for each Function. ----------	ACTION ----------NOTE---------- 1. LCO 3.0.4 is not applicable 2. Separate Condition entry is allowed for each Function. ----------	Added a Note "LCO 3.0.4 is not applicable" so as not to prohibit or hinder operator to enter the other MODES or other specified condition during safe shutdown executing the unsatisfied required action based on the referenced plants.	
3.3.13 [Logarithmic] Power Monitoring Channels	REQUIRED ACTION A.2 Perform SDM verification in accordance with SR 3.1.1.1.	REQUIRED ACTION A.2 Perform SDM verification in accordance with SR 3.1.1.1 if T_{cold} > 99°C (210°F) or SR3.1.2.1 if T_{cold} ≤ 99°C (210°F).	SR 3.1.1.1 of NUREG-1432 is separately described with SR 3.1.1.1 (T_{cold} > 99°C) and SR 3.1.2.1 (T_{cold} ≤ 99°C).	
Addition - Boron Dilution Alarms	None	LCO 3.3.14 Two startup channel high neutron flux alarms shall be OPERABLE.	The OPERABILITY of BDAS channels is necessary to meet the assumptions of the safety analyses as described in the APR1400 DCD Tier2, Section 15.4.6.	Related ACTIONS and SURVEILLANCE REQUIREMENT are added.
		APPLICABILITY MODES 3, 4 and 5. ----------NOTE---------- MODE 3, within 1 hour after the		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
		neutron flux is within the startup range following a reactor shutdown.		
3.4 REACTOR COOLANT SYSTEM (RCS)				
3.4.1 RCS Pressure, Temperature, and Flow [Departure from Nucleate Boiling (DNB)] Limits	LCO 3.4.1 RCS DNB parameters for pressurizer pressure, cold leg temperature, and RCS total flow rate shall be within the limits specified in the COLR.	LCO 3.4.1 RCS departure from nucleate boiling (DNB) parameters for pressurizer pressure, cold leg temperature, and RCS total flow rate shall be within the limits specified below. a. Pressurizer pressure ≥ 154.7 kg/cm^2A (2,201 psia) and ≤ 161.6 kg/cm^2A (2,299 psia); b. RCS cold leg temperature (T_{cold}) ≥ 286.7℃ (548°F) and ≤ 293.3℃ (560°F) for < 90% RTP, or ≥ 289.4℃ (553°F) and ≤ 293.3℃ (560°F) for ≥ 90% RTP; and c. RCS total flow rate ≥ 75.6 $\times 10^6$ kg/hr (166.6 $\times 10^6$ lb/hr).	The RCS DNB parameters are the APR1400 plant specific values. LCO is to maintain the operation data within data specified in DCD Table 15.0-3.	APR1400 specific value used (DCD 15.0.3)
	APPLICABILITY MODE 1 ----------NOTE---------- Pressurizer pressure limit does not apply during: a. THERMAL POWER ramp > 5% RTP per minute or b. THERMAL POWER step > 10% RTP. ----------	APPLICABILITY MODES 1 and 2 for pressurizer pressure, MODE 1 for RCS cold leg temperature (T_{cold}), MODE 2 (k_{eff}≥1)for RCS cold leg temperature (T_{cold}), MODE 1 for RCS total flow rate.	Core power as an initial condition of safety analyses for the APR1400 is specified in DCD Table 15.0-3. Mode 2 includes the core power of 0 %.	APR1400 specific value used (DCD 15.0.3)

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	CONDITION A. Pressurizer Pressure or RCS flow rate not within limit	CONDITION A. RCS total flow rate not within limit.	LCO for RCS flow rate is only applied to MODE 1 in APPLICABILITY. So, the condition for the flow rate is separated from the pressurizer (PZR) pressure.	
	C. RCS cold leg temperature not within limits.	C. Pressurizer pressure or RCS cold leg temperature not within limit	LCOs for PZR pressure and cold leg temperature are applied to MODES 1 and 2 in APPLICABILITY. So, PZR pressure is merged into the cold leg temperature. When the LCOs are not met, the condition shall be changed into the not-applicable MODE.	
	REQUIRED ACTION D.1 Reduce THERMAL POWER to ≤[30]% RTP	REQUIRED ACTION D.1 Be in Mode 3	LCO 3.4.1 is applicable to MODEs 1 &2. If LCO 3.4.1 is not met, plant condition shall not be in MODEs 1&2.	
	SURVEILLANCE SR 3.4.1.1 Verify pressurizer pressure is within the limits specified in the COLR.	SURVEILLANCE SR 3.4.1.1 Verify pressurizer pressure ≥ 154.7 kg/cm^{2}A (2,201 psia) and ≤ 161.6 kg/cm^{2}A (2,299 psia).	See II.4	APR1400 specific value used
	SR 3.4.1.2 Verify RCS cold leg temperature is within the limits specified in the COLR.	SR 3.4.1.2 Verify RCS cold leg temperature ≥ 286.7℃ (548˚F) and ≤ 293.3℃ (560˚F) for < 90% RTP or ≥ 289.4℃ (553˚F) and ≤ 293.3℃ (560˚F) for ≥ 90% RTP.		APR1400 specific value used

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SR 3.4.1.3 ----------NOTE---------- Only required to be met in MODE 1. ---------- Verify RCS total flow rate is greater than or equal to the limits specified in the COLR.	SR 3.4.1.3 Verify RCS total flow rate ≥ 75.6 $\times 10^6$ kg/hr (166.6 $\times 10^6$ lb/hr)		APR1400 specific value used
	SR 3.4.1.4 ----------NOTE---------- Not required to be performed until [24] hours after ≥ [90]% RTP. ---------- Verify by precision heat balance that RCS total flow rate is within limits specified in the COLR	SR 3.4.1.4 ----------NOTE---------- Not required to be performed until 24 hours after ≥ 95**%** RTP. ---------- Verify by precision heat balance that RCS total flow rate ≥ 75.6 $\times 10^6$ kg/hr 9166.6 $\times 10^6$ lb/hr) and ≤ 86.9 $\times 10^6$ kg/hr (191.6 $\times 10^6$ lb/hr)	Higher power is desirable for more accurate measurements The upper flow limit is also required to be met to ensure the mechanical integrity of the RCS.	Current TS value used
3.4.2 RCS Minimum Temperature for Criticality	LCO 3.4.2 Each RCS loop average temperature (T_{avg}) shall be ≥ [520] ℉.	LCO 3.4.2 Each RCS cold leg temperature (T_{cold}) shall be ≥ 286.7℃ (548 ℉).	See II.3.1	
	APPLICABILITY MODE 1 with T_{avg} in one or more RCS loops < [535] ℉, MODE 2 with T_{avg} in one or more RCS loops < [535] ℉ and K_{eff} ≥ 1.0.	APPLICABILITY MODE 1, MODE 2 with k_{eff}≥1.0.	See II.3.1	
	CONDITION A. T_{avg} in one or more RCS loops not within limit. B.	CONDITION A. RCS T_{cold} in one or more RCS loops not within limit.	To enter a MODE out of APPLICABILITY	
	REQUIRED ACTION A.1 Be in MODE 2 with K_{eff} < 1.0.	REQUIRED ACTION A.1 Be in MODE 3.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	FREQUENCY SR 3.4.2.1 [12 hours] OR [In accordance with the Surveillance Frequency Control Program]	FREQUENCY SR 3.4.2.1 Once within 15 minutes prior to achieving criticality AND ----------NOTE---------- Required if the reactor is critical and RCS T_{cold} < 289.4°C (553°F). ---------- 30 minutes OR 12 hours	The first FREQUENCY is to verify LCO more vigilantly when approaching core critical. The second FREQUENCY of 30 minutes is to reduce possibility of inadvertent violation of LCO by frequent surveillance when the reactor is critical. 12 hour is added for consistency with STS.	RITS not applied.
3.4.3 RCS Pressure and Temperature (P/T) Limits	APPLICABILITY At all times	APPLICABILITY At all times (except when reactor vessel closure head is fully de-tensioned such that the RCS cannot be pressurized)	The exception is allowed in MODE 6 with the reactor vessel closure head removed since there is no potential for pressurization and therefore no potential for a non-ductile failure.	
3.4.4 RCS Loops – MODES 1 and 2	LCO 3.4.4 Two RCS loops shall be OPERABLE and in operation.	LCO 3.4.4 Two RCS loops shall be OPERABLE and two reactor coolant pumps in each loop shall be in operation.	More specific information is described for "in operation".	
3.4.5 RCS Loops – MODE 3	LCO 3.4.5 [Two] RCS loops shall be OPERABLE and one RCS loop shall be in operation.	LCO 3.4.5 Two RCS loops shall be OPERABLE with steam generators and at least one reactor coolant pump per loop and at least one RCS loop shall be in operation.	The meaning of the LCO is practically the same.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	CONDITION C Two RCS loops inoperable.	CONDITION C No RCS loop OPERABLE.	The meaning of the CONDITION C is practically the same.	
	REQUIRED ACTION C.1. Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.	REQUIRED ACTION C.1. Suspend all operations involving a reduction of RCS boron concentration.	The meaning of the REQUIRED ACTION is practically the same.	
3.4.6 RCS Loops – MODE 4	LCO 3.4.6 ----------NOTE---------- 1. All reactor coolant pumps (RCPs) and SDC pumps may be removed from operation for ≤ 1 hour per 8 hour period, provided: a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1	LCO 3.4.6 ----------NOTE---------- 1. All reactor coolant pumps (RCPs) and SC pumps may be de-energized ≤ 1 hour per 8-hour period, provided: a. No operations are permitted that would cause reduction of the RCS boron concentration required to meet the SDM of LCO 3.1.1;	There is no PZR level limit for RCP operation since LTOP analysis assumes the PZR is filled solid. Thus, the level limit is eliminated.	
	LCO 3.4.6 ----------NOTE---------- 2. No RCP shall be started with any RCS cold leg temperature less than or equal to the LTOP enable temperature specified in the PTLR unless: a. Pressurizer water level is < [60]% or b. Secondary side water temperature in each steam generator (SG) is < [100] °F above each of the RCS cold	LCO 3.4.6 ----------NOTE---------- 2. No RCP shall be started with any RCS cold leg temperatures less than or equal to the LTOP enable temperature specified in the PTLR, unless secondary side water temperature in each steam generator (SG) is < 55.6 °C (100 °F) above each of the RCS cold leg temperatures. ----------	The LTOP analyses in FSAR Section 5.2.2.10 is performed with the pressurizer in a water solid condition with a temperature difference of ≥ 139 °C (250 °F) between RCS cold leg and secondary side in each steam generator. There are no analyses performed with the pressurizer at a lower water level. Therefore, the option in NUREG-1432 is not utilized and this is conservative and	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	leg temperatures. ----------		consistent with the analyses.	
	CONDITION A. One required loop inoperable.	CONDITION A. One required RCS loop inoperable. AND Two SC trains inoperable.	LCO requires that two RCS loops or two SC trains are operable and one loop or train is in operation. “One RCS loop inoperable” is not LCO violation if another RCS loop and one of two SC trains are operable and any one of them is in operation. Therefore, combination for LCO violation is defined exactly.	
	REQUIRED ACTION A.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Initiate action to make at least one steam generator available for decay heat removal via natural circulation.	REQUIRED ACTION None	Natural circulation cooldown in Mode 4 is not analyzed.	
	CONDITION None	CONDITION B. One required SC train inoperable. AND Two required RCS loops inoperable.	LCO requires that two RCS loops or SC trains are operable and one loop or train is in operation. This condition is for defining combination for LCO violation exactly.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	REQUIRED ACTION None	REQUIRED ACTION B.1 Be in MODE 5.	LCO requires that two RCS loops or SC trains are operable and one loop or train is in operation. This condition is for defining combination for LCO violation exactly. With only one SC train OPERABLE, redundancy for decay heat removal is lost and then, in the event of a loss of the remaining SC train, it would be safer to be in MODE 5 rather than MODE 4.	
	CONDITION B. Two required loops or trains inoperable. OR Required loop or train not in operation.	CONDITION C. Two required RCS loops or SC trains inoperable OR Required RCS loop or SC train not in operation.	The meanings of the conditions are practically the same.	
	REQUIRED ACTION B.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.	REQUIRED ACTION C.1 Suspend all operations involving reduction in RCS boron concentration.		
	SR 3.4.6.1 Verify required RCS loop or SDC train is in operation.	SR 3.4.6.1 Verify one RCS loop or SC train is in operation	The meaning of the Surveillance Requirement is practically the same.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SR 3.4.6.4 None	SR 3.4.6.4 ----------NOTE ---------- Not required to be performed until 12 hours after entering Mode 4. ---------- Verify required SCS train locations susceptible to gas accumulation are sufficiently filled with water. FREQUENCY 31 days	TSTF-523 (Managing Gas Accumulation) is applied to APR1400 NRC DC Technical Specifications.	
3.4.7 RCS Loops – MODE 5, Loops Filled	LCO 3.4.7 ----------NOTE---------- 1. The SDC pump of the train in operation may be removed from operation for ≤ 1 hour per 8 hour period, provided: a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1 and	LCO 3.4.7 ----------NOTE---------- 1. The SC pump of the train in operation may be de-energized ≤ 1 hour per 8-hour period, provided: a. No operations are permitted that would cause reduction of the RCS boron concentration required to meet the SDM of LCO 3.1.1;		
	LCO 3.4.7 ----------NOTE---------- 3. No RCP shall be started with any RCS cold leg temperature less than or equal to the LTOP enable temperature specified in the PTLR unless: a. Pressurizer water level is < [60]% or	LCO 3.4.7 ----------NOTE---------- 3. No RCP shall be started with one or more of the RCS cold leg temperatures less than or equal to the LTOP enable temperature specified in the PTLR, unless secondary water temperature of each SG is < 55.6 °C (100 °F) above each of the RCS cold leg temperatures.	The LTOP analyses in FSAR Section 5.2.2.10 is performed with the pressurizer in a water solid condition with a temperature difference of ≥ 139 °C (250 °F) between RCS cold leg and secondary side in each steam generator. There are no analyses performed with the pressurizer at a lower water level. Therefore, the option in	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	b. Secondary side water temperature in each steam generator (SG) is < [100] °F above each of the RCS cold leg temperatures.		NUREG-1432 is not utilized and this is conservative and consistent with the analyses.	
	LCO 3.4.7 ----------NOTE---------- None ----------	LCO 3.4.7 ----------NOTE---------- 5. A containment spray pump can be manually realigned to meet the requirement of a SC pump. ----------	Containment Spray Pump (CSP) can be realigned to be used as Shutdown Cooling Pump (SCP) because SCP and CSP are interchangeable.	
	REQUIRED ACTION C.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.	REQUIRED ACTION C.1 Suspend all operations involving reduction in RCS boron concentration.		
	None	SR 3.4.7.4 Verify required SCS train locations susceptible to gas accumulation are sufficiently filled with water. FREQUENCY 31 days	TSTF-523 (Managing Gas Accumulation) is applied to APR1400 NRC DC Technical Specifications.	
3.4.8 RCS Loops – MODE 5, Loops Not Filled	LCO 3.4.8 ----------NOTE---------- 1. All SDC pumps may be removed from operation for ≤ 15 minutes when switching from one train to another provided: b. No operations are permitted	LCO 3.4.8 ----------NOTE---------- 1. All SC pumps may be de-energized for ≤ 15 minutes when switching from one train to another provided: b. No operations are permitted		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1	that would cause reduction of the RCS boron concentration required to meet the SDM of LCO 3.1.1		
	3. None. ----------	3. A containment spray pump can be manually realigned to meet the requirement of a SC pump. ----------	See III.5.2.2	
	CONDITION B. No Required SDC train OPERABLE. OR Required SDC train not in operation.	CONDITION B. Required SC trains inoperable. OR No SC train in operation.	The meanings of the CONDITION are practically the same.	
	REQUIRED ACTION B.1 Suspend operation that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.	REQUIRED ACTION B.1 Suspend all operations involving reduction of RCS boron concentration.		
	None	B.3 Initiate action to raise RCS level to > EL 38.72 m (127 ft-1/4 in).	If shutdown cooling pump cannot be restored, RCS level should be raised to > EL 38.72 m. This will place the plant in a conservative position with respective to decay heat removal.	
	SURVEILLANCE None	SURVEILLANCE SR 3.4.8.3 Verify required SCS train locations	TSTF-523 (Managing Gas Accumulation) is applied to APR1400 NRC DC Technical	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
		susceptible to gas accumulation are sufficiently filled with water. FREQUENCY 31 days	Specifications.	
3.4.9 Pressurizer	LCO 3.4.9 a. Pressurizer water level <[60%] and b. [Two groups of] pressurizer heaters OPERABLE with the capacity [of each group] ≥[150 kw [and capable of being powered from an emergency power supply]	LCO 3.4.9 a. Pressurizer water level ≥ 25% and ≤ 56%, and b. Two groups of pressurizer backup heaters OPERABLE with the capacity of each group ≥ 300 kw and capable of being powered from an emergency power supply.	The pressurizer water level of 25% is determined by considering the water level to prevent heater's burn-up from low water level. The pressurizer water level of 56% is to provide steam space for controlling pressurizer pressure. Heater capacity is determined by considering heat loss from pressurizer insulation. The value of 300 kW is sufficient to add heat for controlling pressurizer pressure for the APR1400.	APR1400 specific value used
	CONDITION B. One [required] group of pressurizer heaters inoperable.	CONDITION B. Required Action and associated Completion Time of Condition A not met.	The deviations reflect the APR1400 plant specific operating practice.	
	REQUIRED ACTION None.	REQUIRED ACTION A.1 Restore pressurizer water level within limit.	The deviations reflect the APR1400 plant specific operating practice. With PZR water level outside the limits, ACTION is taken within 1 hour to restore the plant to be operated within the bounds of safety analyses. If PZR water level cannot be restored to within the limits in 1 hour, the plant is	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
			placed in MODES 3 with the reactor trip circuit breakers open within 6 hours, and in MODE 4 within 12 hours.	
	SURVEILLANCE SR 3.4.9.3 [Verify required pressurizer heaters are capable of being powered from an emergency power supply.	SURVEILLANCE SR 3.4.9.3 Verify that on an engineered safety features actuation test signal concurrent with a loss of offsite power: a. pressurizer backup heaters are automatically shed from emergency power sources. b. pressurizer backup heaters can be reconnected to their respective buses manually from the control room	APR1400 pressurizer backup heaters can be manually transferred to be energized by emergency power supply.	
3.4.10 Pressurizer Safety Valves	LCO 3.4.10 [Two] pressurizer safety valves shall be OPERABLE with lift settings ≥ [2475] psia and ≤ [2525] psia.	LCO 3.4.10 Four pressurizer POSVRs shall be OPERABLE such that: a. Two spring-loaded pilot valves shall be OPERABLE with lift settings ≥171.1 kg/cm^{2}A (2,433.0 psia) and ≤176.3 kg/cm^{2}A (2,507.0 psia) b. The opening time of pressurizer POSRV shall be OPERABLE within 0.5 seconds, including dead time.	The setpoint range is a APR1400 specific characteristics and the valve type is different. Pressurizer Pilot Operated Safety Relief Valve (POSRV) is applied in the APR1400. The opening time is specified in the Design Specification and verified by test for the APR1400 plant.	
	APPLICABILITY ----------NOTE---------- The lift setting are not required to be within LCO limits during	APPLICABILITY ----------NOTE---------- The opening time measurement and lift pressure setting of POSRV	The meanings of the APPLICABILITY are practically the same. The 72 hours exception is based on 18 hours	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	MODES 3 and 4 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for [36] hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup	are not required to be within LCO limits during MODES 3 and 4 for the purpose of setting the POSRVs under ambient (hot) conditions. This exception is allowed for 72 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup.	outage time for each of the four valves (APR1400 adopts 4 POSRVs). The 18 hours period is determined based on operating experience.	
	REQUIRED ACTION B.2 Be in MODE 4 with any RCS cold leg temperature less than or equal to the LTOP enable temperature specified in the PTLR	REQUIRED ACTION B.2.1 Be in MODE 4 with all RCS cold leg temperatures less than or equal to LTOP enable temperature specified in PTLR. OR B.2.2 Be in MODE 4 on shutdown cooling with the requirements of LCO 3.4.11 met.	The REQUIRED ACTIONs reflect the APR1400 design. When the POSRV(s) are inoperable, LTOP relief valves shall be aligned for OPP. Alignment of LTOP relief valves can be allowed by meeting conditions by reducing the cold leg temperature down to the LTOP enable temperature and by opening SCS isolation valves.	
	SURVEILLANCE SR 3.4.10.1 Verify each pressurizer safety valve is OPERABLE in accordance with the inservice Testing Program. Following testing, lift settings shall be within ±1%.	SURVEILLANCE SR 3.4.10.1 Verify the open and close positions for the following valves in the main control room (MCR): a. main valves – close, b. motor operated isolation valves and manual isolation valves – open, c. spring-loaded pilot valves – close, and d. motor operated pilot valves – close.	The SRs reflect POSRV characteristics. The testing and inspection for POSRVs are given in DCD Section 5.2.2.10.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	None	SR 3.4.10.2 Verify electric power disconnections of the following motor-operated valves:		
	None	SR 3.4.10.3 Verify each pressurizer POSRV meets the following:		
	None	SR 3.4.10.4 Verify alarm devices for valve positions and electric power connections of the following valves:		
	None	SR 3.4.10.5 Verify position indicators of the following valves are operated normally:		
	None	SR 3.4.10.6 Verify downstream manual valves of spring-loaded pilot valves are locked in open position.		
3.4.11 Pressurizer Power Operated Relief Valves (PORVs)	The LCO is for PORV.	None	There is no PORV in the APR1400 (plant specific).	
3.4.12 Low Temperature Overpressure Protection (LTOP) System	LCO 3.4.12 An LTOP System shall be OPERABLE with a maximum of one high pressure safety injection (HPSI) pump and one charging pump capable of injecting into the RCS and the safety injection tanks (SITs) isolated, and: ----------NOTES----------	LCO 3.4.11 LTOP System shall be OPERABLE as follows:	SCS suction isolation valves are sized to accommodate mass addition for 4 SIPs and one charging pump. The flow rates from two charging pumps during pump switchover are limited by flow restrictor. Therefore, there is no need to limit the charging pump operation.	APR 1400 specific design is reflected.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	1. [Two charging pumps] may be made capable of injecting for ≤ 1 hour for pump swap operations. 2. SIT may be unisolated when SIT pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR. ---------- a. Two OPERABLE power operated relief valves (PORVs) with lift settings within the limits specified in the PTLR or b. The RCS depressurized and an RCS vent of ≥ [1.3] square inches.	a. Two OPERABLE shutdown cooling system (SCS) suction line relief valves with lift settings ≤ 37.3 kg/cm^2 (530 psig), or b. RCS depressurized and an RCS vent of ≥ 180.6 cm^2 (28 in^2)	SIT operating pressure is 610 psig and SIT discharge cannot pressurize over LTOP limit pressure, 625 psia. It is because RCS pressure can be assumed to be less than 450 psia (SCS cut in pressure), and RCS volume is larger than SIT. Therefore, there is no need to include SIT isolation in the APR1400 Technical Specification.	
	ACTIONS ----------NOTES---------- LCO 3.0.4.b is not applicable to PORVs when entering MODE 4. ----------	ACTIONS None	Relief valves for LTOP function are used in the APR1400 instead of PORV. These relief valves have full capacity each and are a kind of passive device. A risk assessment for passive relief valves is not required. Therefore, The NOTE for 3.0.6.b is not needed.	
	CONDITION A. Two or more HPSI pumps capable of injecting into the RCS.	CONDITION None	See the Justification to LCO 3.4.11	APR 1400 specific design is reflected.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	B. Two or more charging pumps capable of injecting into the RCS.	None	See the Justification to LCO 3.4.11	APR 1400 specific design is reflected.
	C. A SIT not isolated when SIT pressure is greater than or equal to the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	None	See the Justification to LCO 3.4.11	APR 1400 specific design is reflected.
	D. Required Action and associated Completion Time of Time of Condition C not met.	None	See the Justification to LCO 3.4.11	APR 1400 specific design is reflected.
	E. One required PORV inoperable in MODE 4.	A. One required SCS suction line relief valve inoperable in MODE 4.	Different valve name is used for the APR1400.	
	F. One required PORV inoperable in MODE 5 or 6.	B. One required SCS suction line relief valve inoperable in MODE 5 or 6.	Different valve name is used for the APR1400.	
	G. Two required PORVs inoperable. OR Required Action and associated Completion Time of Condition A, [B], D, E, or F not met. OR LTOP System inoperable for any reason other than Condition A, [B], C, D, E, or F.	C. Required Action and associated Completion Time not met. D. Two required SCS suction line relief valves inoperable.	C. When one SCS suction isolation valve is inoperable and the required action and associated completion time are not met in ACTION A or B, an additional action for preventing RCS pressurization should be taken such as establishing a vent. D. If two LTOP relief valves are inoperable, an action for preventing RCS pressurization should be	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
			taken such as establishing a vent immediately. Different valve name is used in the APR1400.	
	SURVEILLANCE SR 3.4.12.1 Verify a maximum of one HPSI pump is capable of injecting into the RCS.	SURVEILLANCE None	See the Justification to LCO 3.4.11	APR 1400 specific design is reflected.
	SR 3.4.12.2 Verify a maximum of one charging pump is capable of injecting into the RCS.	None	See the Justification to LCO 3.4.11	APR 1400 specific design is reflected.
	SR 3.4.12.3 Verify each SIT isolated.	None	See the Justification to LCO 3.4.11	APR 1400 specific design is reflected.
	SR 3.4.12.4 Verify required RCS vent ≥ [1.3] square inches is open.	SR 3.4.11.1 ----------NOTE---------- Not required to be met if SR 3.4.11.2 is satisfied for LCO 3.4.11.b requirement. ---------- Verify RCS vent of ≥ 180.6 cm^2 (28 in^2) is established.	RCS vent path is not required because LTOP relief valve setpoint is already adjusted for overpressure protection.	
	SR 3.4.12.5 Verify PORV block valve is open for each required PORV.	None	During MODE 4~6, at least one SC train shall be in operation. Therefore SCS suction line isolation valves (PORV block valves) are open.	
	SR 3.4.12.6 ----------NOTE---------- Not required to be performed until [12] hours after decreasing RCS cold leg temperature to less than or	None	LTOP relief valves are not a PORV but self-actuating type. Therefore this SR is not required.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	equal to the LTOP enable temperature specified in the PTLR. ---------- Perform CHANNEL FUNCTIONAL TEST on each required PORV, excluding actuation.			
	SR 3.4.12.7 Perform CHANNEL CALIBRATION on each required PORV actuation channel.	SR 3.4.11.2 ----------NOTE---------- Not required to be met if SR 3.4.11.1 is satisfied for LCO 3.4.11.a requirement. ---------- Verify set-point setting for each required SCS suction line relief valve is within limits.	LTOP relief valves are not a PORV but self-actuating type. Therefore this SR is not required to prevent RCS over-pressurization.	
3.4.14 RCS Pressure Isolation Valve (PIV) Leakage	REQUIRED ACTION A.2 [Isolate the high pressure portion of the affected system from the low pressure portion by use of a second closed manual, deactivated automatic, or check valve. [or] Restore RCS PIV to within limits.	REQUIRED ACTION A.2 Restore RCS PIV leakage to within limits.	An isolation may cause a loss of Residual Heat Removal (RHR). The (automatic) isolation function is not used in the APR1400.	
	CONDITION C. Shutdown Cooling (SDC) System autoclosure interlock function inoperable.	CONDITION C. SC System open permissive interlock function inoperable.	There is no auto-closure interlock in the APR1400. OPP for SCS is performed by LTOP relief valves.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	REQUIRED ACTION C.1 Isolate the affected penetration by use of one closed manual or deactivated automatic valve.	REQUIRED ACTION C.1 Depressurize RCS pressure below open permissive interlock setpoint.	An isolation may cause a loss of RHR. Therefore RCS should be depressurized for connecting SCS operation for residual heat removal.	
	FREQUENCY SR 3.4.14.1 In accordance with the Inservice Testing Program, and [18] months AND Prior to entering MODE 2 determine the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months AND Within 24 hours following valve actuation due to automatic or manual action or flow through the valve	FREQUENCY SR 3.4.13.1 18 months AND Prior to entering MODE 2 whenever unit has been in MODE 5 for 72 hours or more, if leakage testing has not been performed in previous 9 months AND Prior to returning valve to service following maintenance, repair, or replacement work on valve AND Within 24 hours following valve actuation due to automatic or manual action or flow through the valve	The valve leakage rate shall be verified for in-service after any maintenance, repair or replacement work.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SURVEILLANCE SR 3.4.14.2 ----------NOTE---------- Not required to be met when the SDC System autoclosure interlock is disabled in accordance with SR 3.4.12.7. ---------- Verify SDC System autoclosure interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ [425] psig.	SURVEILLANCE SR 3.4.13.2 ----------NOTE---------- The performance of this Surveillance Requirement is not required if SC suction line isolation valves are open for LTOP by LCO 3.4.11.a. ---------- Verify SC system open permissive interlock prevents the SC system suction line isolation valve from being opened with a simulated or actual RCS pressure signal ≥ 31.6 kg/cm^2 (450 psia).	There is no auto closure interlock in the APR1400.	
	SR 3.4.14.3 ----------NOTE---------- Not required to be met when the SDC System autoclosure interlock is disabled in accordance with SR 3.4.12.7. ---------- Verify SDC System autoclosure interlock causes the valves to close automatically with a simulated or actual RCS pressure signal ≥ [600] psig.	None	There is no auto closure interlock in the APR1400.	
3.4.15 RCS Leakage Detection Instrumentation	LCO 3.4.15 [Two of] the following RCS leakage detection instrumentation shall be OPERABLE: a. One containment sump	LCO 3.4.14 The following RCS leakage detection instrumentation shall be OPERABLE: a. One containment sump	1. For item 'a', Containment sump means containment sump level. Therefore they are the same one. 2. For item 'c', the method used	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	monitor c. One containment air cooler condensate flow rate monitor.]	level monitor c. One containment atmosphere humidity monitor	in the APR1400 is one of the methods described in RG 1.45.	
	COMPLETION TIME A.2 30 days B.2.1 30 days B.2.2 30 days E.1 30 days E.2 30 days	COMPLETION TIME A.2 31 days B.2.1 31 days B.2.2 31 days E.1 31 days E.2 31 days	See II.3.2	
3.4.16 RCS Specific Activity	LCO 3.4.16 The specific activity of the reactor coolant shall be within limits.	LCO 3.4.15 RCS DOSE EQUIVALENT I-131 and DOSE EQUIVALENT XE-133 specific activity shall be within limits.	See II.2.2	
	APPLICABILITY MODES 1 and 2, MODE 3 with RCS average temperature (T_{avg}) ≥ 500°F	APPLICABILITY MODES 1, 2, 3 and 4.	See II.2.3	
	CONDITION A. DOSE EQUIVALENT I-131 > 1.0 µCi/gm. B. Required Action and associated Completion Time of Condition A not met. OR DOSE EQUIVALENT I-131 in the unacceptable region of	CONDITION A. DOSE EQUIVALENT I-131 not within limit. B. DOSE EQUIVALENT XE-133 not within limit.	See II.2.2	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	Figure 3.4.16-1 C. Gross specific activity of the reactor coolant not within limit.	 C. Required Action and associated Completion Time of Condition A or B not met. OR DOSE EQUIVALENT I-131 > 2.22×10^6 Bq/g.		
	REQUIRED ACTION ----------NOTE---------- LCO 3.0.4.c is applicable. ---------- A.1 Verify DOSE EQUIVALENT I-131 within the acceptable region of Figure 3.4.16-1. AND A.2 Restore DOSE EQUIVALENT I-131 to within limit.	REQUIRED ACTION ----------NOTE---------- LCO 3.0.4 is not applicable. ---------- A.1 Verify DOSE EQUIVALENT I-131 ≤ 2.22×10^6 Bq/g AND A.2 Restore DOSE EQUIVALENT I-131 to within limit.	See II.3.3	
	  B.1 Be in MODE 3 with T_{avg} < 500°F.	----------NOTE---------- LCO 3.0.4 is not applicable. ---------- B.1 Restore DOSE EQUIVALENT XE-133 to within limit.	See II.3.3	
	C.1 Be in MODE 3 with T_{avg} < 500°F	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	See II.3.3	
	SURVEILLANCE SR 3.4.16.1	SURVEILLANCE SR 3.4.15.1	See II.3.3	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	Verify reactor coolant gross specific activity ≤ 100/Ē µCi/gm.	----------NOTE---------- Only required to be performed in MODE 1. ---------- Verify reactor coolant DOSE EQUIVALENT XE-133 specific activity ≤ 1.11 x 10^7 Bq/g.		
	SR 3.4.16.3 ----------NOTE---------- Not required to be performed until 31 days after a minimum of 2 EFPD and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours. ---------- Determine Ē from a sample taken in MODE 1 after a minimum of 2 EFPD and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	None	See II.3.3	
Addition - Reactor Coolant Gas Vent (RCGV) Function	None	LCO 3.4.16 The following RCGV path shall be OPERABLE: a. Two paths from the reactor vessel closure head to in-containment refueling water storage tank (IRWST) and b. Two paths from the pressurizer steam space to IRWST APPLICABILITY	BTP RSB 5-4 requires as follows: 1. The design shall be such that the reactor can be taken from normal operating conditions to cold shutdown using only safety-grade systems. 2. RCGVS is a safety-grade means in order to use for pressure control during RCS cooling from the hot zero power to the entry condition of	Related ACTIONS and SURVEILLANCE REQUIREMENT are added.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
		MODES 1,2 and 3, MODE 4 with RCS pressure ≥ 31.6 kg/cm^{2}A (450 psia)	SCS. Therefore it is controlled by LCO for operability.	
3.4.17 Special Test Exceptions (STE)-RCS Loops	LCO 3.4.17 The requirements of LCO 3.4.4, "RCS Loops - MODES 1 and 2," and the listed requirements of LCO 3.3.1, "Reactor Protective System (RPS) Instrumentation - Operating," for the [(Analog) RC flow low, thermal margin or low pressure, and asymmetric steam generator transient protective trip functions] [(Digital) high log power, high local power density, low departure from nucleate boiling ratio protective trip functions] may be suspended provided: a. THERMAL POWER ≤ 5% RTP and b. The reactor trip setpoints of the OPERABLE power level channels are set ≤ 20% RTP.	None	These STEs are needed during a startup & PHYSICS TESTS in MODE 2 which means actually a Natural Circulation test at a criticality condition. The APR1400 performs Natural Circulation test at Hot Standby condition, so these STEs are not required.	
3.5 EMERGENCY CORE COOLING SYSTEM (ECCS)				
3.5.1 Safety Injection Tanks (SITs)	APPLICABILITY MODES 1 and 2, MODE 3 with pressurizer pressure ≥ [700] psia.	APPLICABILITY MODES 1 and 2, MODES 3 and 4 with pressurizer pressure ≥ 50.3 kg/cm^{2}A (715 psia).	See III.3.2.1	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	C.2 2 hours	D.2 12 hours	12 hours in NUREG 1432 Rev. 2 is used rather than 2 hours in NUREG 1432 Rev. 3,4. But according to the NUREG 1432 Rev 04 Bases, the '12 hr' is used as a pressure reduction time. Therefore, it seems appropriate to use 12 hr rather than 2 hr.	
	FREQUENCY SR 3.5.1.4 Once within 6 hours after each solution volume increase of ≥ [1]% of tank volume that is not the result of addition from the refueling water tank	FREQUENCY SR 3.5.1.4 Whenever a SIT volume change not from IRWST exceeds the limits of SR 3.5.1.2, immediately after a boron concentration measurement is ready	The SIT boron concentration will not fall below the safety analysis minimum of 2,000 ppm even if the SIT is at 2,300 ppm and the SIT water volume has swing from its minimum to maximum volume.	
3.5.2 ECCS - Operating	LCO 3.5.2 Two ECCS trains Shall be OPERABLE.	LCO 3.5.2 Four trains of SIS shall be OPERABLE.	See Section III.3.1	
	APPLICABILITY MODES 1, 2, and 3, with pressurizer pressure ≥ 1700 psia	APPLICABILITY MODES 1, 2, and 3	See Section III.3.2.2	
	CONDITION A. One LPSI subsystem Inoperable. B. One or more trains inoperable for reasons other than Condition A. D. Less than 100% of the ECCS flow equivalent to a single	CONDITION A. One train inoperable OR Two trains inoperable and diagonally oriented trains with respect to the reactor vessel B. Required Action and associated	See III.3.2.2	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	OPERABLE train available C. Required Action and associated Completion Time not met.	Completion Time not met. C. Two or more SIS trains inoperable for reasons other than Condition A. REQUIRED ACTION A.2 Restore two trains diagonally oriented with respect to the reactor vessel to OPERABLE status.		
	REQUIRED ACTION C.2 Reduce pressurizer pressure to < [1700] psia.	REQUIRED ACTION B.2 Be in Mode 4.	See III.3.2.2	
	SURVEILLANCE SR 3.5.2.1 Verify the following valves are in the listed position with power to the valve operator removed and key locked in position.	SURVEILLANCE SR 3.5.2.1 Verify the following hot leg injection isolation valves are locked in the closed position:	The valves with power to the valve operator removed are not applicable for the APR1400.	
	SR 3.5.2.2 Verify each ECCS.	----------NOTE---------- Not required to be met for system vent flow paths opened under administrative control. ---------- SR 3.5.2.2 Verify each SIS.	Activities for gas accumulation management are considered.	
	SR 3.5.2.3 Verify ECCS piping is full of water.	SR 3.5.2.3 Verify SIS piping locations susceptible to gas accumulation are sufficiently filled with water.	TSTF-523 (Managing Gas Accumulation) is applied to APR1400 NRC DC Technical Specification	
	SR 3.5.2.5 [Verify each charging pump develops a flow of >= [36] gpm at a discharge	SR 3.5.2.5 Verify each SIS pump develops a flow of greater than or equal to 3,407 lpm (900	The SI pumps are tested at rated flow condition (in addition to the miniflow condition) during power	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	pressure of >= [2200] psig.	gpm) at a differential pressure greater than or equal to 86.9 kg/cm^2 D (1,236 psid).	operations to enhance the capability of monitoring pump performance degradation.	
	SR 3.5.2.6 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.	SR 3.5.2.6 Verify each SIS train automatic valve in the flow path actuates to the correct position on an actual or simulated actuation signal.	"Not locked, sealed, or otherwise secured in position" is unnecessary in SR 3.5.2.6.	
	SR 3.5.2.8 Verify each LPSI pump stops on an actual or simulated actuation signal.	None	There is no LPSI pump in APR1400 plant design.	
	SR 3.5.2.9 Verify, for each ECCS throttle valve listed below, each position stop is in the correct position.	None	The automatic valve and the part of the power operated valves which have throttling function are included in SR 3.5.2.2.	
	SR 3.5.2.10 Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.	SR 3.5.2.8 Verify, by visual inspection, that the IRWST strainers and HVT trash racks are not restricted by debris and strainers show no evidence of structural distress or abnormal corrosion.	See III.3.2.3	
3.5.3 ECCS - Shutdown	LCO 3.5.3 One high pressure safety injection (HPSI) train shall be OPERABLE.	LCO 3.5.3 Two trains of SIS diagonally oriented with respect to the reactor vessel shall be OPERABLE.	See III.3.1	
	APPLICABILITY MODE 3 with pressurizer pressure < [1700] psia, MODE 4.	APPLICABILITY MODES 4 and 5, MODE 6 with RCS level < 39.7 m (130 ft-0 in)	See III.3.2.2	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	ACTIONS ----------NOTE---------- LCO 3.0.4.b is not applicable to ECCS High Pressure Safety Injection subsystem when entering MODE 4. ----------	ACTIONS None	See III.3.2.2	
	REQUIRED ACTION B.1 Be in MODE 5	REQUIRED ACTION B.1 Initiate actions to restore RCS level ≥ 39.7 m (130 ft-0 in) AND B.2 Reduce RCS cold leg temperature to < 57.2 ℃ (135℉)	See III.3.2.2	
3.5.4 Refueling Water Tank (RWT)	LCO 3.5.4 The RWT shall be OPERABLE.	LCO 3.5.4 The IRWST shall be OPERABLE.	See II.5	
	APPLICABILITY: MODES 1, 2, 3, and 4.	APPLICABILITY: MODES 1, 2, 3, 4 and 5, MODE 6 with RCS level < 39.7 m(130 ft 0 in)	See III.3.2.3	
	CONDITION A. RWT boron concentration not within limits. C. RWT borated water temperature not within limits.	CONDITION A. IRWST boron concentration not within limits. OR IRWST borated water temperature not within limits.	See III.3.2.3	Related REQUIRED ACTIONs and COMPLETIONs are changed.
	B. Required Action and associated Completion Time of Condition A not met.	C. Required Action and associated Completion Time of Condition A or B not met in MODES 1, 2, 3,	See III.3.2.3	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	E. Required Action and associated Completion Time of Condition C or D not met.	or 4.		
	D. RWT inoperable for reasons other than Condition A or C.	B. IRWST borated water volume not within limits.	See III.3.2.3	
	None	D. Required Action and associated Completion Time of condition A or B not met in MODE 5 or MODE 6 with RCS level < 39.7 m (130 ft 0 in).	See III.3.2.3	
	REQUIRED ACTION B.1 ----------NOTES---------- LCO 3.0.4.a is not applicable when entering MODE 3 or MODE 4. ---------- Be in MODE 3. E.1 Be in MODE 3. AND E.2 Be in MODE 5.	REQUIRED ACTION None C.1 Be in MODE 3. AND C.2 Be in MODE 5.	See III.3.2.3	
	None	D.1 Initiate action to restore RCS level to ≥ 39.7 m (130 ft 0 in). AND D.2 Reduce RCS cold leg temperature to < 57.2 ℃ (135 ℉).	See III.3.2.3	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SURVEILLANCE SR 3.5.4.1 ----------NOTE---------- [Only required to be performed when ambient air temperature is ≥ 40°F or ≤ 100°F.] ----------	SURVEILLANCE SR 3.5.4.1 None	See III.3.2.3	
3.5.5 Trisodium Phosphate (TSP)	SURVEILLANCE SR 3.5.5.1 Verify the TSP baskets contain ≥ [291] ft^3 of trisodium phosphate. SR 3.5.5.2 Verify that a sample from the TSP baskets provides adequate pH adjustment of RWT water.-	SURVEILLANCE SR 3.5.5.1 Verify the TSP baskets contain ≥ 29.5 m^3 (1,042 ft^3) of TSP. SR 3.5.5.2 Verify that a sample from the TSP baskets provides adequate pH adjustment of IRWST water.	This is an intrinsic design characteristic of APR1400. The required volume of TSP for the APR1400 is presented in Table 6.5-4 of Tier 2. See II.5	
3.6 CONTAINMENT SYSTEMS				
3.6.1 Containment	-	Same as NUREG-1432		
3.6.2 Containment Air Locks	REQUIRED ACTION D.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in Mode 4.	REQUIRED ACTION D.2 Be in Mode 5.	See II.3.3	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	COMPLETION TIME D.2 12 hours	COMPLETION TIME D.2 36 hours	See II.3.3	
	SURVEILLANCE SR 3.6.2.1 None	SURVEILLANCE SR 3.6.2.1 The acceptance criteria for air lock testing are: a. Overall air lock leakage rate is ≤ 0.05 L_a when tested at ≤ P_a [3.77 kg/cm^2 (53.6 psig)]. b. For each door seal leak rate is ≤ 0.01 La when tested at ≤ P_a [3.77 kg/cm^2 (53.6 psig)].	See Table II-1	
3.6.3 Containment Isolation Valves	CONDITION A. ----------NOTE---------- Only applicable to the [containment sump supply valves to the ECCS and containment spray pumps]. --- One or more penetration flow paths with one containment isolation valve inoperable	CONDITION A. ----------NOTE---------- Only applicable to penetration flow paths with two containment isolation valves. --- One or more penetration flow paths with one containment isolation valve inoperable (except for purge valve leakage not within limit).	Condition A of NUREG-1432 only applicable to the containment isolation valves that do not meet the conditions to extend the Completion Time to 7 days. The APR1400 does not adopt NUREG-1432.	Related REQUIRED ACTION and COMPLETION TIME are changed.
	B. One or more penetration flow paths with one containment isolation valve inoperable [for reasons other than Condition[s] A, E, [and F]]. REQUIRED ACTION AND	B. One or more penetration flow paths with two containment isolation valves inoperable (except for purge valve leakage not within limit. REQUIRED ACTION None	See II.3.3	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	B.2 ------NOTES------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ---------- Verify the affected penetration flow path is isolated. COMPLETION TIME B.1 [7 days] B.2 Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment]	COMPLETION TIME B.1 1 hour None		
	C. ----------NOTE---------- Only applicable to penetration flow paths with two [or more] containment isolation valves. ---------- One or more penetration flow paths with two [or more]	C. ----------NOTE---------- Only applicable to those penetration flow paths with only one containment isolation valve. and a closed system. ---------- One or more penetration flow paths with one containment	APR1400 does not adopt NUREG-1432. However APR1400 Condition-C is similar to NUREG-1432, Condition- D except the bracketed options and Completion Time is more	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	containment isolation valves inoperable [for reasons REQUIRED ACTION None COMPLETION TIME C.1 1 hour None	isolation valve inoperable. REQUIRED ACTION AND C.2 ----------NOTE---------- Isolation devices in high radiation areas may be verified by use of administrative means. --- Verify affected penetration flow path is isolated. COMPLETION TIME C.1 4 hours C.2 Once per 31 days	conservative.	
	D. ----------NOTE---------- Only applicable to penetration flow paths with only one containment isolation valve and a closed system. --- One or more penetration flow paths with one containment isolation valve inoperable. REQUIRED ACTION	D. None One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits. REQUIRED ACTION D.1 Isolate the affected	APR1400 does not adopt NUREG-1432. APR1400 Condition-D is similar to NUREG-1432, Condition- F	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	D.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. None COMPLETION TIME D.1 72 hours for Those penetrations that do not met the 7 day criteria AND 7 days for those penetrations that meet the 7 day criteria D.2 Once per 31 days	penetration flow path by use of at least one closed and deactivated automatic valve with resilient seals, closed manual valve with resilient seals, or blind flange. AND D.3 Perform SR 3.6.3.6 for the resilient seal purge valves closed to comply C. with Required Action D.1. COMPLETION TIME D.1 24 hours D.2 Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
		containment D.3 Once per 92 days		
	E. [One or more secondary containment bypass leakage [or purge valve leakage] not within limit.	None	NUREG-1432, Condition- E is not applicable because it deals with dual Containments.	
	F. [One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.	D. One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits	APR1400 does not adopt NUREG-1432. NUREG-1432 Condition-F is similar to APR1400 Condition- D.	
	G. Required Action and associated Completion Time not met.	E. Required Action and associated Completion Time not met.	See II.3.3	
	SURVEILLANCE SR 3.6.3.1 [Verify each [42] inch purge valve is sealed closed except for one purge valve in a penetration flow path while in Condition E of this LCO.	SURVEILLANCE SR 3.6.3.1 Verify each 1219.2 mm (48 inch) purge valve is sealed closed except for one purge valve in a penetration flow path while in Condition D of this LCO.	The SR reflects APR1400 plant specific design. - NUREG-1432 : 42 inch - APR1400 : 48 inch	
	SR 3.6.3.8 [Verify each [ ] inch containment purge valve is blocked to restrict the valve from opening > [50]%.	None	Design concept for containment purge valve is different between NUREG-1432 and APR1400.	
	SR 3.6.3.9 [Verify the combined leakage rate for all secondary containment bypass leakage paths is ≤ [L_a] when	None	The SR is not applicable because it deals with dual containments	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	pressurized to ≥ [psig].			
3.6.4 Containment Pressure	REQUIRED ACTION B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4. COMPLETION TIME B.2 12 hours	REQUIRED ACTION B.2 None Be in MODE 5. COMPLETION TIME B.2 36 hours	See II.3.3	
3.6.5 Containment Air Temperature	REQUIRED ACTION B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4. COMPLETION TIME B.2 12 hours	REQUIRED ACTION B.2 None Be in MODE 5. COMPLETION TIME B.2 36 hours	See II.3.3	Related COMPLETION TIME is changed.
3.6.6 Containment Spray and Cooling System	LCO 3.6.6 Two containment spray trains and two containment cooling trains shall be OPERABLE.	LCO 3.6.6 Two Containment Spray divisions shall be OPERABLE.	"Train" is changed to "Division". See II.5	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	COMPLETION TIME A.1 [7] days	COMPLETION TIME A.1 72 hours	See Table II-2, III.6.2.1	
	REQUIRED ACTION B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	REQUIRED ACTION B.2 None Be in MODE 5.	See II.3.3	
	CONDITION C. One containment cooling train inoperable.	CONDITION None	See II.5	
	D. One containment spray and one containment cooling train inoperable.	None	See II.5	
	E. Two containment cooling trains inoperable.	None	See II.5	
	F. Required Action and associated Completion Time of Condition C, D, or E not met.	None	See II.5	
	G. Two containment spray trains inoperable. OR Any combination of three or more trains inoperable.	C. Two containment spray divisions inoperable.	"Train" is changed to "Division".	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SURVEILLANCE SR 3.6.6.2 Operate each containment cooling train fan unit for ≥ 15 minutes. SR 3.6.6.3 Verify each containment cooling train cooling water flow rate is ≥ [2000] gpm to each fan cooler. SR 3.6.6.8 Verify each containment cooling train starts automatically on an actual or simulated actuation signal.	SURVEILLANCE None	See II.5	
3.6.7 Spray Additive System	None	3.6.7 Containment Penetrations - REDUCED RCS INVENTORY Operations LCO The Containment building penetrations shall be in the following status: a. The equipment hatch closed and held in place by [a minimum of four bolts.] b. One door in each airlock closed. c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere is either: 1. Closed by a manual or automatic isolation valve, blind flange, or equivalent; or	See III.6.2.2 During reduced RCS inventory operation, a release of fission product within the containment to the environment is restricted.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
		2. Exhausting through OPERABLE Containment Purge System ACUs, and is capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System.		
3.6.8 Shield Building Exhaust Air Cleanup System (SBEACS)	-	None	There is not the system in the APR1400.	
3.6.9 Hydrogen Mixing System (HMS)	-	None	See III.6.2.3	
3.6.10 Iodine Cleanup System (ICS)	-	None	See III.6.2.4	
3.6.11 Shield Building	-	None	There is not the system in the APR1400.	
3.6.12 Vacuum Relief Valves	-	None	There is not the system in the APR1400.	
3.7 PLANT SYSTEMS				
3.7.1 Main Steam Safety Valves (MSSVs)	SURVEILLANCE SR 3.7.1.1 ----------NOTE---------- Only required to be performed in MODES 1 and 2. ----------	SURVEILLANCE SR 3.7.1.1 ----------NOTE---------- Only required to be performed after MODE 3 entry. In case of entering MODES 3 and 4 for lift setting and test of MSSV, SR 3.0.4 would not apply. ----------	MSSV testing is performed at hot conditions. There is no difference of bases for surveillance requirements between NUREG-1432 and APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
3.7.2 Main Steam Isolation Valves (MSIVs)	SURVEILLANCE SR 3.7.2.1 ----------NOTE---------- Only required to be performed in MODES 1 and 2. ----------	SURVEILLANCE SR 3.7.2.1 ----------NOTE---------- Only required to be performed in MODES 3. ----------	The MSIVs are not tested at power since the test increases the risk of valve closure with the unit generating power. The test for verifying the closure time of MSIVs is conducted in MODE 3. There is no difference of bases for surveillance requirements between NUREG-1432 and APR1400.	
	SURVEILLANCE SR 3.7.2.2 ----------NOTE---------- Only required to be performed in MODES 1 and 2. ----------	SURVEILLANCE SR 3.7.2.2 ----------NOTE---------- Only required to be performed in MODES 3. ----------	The MSIVs are not tested at power since the test increases the risk of valve closure with the unit generating power. Therefore, the NOTE is changed such that the MSIVs actuation test to the isolation position is conducted in MODE 3.	
3.7.3 Main Feedwater Isolation Valves (MFIVs) [and [MFIV] Bypass Valves]	-	Same as NUREG-1432		
3.7.4 Atmospheric Dump Valves (ADVs)	-	Same as NUREG-1432		
3.7.5 Auxiliary Feedwater (AFW) System	ACTION ----------NOTE---------- LCO 3.0.4.b is not applicable. ----------	ACTION None	Risk informed Technical Specification is not applied for the APR1400. (Refer to the justification of LCO 3.0.4.)	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	CONDITION A. Turbine driven AFW train inoperable due to one inoperable steam supply.	CONDITION A. One turbine driven AFW train inoperable due to associated inoperable steam supply.	Design concept and configuration for AFWS are different between NUREG-1432 and APR1400. - NUREG-1432 : 3 trains (Two motor driven pump trains and one turbine driven pump train) - APR1400 : 4 trains (Two motor driven pump trains and two turbine driven pump trains)	
	C. Turbine driven AFW train inoperable due to one inoperable steam supply. AND One motor driven AFW train inoperable.	C. One turbine driven AFW train inoperable due to associated inoperable steam supply. AND One motor driven AFW train inoperable.		
	D. Required Action and associated Completion Time of Condition A [, B, or C] not met. [OR [Two] AFW trains inoperable in MODE 1, 2, or 3 for reasons other than Condition C.]	D. Required Action and associated Completion Time of Conditions A, B, or C not met. OR Three AFW trains inoperable in MODE 1, 2, or 3.		
	E. [Three] AFW trains inoperable in MODE 1, 2, or 3.	E. Four AFW trains inoperable in MODE 1, 2, or 3.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SURVEILLANCE SR 3.7.5.5 Verify the proper alignment of the required AFW flow paths by verifying flow from the condensate storage tank to each steam generator.	SURVEILLANCE SR 3.7.5.5 Verify the proper alignment of the required AFW flow paths by verifying flow from auxiliary feedwater storage tank to each steam generator.	AFW is supplied from its exclusive AFWST in the APR1400 design.	
3.7.6 Condensate Storage Tank (CST)	LCO 3.7.6 The CST shall be OPERABLE.	LCO 3.7.6 One AFWST shall be OPERABLE.	Design concept and configuration for AFWS are different between NUREG-1432 and APR1400. - NUREG-1432 : CST is commonly used. - APR1400 : Two 100 % capacity Auxiliary Feedwater Storage Tanks (AFWSTs) are installed. If one AFWST is not operable, the other AFWST as backup water source provides water to the steam generators.	
	CONDITION A. CST inoperable.	CONDITION A. One AFWST inoperable.		
	REQUIRED ACTION A.1 Verify OPERABILITY of backup water supply. AND A.2 Restore CST to OPERABLE status.	REQUIRED ACTION A.1 Verify OPERABILITY of the other AFWST. AND A.2 Restore AFWST to OPERABLE status.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
3.7.7 Component Cooling Water (CCW) System	REQUIRED ACTION A.1 ----------NOTES---------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for shutdown cooling made inoperable by CCW. ---------- Restore CCW train to OPERABLE status.	REQUIRED ACTION ----------NOTES---------- 1. Enter applicable Conditions and Required Actions of LCO 3.8.1, “AC Sources – Operating,”for emergency diesel generator made inoperable by CCW. 2. Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for shutdown cooling made inoperable by CCW. ---------- A.1 Restore CCW division to OPERABLE status.	This is an intrinsic design characteristic of APR1400. "Train" is changed to "Division".	
	B.2 ----------NOTES---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	B.2 None Be in MODE 5.	See II.3.3	
3.7.8 Service Water System (SWS)	REQUIRED ACTION B.2 ----------NOTES---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	REQUIRED ACTION B.2 Be in MODE 5.	See II.3.3	
3.7.9 Ultimate Heat Sink (UHS)	LCO 3.7.9 The UHS shall be OPERABLE.	LCO 3.7.9 [[Two]] UHS [[divisions]] shall be OPERABLE.	See III.7.2.1	
	CONDITION A. [One or more cooling towers with one cooling tower fan inoperable.	CONDITION A. [[One UHS cooling tower inoperable.]]	See III.7.2.1	Related REQUIRED ACTIONs and

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
				TIMEs are changed.
	B. Required Action and associated Completion Time of Condition A or B not met.	B. [[Required Action and associated Completion Time of Condition A not met. OR]] UHS inoperable [[for reasons other than condition A.]]	See III.7.2.1	
	C. [Water temperature of the UHS > [90]°F and ≤ [ ]°F	None	CONDITION C of NUREG-1432 is included in CONDITION B of APR1400.	
	D. [Required Action and associated Completion Time of Condition C not met. OR] UHS inoperable [for reasons other than condition A or C.]	None	CONDITION D of NUREG-1432 is included in CONDITION B of APR1400.	
	REQUIRED ACTION B.2 ----------NOTES---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4	REQUIRED ACTION B.2 None Be in MODE 5	See II.3.3	
	SURVEILLANCE SR 3.7.9.1 [Verify water level of UHS is ≥ [562] ft [mean sea level].	SURVEILLANCE SR 3.7.9.1 Verify water level of UHS is ≥ [[3m (10 ft) from the bottom of the basin]].	The SR reflects design characteristic of APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SR 3.7.9.2 [Verify average water temperature of UHS is ≤ [90]°F.	SR 3.7.9.2 Verify water temperature of UHS [[basin]] is ≤ [[33.2 ˚C (91.8 °F)]].	The SR reflects design characteristic of APR1400.	
	None None	SR 3.7.9.4 [[Verify each UHS manual, power-operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed or otherwise secured in position, is in the correct position.]] SR 3.7.9.5 [[Verify each UHS automatic valve and each control valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to correct position on an actual or simulated actuation signal.]] SR 3.7.9.6 [[Verify each cooling tower fan starts automatically on an actual or simulated actuation signal.]]	Other SRs are added because of an intrinsic design characteristic of APR1400. - SR 3.7.9.4 - SR 3.7.9.5 - SR 3.7.9.6	
3.7.10 Essential Chilled Water (ECW)	3.7.10 Essential Chilled Water (ECW)	3.7.10 Essential Chilled Water System (ECWS)		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	REQUIRED ACTION B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	REQUIRED ACTION B.2 None Be in MODE 5.	See II.3.3	
	COMPLETION TIME B.2 12 hours	COMPLETION TIME B.2 36 hours	See II.3.3.	
3.7.11 Control Room Emergency Air Cleanup System (CREACS)	3.7.11 Control Room Emergency Air Cleanup System (CREACS)	3.7.11 Control Room HVAC System (CRHS)	3.7.11 CREACS and 3.7.12 CREATCS of NUREG-1432 are combined into 3.7.11 Control Room HVAC System (CRHS) of APR1400.	
	REQUIRED ACTION C.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	REQUIRED ACTION C.2 None Be in MODE 5.	See II.3.3	.
	D.1 ----------NOTE---------- Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. ----------	None	The deviation reflects APR1400 design. Toxic gas protection mode is not required since there are no toxic substances stored or transported in accordance with the result of analysis of toxic hazards.	
	SURVEILLANCE None	SURVEILLANCE SR 3.7.11.5 Verify each CRSRS division has	SR 3.7.11.5 is reflected by combining 3.7.11 (CREACS) and 3.7.12 (CREATCS) of	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
		the capacity to remove design heat load.	NUREG-1432 into 3.7.11 (CRHS) of APR1400.	
3.7.12 Control Room Emergency Air Temperature Control System (CREATCS)	3.7.12 Control Room Emergency Air Temperature Control System (CREATCS)	3.7.11 Control Room HVAC System (CRHS)	3.7.11 CREACS and 3.7.12 CREATCS of NUREG-1432 are combined into 3.7.11 Control Room HVAC System (CRHS) of APR1400.	
	LCO 3.7.12 Two CREATCS trains shall be OPERABLE.	LCO 3.7.11 The CRHS shall be OPERABLE with : b. Two AHUs in two CRSRS divisions OPERABLE.	The CRSRS of APR1400 adopts four independent and redundant AHUs. The LCO “two AHUs in two CRSRS divisions OPERABLE” ensures that at least one AHU is available assuming a single failure.	
	CONDITION A. One CREATCS train inoperable.	CONDITION B. Three AHUs in two CRSRS divisions inoperable.	The CONDITION reflects LCO 3.7.11.	
	REQUIRED ACTION A.1 Restore CREATCS train to OPERABLE status.	REQUIRED ACTION B.1 Restore one inoperable AHU in two CRSRS divisions to OPERABLE status.	The REQUIRED ACTION reflects LCO 3.7.11.	
	REQUIRED ACTION B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	REQUIRED ACTION D.2 None Be in MODE 5.	See II.3.3	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SURVEILLANCE SR 3.7.14.5 [Verify each FBACS filter bypass damper can be opened.	SURVEILLANCE None	The filter bypass damper is not used in APR1400.	
3.7.13 Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)	3.7.13 Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)	3.7.12 Auxiliary Building Controlled Area Emergency Exhaust System (ABCAEES)	3.7.12 ABCAEES of APR1400 has both functions of 3.7.13 ECCS PREACS and 3.7.15 PREACS of NUREG 1432.	
	LCO 3.7.13 ----------NOTE---------- The ECCS pump room boundary may be opened intermittently under administrative control. ----------	LCO 3.7.12 ----------NOTE---------- The mechanical penetration room and safety-related mechanical equipment room boundary may be opened intermittently under administrative control. ----------	3.7.12 ABCAEES of APR1400 serves all areas which are served by 3.7.13 ECCS PREACS and 3.7.15 PREACS of NUREG 1432. The ECCS pump rooms of NUREG 1432 are included in the safety-related mechanical equipment rooms of APR1400.	
	CONDITION B. Two ECCS PREACS trains inoperable due to inoperable ECCS pump room boundary	CONDITION None	To adopt condition B, the licensee should have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into condition B. However, APR1400 does not have any guidance describing compensatory measures to be taken in the event of entry into condition B.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
			For that reason, APR1400 does not adopt condition B.	
	REQUIRED ACTION C.2.---------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	REQUIRED ACTION B.2. None Be in MODE 5.	See II.3.3	
	SURVEILLANCE SR 3.7.13.5 [Verify each ECCS PREACS filter bypass damper can be opened.	SURVEILLANCE None	The filter bypass damper is not used in ABCAEES of APR1400.	
3.7.14 Fuel Building Air Cleanup System (FBACS)	3.7.14 Fuel Building Air Cleanup System (FBACS)	3.7.13 Fuel Handling Area Emergency Exhaust System (FHAEES)	APR1400 does not have a fuel building. In APR1400, a fuel handling area located in the auxiliary building exists. 3.7.13 FHAEES of APR1400 has same function of 3.7.14 FBACS of NUREG-1432.	
	APPLICABILITY [MODES 1, 2, 3, and 4] During movement of [recently] irradiated fuel assemblies in the fuel building.	APPLICABILITY During movement of [recently] irradiated fuel assemblies in the fuel handling area.	Since this system is not included within the boundary of ECCS equipment area, the system is not required to be OPERABLE in MODES 1, 2, 3, and 4.	Related CONDITIONs are changed due to the change of APPLICABILITY.
	CONDITION B. Two FBACS trains inoperable due to inoperable fuel building boundary in MODE 1, 2, 3, or 4.	CONDITION None	To adopt condition B, the licensee should have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into condition B.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
			However, APR1400 does not have any guidance describing compensatory measures to be taken in the event of entry into condition B. For that reason, APR1400 does not adopt condition B.	
	CONDITION C. [Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3 or 4. OR Two FBACS trains inoperable in MODE 1, 2, 3 or 4 for reasons other than Condition B.	CONDITION None	Since this system is not included within the boundary of ECCS equipment area, the system is not required to be OPERABLE in MODES 1, 2, 3 and 4.	
	SURVEILLANCE SR 3.7.14.5 [Verify each FBACS filter bypass damper can be opened.	SURVEILLANCE None	The filter bypass damper is not used in FHAEES of APR1400.	
3.7.15 Penetration Room Exhaust Air Cleanup System (PREACS)	3.7.15 Penetration Room Exhaust Air Cleanup System (PREACS)	3.7.12 Auxiliary Building Controlled Area Emergency Exhaust System (ABCAEES)	3.7.12 ABCAEES of APR1400 has both function of 3.7.13 ECCS PREACS and 3.7.15 PREACS of NUREG 1432.	
	LCO 3.7.15 ----------NOTE---------- The penetration room boundary may be opened intermittently under administrative control.	LCO 3.7.12 ----------NOTE---------- The mechanical penetration room and safety-related mechanical equipment room boundary may be opened	3.7.12 ABCAEES of APR1400 serves all areas those are served by 3.7.13 ECCS PREACS and 3.7.15 PREACS of NUREG 1432.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	---------- intermittently under administrative control. ----------			
	REQUIRED ACTION C.2.---------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	REQUIRED ACTION B.2. None Be in MODE 5.	See II.3.3	
	CONDITION B. Two PREACS trains inoperable due to inoperable penetration room boundary	CONDITION None	To adopt condition B, the licensee should have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into condition B. However, APR1400 does not have any guidance describing compensatory measures to be taken in the event of entry into condition B. For that reason, APR1400 does not adopt condition B.	
	SURVEILLANCE SR 3.7.15.4 [Verify each PREACS filter bypass damper can be opened.	SURVEILLANCE None	The filter bypass damper is not used in ABCAEES of APR1400.	
3.7.16 Fuel Storage Pool Water Level	-	Same as NUREG-1432		This item is equivalent to 3.7.14 Spent Fuel Pool Water Level

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
				(SFPWL) of APR1400.
3.7.17 Fuel Storage Pool Boron Concentration	LCO 3.7.17 The fuel storage pool boron concentration shall be [2000] ppm.	LCO 3.7.15 The spent fuel pool boron concentration shall be ≥ 2,150 ppm.	This is an intrinsic design characteristic of APR1400.	This item is equivalent to 3.7.15 Spent Fuel Pool Boron Concentration of APR1400.
3.7.18 Spent Fuel Pool Storage	REQUIRED ACTION A.1 ----------NOTE---------- LCO 3.0.3 is not applicable. ---------- Initiate action to move the noncomplying fuel assembly from [Region 2].	REQUIRED ACTION A.1 ----------NOTE---------- LCO 3.0.3 is not applicable. ---------- Initiate action to move the noncomplying fuel from Region II to Region I.	The action is defined for the storage location or moving destination of noncomplying fuel.	This item is equivalent to 3.7.16 Spent Fuel Assembly Storage of APR1400.
3.7.19 Secondary Specific Activity	-	Same as NUREG-1432		This item is equivalent to 3.7.17 Secondary Specific Activity of APR1400.
3.8 ELECTRICAL POWER SYSTEMS				
3.8.1 AC Sources Operating	LCO 3.8.1 b. Two diesel generators (DGs) each capable of supplying one train of the onsite Class 1E AC Electrical Power Distribution System, and	LCO 3.8.1 b. Division I and division II emergency diesel generators (EDGs), each division capable of supplying one division of the onsite Class 1E AC Electrical Power Distribution System and consisting of two EDGs (EDG A and EDG C for division I, and EDG B and EDG D for division II), and	See III.4.2.1.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	[c. Automatic load sequencers for Train A and Train B.]	c. Four automatic load sequencers for EDG A, EDG B, EDG C, and EDG D.		
	ACTIONS ----------NOTE---------- LCO 3.0.4.b is not applicable to DGs. ----------	ACTIONS None	See III.4.2.2.	
	CONDITION B. One [required] DG inoperable.	CONDITION B. One or two EDGs on one division inoperable.	See III.4.2.1.	
	D. One [required] offsite circuit inoperable. AND One [required] DG inoperable.	D. One offsite circuit inoperable. AND One or two EDGs on one division inoperable.	See III.4.2.1.	
	E. Two [required] DGs inoperable.	E. One or two EDGs on each division inoperable.	See III.4.2.1.	
	G.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	G.2 None Be in MODE 5.	See II.3.3.	
	H. Three or more [required] AC sources inoperable.	H. Two offsite circuits and one or more EDGs inoperable. OR One offsite circuit and one or	See III.4.2.1. .	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
		two EDGs on each division inoperable.		
	COMPLETION TIME (for G.2) 12 hours	COMPLETION TIME (for G.2) 36 hours	See II.3.3.	
	SURVEILLANCE SR 3.8.1.4 Verify each day tank [and engine mounted tank] contains ≥ [220] gal of fuel oil.	SURVEILLANCE SR 3.8.1.4 Verify each day tank contains ≥ 2,404 L (635 gal) of fuel oil.	See III.4.2.4. The capacity of day tank may vary depending on manufacturer's recommendations. However, the capacity of 635 gal is the value that has been validated to be an actual one through long-term applications in local nuclear plants.	
	SR 3.8.1.7 a. In ≤ [10] seconds, voltage ≥ [3740] V and frequency ≥ [58.8] Hz and	SR 3.8.1.7 a. In ≤ 17 seconds, voltage ≥ 3,744 V and frequency ≥ 58.8 Hz and	See III.4.2.4.	
	SR 3.8.1.11 c. 1. Energizes permanently connected loads in ≤ [10] seconds,	SR 3.8.1.11 c. 1. Energizes permanently-connected loads in ≤ 19 seconds,	See III.4.2.4.	
	SR 3.8.1.12 a. In ≤ [10] seconds after auto-start and during tests, achieves voltage ≥ [3740] V and frequency ≥ [58.8] Hz,	SR 3.8.1.12 a. In ≤ 17 seconds after auto-start and during tests, achieves voltage ≥ 3,744 V and frequency ≥ 58.8 Hz,	See III.4.2.4.	
	SR 3.8.1.15 a. In ≤ [10] seconds, voltage ≥ [3740] V and frequency ≥ [58.8] Hz and	SR 3.8.1.15 a. In ≤ 17 seconds, voltage ≥ 3,744 V and frequency ≥ 58.8 Hz	See III.4.2.4.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	SR 3.8.1.19 c. 1. energizes permanently connected loads in ≤ [10] seconds,	SR 3.8.1.19 c. 1. Energizes permanently connected loads in ≤ 19 seconds,	See III.4.2.4.	
	SR 3.8.1.20 a. In ≤ [10] seconds, voltage ≥ [3740] V and frequency ≥ [58.8] Hz and	SR 3.8.1.20 a. In ≤ 17 seconds, voltage ≥ 3,744 V and frequency ≥ 58.8 Hz	See III.4.2.4.	
3.8.2 AC Sources - Shutdown	LCO 3.8.2 b. One diesel generator (DG) capable of supplying one train of the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.10.	LCO 3.8.2 b. One division of emergency diesel generators (EDGs) capable of supplying one division of the onsite Class 1E AC Electrical Power Distribution System required by LCO 3.8.10.	See III.4.2.1.	
	CONDITION B. One required DG inoperable.	CONDITION B. One or two required EDGs on one division inoperable.	See III.4.2.1.	
3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air	CONDITION E. One or more DGs with starting air receiver pressure < [225] psig and ≥ [125] psig.	CONDITION E. One or more EDGs with starting air receiver pressure < [580] psig and ≥ [125] psig.	See III.4.2.4. The air pressure of starting air receiver may vary depending on manufacturer's recommendations. However, the pressure of 580 psig is the value that has been validated to be an actual one through long-term applications in local nuclear plants.	
	SURVEILANCE SR 3.8.3.4 Verify each DG air start receiver pressure is ≥ [225] psig.	SURVEILANCE SR 3.8.3.4 Verify each DG air start receiver pressure is ≥ 580 psig.	See III.4.2.4. The air pressure of starting air receiver may vary depending on manufacturer's recommendations. However, the pressure of 580 psig is the value	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
			that has been validated to be an actual one through long-term applications in local nuclear plants.	
3.8.4 DC Sources – Operating	REQUIRED ACTION D.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	REQUIRED ACTION D.2 None Be in MODE 5.	See II.3.3	
	COMPLETION TIME (for D.2) 12 hours	COMPLETION TIME (for D.2) 36 hours	See II.3.3	
	SURVEILANCE SR 3.8.4.2 Verify each battery charger supplies ≥ [400] amps at greater than or equal to the minimum established float voltage for ≥ [8] hours.	SURVEILANCE SR 3.8.4.2 Verify battery chargers A and B supply 700 amps and battery chargers C and D supply 1,200 amps at greater than or equal to the minimum established float voltage for ≥ 8 hours.	See III.4.2.4.	
3.8.5 DC Sources – Shutdown	-	Same as NUREG-1432		
3.8.6 Battery Parameters	-	Same as NUREG-1432		
3.8.7 Inverters – Operating	REQUIRED ACTION B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable	REQUIRED ACTION B.2 None	See II.3.3	.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	when entering MODE 4. ---------- Be in MODE 4.	Be in MODE 5.		
	COMPLETION TIME (for B.2) 12 hours	COMPLETION TIME (for B.2) 36 hours	See II.3.3.	
3.8.8 Inverters – Shutdown	REQUIRED ACTION A.1 Declare affected required feature(s) inoperable.	REQUIRED ACTION A.1 Declare affected required feature(s) with no offsite power available inoperable.		Deviation will be cancelled. The required action will be revised according to STS.
3.8.9 Distribution Systems – Operating	-	Same as NUREG-1432		
3.8.10 Distribution Systems – Shutdown	-	Same as NUREG-1432		
3.9 REFUELING OPERATIONS				
3.9.1 Boron Concentration	-	Same as NUREG-1432		
3.9.2 Nuclear Instrumentation	-	Same as NUREG-1432		
3.9.3 Containment Penetrations	APPLICABILITY None During movement of recently irradiated fuel assemblies within containment.	APPLICABILITY During CORE ALTERATIONS, During movement of irradiated fuel assemblies within containment.	See II.2.1	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	REQUIRED ACTION None A.1 Suspend movement of recently irradiated fuel assemblies within containment.	REQUIRED ACTION A.1 Suspend CORE ALTERATIONS. AND A.2 Suspend movement of irradiated fuel assemblies within containment	See II.2.1	
	SURVEILLANCE SR 3.9.3.2 ----------NOTE---------- Not required to be met for containment purge and exhaust valve(s) in penetrations closed to comply with LCO 3.9.3.c.1. ---------- Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.	SURVEILLANCE SR 3.9.3.2 None Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.	APR1400 SR 3.9.3.2 will be revised same as NUREG-1432 SR 3.9.3.2	
	FREQUENCY SR 3.9.3.1 None 7 days	FREQUENCY SR 3.9.3.1 Within 72 hour prior to the start of movement of irradiated fuel in the containment building AND Once per 7 days during CORE ALTERATIONS or movement of irradiated fuel in the containment building	Conservative surveillance frequency is used in the APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
3.9.4 Shutdown Cooling (SDC) and Coolant Circulation – High Water Level	LCO 3.9.4 ----------NOTE---------- The required SDC loop may be removed from operation for ≤ 1 hour per [8] hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1. ----------	LCO 3.9.4 ----------NOTE---------- The required SCS train may be removed from operation for ≤ 1 hour per 8-hour period, provided no operations are permitted that would cause dilution of the reactor coolant system boron concentration. ----------	Note is applied to APR1400 to ensure conservative LCO than NUREG-1432.	
	REQUIRED ACTION A.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	REQUIRED ACTION A.1 Suspend operations that involving a reduction in reactor coolant boron concentration.	Conservative required action is used in APR1400.	
	SURVEILLANCE SR 3.9.4.1 Verify one SCS loop is in operation and circulating reactor coolant at a flow rate of ≥ [2200] gpm.	SURVEILLANCE SR 3.9.4.1 Verify one SCS train is in operation and circulating reactor coolant at a flow rate of ≥ 15,710 L/min (4,150 gpm).	The flow rate is specific for the APR1400. The flow rate for decay heat removal, boron mixing and prevention of boron stratification is evaluated and specified.	The flow rate is specific for the APR1400.
	SURVEILLANCE None	SURVEILLANCE SR 3.9.4.2 Verify required SCS train piping locations susceptible to gas accumulation are sufficiently filled with water.	TSTF-523 (Managing Gas Accumulation) is applied to APR1400 NRC DC Technical Specification.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
3.9.5 Shutdown Cooling (SDC) and Coolant Circulation - Low Water Level	LCO 3.9.5 Two SDC loops shall be OPERABLE, and one SDC loop shall be in operation. ----------NOTES---------- 1. All SDC pumps may be removed from operation for ≤ 15 minutes when switching from one train to another provided: a. The core outlet temperature is maintained >10 degrees F below saturation temperature, b. No operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, and c. No draining operations to further reduce RCS water volume are permitted. 2. One required SDC loop may be inoperable for up to 2 hours for surveillance testing, provided that the other SDC loop is OPERABLE and in operation. ----------	LCO 3.9.5 The heat removal system shall be in the following status: a. Two SCS trains shall be OPERABLE and one SCS train shall be in operation. b. With REDUCED RCS INVENTORY, the containment spray pump in the same train as an operating SCS train shall be OPERABLE.	1. For item 'a', the intent of APR1400 is the same as that of NUREG-1432. 2. For item 'b', APR1400 is more conservative. This ensures two forced circulation loops are available for decay heat removal if the operating SC pump becomes inoperable for any reason and improves a reliability of SC operation during reduced inventory operation.	
	REQUIRED ACTION B.1 Suspend operations that would cause introduction of coolant into the RCS with boron	REQUIRED ACTION B.1 Suspend operations involving a reduction in reactor coolant boron concentration.	For B.1, APR1400 is more conservative.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	concentration less than required to meet the boron concentration of LCO 3.9.1.			
	None	B.3 Initiate action to raise RCS level to > EL 38.72 m (127ft-1/4 in) when in REDUCED RCS INVENTORY.	This enhances safety and prevents boron dilution event during reduced inventory operation.	
	REQUIRED ACTION B.3 Close equipment hatch and secure with [four] bolts. AND B.4 Close one door in each air lock. AND B.5.1 Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent. OR B.5.2 Verify each penetration is capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System.	REQUIRED ACTION B.4 Initiate actions to make the containment building penetrations in the required status as in LCO 3.6.7.	Details about actions of containment building penetrations exist in LCO 3.6.7. Therefore Required Action B.4 refers to LCO 3.6.7.	.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	CONDITION None	CONDITION C. Containment spray pump in the same train as an operating SCS train inoperable.	See III.5.2.4	
	REQUIRED ACTION None	REQUIRED ACTION C.1 If the containment spray pump in the alternate SCS train is OPERABLE, initiate action to place that SCS train in operation. COMPLETION TIME Immediately AND REQUIRED ACTION C.2 Monitor SCS performance. COMPLETION TIME Every 30 minutes AND REQUIRED ACTION C.3 Restore containment spray pump to OPERABLE status. COMPLETION TIME 48 hours	See III.5.2.4	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	CONDITION None	CONDITION D. Required Action and Completion time of Item C.3 not met.	See III.5.2.4	
	REQUIRED ACTION None	REQUIRED ACTION D.1 Raise RCS level > EL 38.72 m (127 ft-1/4 in).	This places the plant in a conservative position with respect to providing decay heat removal.	
	SURVEILLANCE None	SURVEILLANCE SR 3.9.5.3 Verify correct breaker alignment and indicated power available to the required CS pump.	This ensures forced circulation is available for decay heat removal if the operating SC pump becomes inoperable for any reason and improves a reliability of SC operation during reduced inventory operation.	
	SURVEILLANCE None	SURVEILLANCE SR 3.9.5.4 Verify required SCS train piping locations susceptible to gas accumulation are sufficiently filled with water.	TSTF-523 (Managing Gas Accumulation) is applied to APR1400 NRC DC Technical Specification.	TSTF-523 is incorporated.
3.9.6 Refueling Water Level	APPLICABILITY: None During movement of [recently] irradiated fuel assemblies within containment.	APPLICABILITY: During CORE ALTERATIONS, except during latching and unlatching of control rod drive shafts, During movement of irradiated fuel assemblies within containment.	See II.2.1 See III.5.2.5	
	REQUIRED ACTION None	REQUIRED ACTION A.1 Suspend movement of irradiated fuel assemblies within containment.	See II.2.1	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	A.1 Suspend movement of [recently] irradiated fuel assemblies within containment. None	AND A.2 Suspend movement of irradiated fuel assemblies within containment. AND A.3 Initiate actions to restore refueling water level to within limits.	See III.5.2.5 See III.5.2.5	
4.0 DESIGN FEATURES				
4.1 Site Location	-	Same as NUREG-1432		
4.2 Reactor Core	-	Same as NUREG-1432	The items reflect APR1400 design.	
4.3 Fuel Storage	4.3.1.1 a. Fuel assemblies having a maximum U-235 enrichment of [4.5] weight percent, b. Keff ≤ 0.95 if fully flooded with unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR], [c. A nominal [9] inch center-to-center distance between fuel assemblies placed in [the high density fuel storage	4.3.1.1 a. Fuel assemblies having a maximum U-235 enrichment of 5 weight percent; b. Keff < 1.0 if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1, “Fuel Storage and Handling.”; c. A nominal (27.5 cm (10.83 in)) center-to-center distance between fuel assemblies placed in the Region I of spent fuel storage racks; d. A nominal (22.5 cm (8.86 in))	a. The item is specific for the APR1400 design. (DCD Tier 2, Section 9.1.1) b. This change is to incorporate SRP 9.1.1 Rev.3. (DCD Tier 2, Section 9.1.1) c. Based on the result of the criticality analysis and the detailed design of the fuel storage racks for the APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	racks],] [d. A nominal [10.4] inch center-to-center distance between fuel assemblies placed in [low density fuel storage racks],] [f. New or partially spent fuel assemblies with a discharge burnup in the "unacceptable range" of Figure [3.7.18-1] will be stored in compliance with the NRC approved [specific document containing the analytical methods, title, date, or specific configuration or figure].] 4.3.1.2 a. Fuel assemblies having a maximum U-235 enrichment of [4.5] weight percent, b. Keff ≤ 0.98 if fully flooded with unborated water, or mist, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR], d. A nominal [10] inch center-to-center distance between fuel assemblies placed in the storage racks.	center-to-center distance between fuel assemblies placed in the Region II of spent fuel storage racks; f. New or partially spent fuel assemblies with a discharge burnup in the "unacceptable domain" of Figure 3.7.16-1 will be stored in compliance with the NRC-approved specific document containing the analytical methods, title, date, or specific configuration or figure. shall only be stored in Region I spent fuel storage racks. 4.3.1.2 a. Fuel assemblies having a maximum U-235 enrichment of 5 weight percent; b. Keff ≤ 0.95 if fully flooded with unborated water, or mist, which includes an allowance for uncertainties as described in Section 9.1 “Fuel Storage and Handling.”; d. A nominal center-to-center distance between fuel assemblies placed in the new fuel storage racks is 35.5 cm (14 in). 4.3.3 The spent fuel pool is designed and shall be maintained with a storage capacity limited to no more than	d. Based on the result of the criticality analysis and the detailed design of the fuel storage racks for the APR1400. f. Refer to the response to RAI 12-7977, Question 16-24, Item 14. a. The item is specific for the APR1400 design. (DCD Tier 2, Section 9.1.1) b. The APR1400 criterion is more conservative than that of NUREG-1432. (DCD Tier 2, Section 9.1.1) d. Based on the result of the criticality analysis and the	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	4.3.3 The spent fuel pool is designed and shall be maintained with a storage capacity limited to no more than [1542] fuel assemblies.	1,792 fuel assemblies.	detailed design of the fuel storage racks for the APR1400. 4.3.3 The item is specific for the APR1400 design. (DCD Tier 2, Section 9.1.1)	
5.0 ADMINISTRATIVE CONTROLS				
5.1 Responsibility	-	Same as NUREG-1432		
5.2 Organization	-	Same as NUREG-1432		
5.3 Unit Staff Qualifications	-	Same as NUREG-1432		
5.4 Procedures	-	Same as NUREG-1432		
5.5 Programs and Manuals	5.5.2 Primary Coolant Sources Outside Containment The systems include [Low Pressure Injection, Reactor Building Spray, Makeup and Purification, and Hydrogen Recombiner].	5.5.2 Primary Coolant Sources Outside Containment The systems include Containment Spray System, Safety Injection System, Chemical and Volume Control System, Gaseous Waste Management System, and Containment Hydrogen Control System.	APR1400 design characteristics are reflected.	
	5.5.9 Steam Generator (SG) Program b.2. ~ Leakage is not to exceed [1	5.5.9 Steam Generator (SG) Program b.2. ~ Leakage is not to exceed	APR1400 design characteristics are reflected.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 NRC DC Technical Specifications (Rev. 0)	Justification	Remark
	gpm] per SG.	1.14 L/min (0.3 gpm) per SG.		
5.6 Reporting Requirements	5.6.5 Post Accident Monitoring Report When a report is required by Condition B or F of LCO 3.3.[11], "Post Accident Monitoring (PAM) Instrumentation,	5.6.5 Accident Monitoring Report When a report is required by Condition B or F of LCO 3.3.11, "Accident Monitoring Instrumentation (AMI),	The name for the instrumentation is changed according to RG 1.97 Rev.4.	
5.7 High Radiation Area	-	Same as NUREG-1432		

IV. CONCLUSIONS

The APR1400 Technical Specifications satisfies 10 CFR 50.36, “Technical Specifications.” The APR1400 Technical Specifications are compared with NUREG-1432, Rev. 4.0, and the justifications for the deviation from NUREG-1432 are described in this report.

V. REFERENCE

[1] Title 10 Code of Federal Regulations Part 50.36, “Technical Specifications”

[2] NUREG-1432, “Standard Technical Specifications – Combustion Engineering Plants”, Vol.1, Rev. 4.0, April 2012