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

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Non-Proprietary

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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.

TABLE OF CONTENTS

LIST OF TABLE

ACRONYMS AND ABBREVIATIONS

ABCAEES	Auxiliary Building Controlled Area Emergency Exhaust System
AC	Alternating Current
ACU	Air Cleaning Unit
ADV	Atmospheric Dump Valve
ALT	As-Left Tolerance
AFAS	Auxiliary Feedwater Actuation Signal
AFT	As-Found Tolerance
AFW(S)	Auxiliary Feedwater (System)
AFWST	Auxiliary Feedwater Storage Tank
AMI	Accident Monitoring Instrumentation
APC-S	Auxiliary Process Cabinet - Safety
ASI	AXIAL SHAPE INDEX
AV	Allowable Value
BA	Burnable Absorbers
BAMP	Boric Acid Makeup Pump
BAST	Boric Acid Storage Tank
BDAS	Boron Dilution Alarm Systems
CCAS	Containment Cooling Actuation Signal
CCW(S)	Component Cooling Water (System)
CEA(C)	Control Element Assembly (Calculator)
CEDMCS	Control Element Drive Mechanism Control System
CFT	CHANNEL FUNCTIONAL TEST
CIV	Containment Isolation Valve
COL	Construction and Operation License
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
CRE	Control Room Envelope
CREACS	Control Room Emergency (Makeup) Air Cleanup System
CREATCS	Control Room Emergency Air Temperature Control System
CREVAS	Control Room Emergency Ventilation Actuation System
CRHS	Control Room HVAC System

CRIS	Control Room Isolation
CRSRS	Control Room Supply and Return System
CSAS	Containment Spray Actuation Signal
CS(P)	Containment Spray (Pump)
CSHX	Containment Spray Heat Exchanger
CSS	Containment Spray System
CST	Condensate Storage Tank
CTS	Current Technical Specifications
DBA	Design Basis Accident
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
DVI	Direct Vessel Injection
ECCS	Emergency Core Cooling System
ECW(S)	Essential Chilled Water (System)
EDG	Emergency Diesel Generator
EFAS	Emergency Feedwater Actuation Signal
EFPD	Effective Full Power Days
ENFMS	Ex-core Neutron Flux Monitoring System
EOG	Emergency Operational Guideline
ESFAS	Engineered Safety Features Actuation System
ESF-CCS	Engineered Safety Features – Component Control System
ESW(S)	Essential Service Water (System)
FBACS	Fuel Building Air Cleanup System
FHAEES	Fuel Handling Area Emergency Exhaust System
FHEVAS	Fuel Handling Area Ventilation Actuation System
FHIS	Fuel Handling Isolation Signal
FSAR	Final Safety Analysis Report
GCB	Generator Circuit Breaker
HMS	Hydrogen Mixing System
HPSI(P)	High Pressure Safety Injection (Pump)
HVAC	Heating, Ventilation, and Air Conditioning
HVT	Holdup Volume Tank

I&C	Instrumentation and Control
ICS	Iodine Cleanup System
IRWST	In-Containment Refueling Water Storage Tank
KHNP	Korea Hydro & Nuclear Co., Ltd
LC	Load Center
LCO	Limiting Condition for Operation
LHR	Linear Heat Rate
LOCA	Loss Of Coolant Accident
LOOP	Loss Of Offsite Power
LOVS	Loss of Voltage Start
LPD	Local Power Density
LPSI(P)	Low Pressure Safety Injection (Pump)
LTOP	Low Temperature Overpressure Protection
MCC	Motor Control Center
MCR	Main Control Room
MFIV	Main Feedwater Isolation Valve
MG	Main Generator
MSADV	Main Steam Atmospheric Dump Valve
MSIS	Main Steam Isolation Signal
MSIV	Main Steam Isolation Valve
MSSV	Main Steam Safety Valves
MTC	Moderator Temperature Coefficient
NPP	Nuclear Power Plant
NTSP	Nominal Trip Setpoint
OPP	Over Pressure Protection
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(S)	Reactor Coolant Gas Vent (System)
RCP	Reactor Coolant Pump

RCPB	Reactor Coolant Pressure Boundary
RCS	Reactor Coolant System
RG	Regulatory Guide
RHR	Residual Heat Removal
RITS	Risk Informed Technical Specification
RITSTF	Risk Informed Technical Specification Task Force
RPCS	Reactor Power Cutback System
RPS	Reactor Protection (Protective) System
RSPT	Reed Switch Position Transmitter
RSR	Remote Shutdown Room
RTCB	Reactor Trip Circuit Breaker
RTD	Resistance Thermal Detector
RTP	RATED THERMAL POWER
RTS	Reactor Trip System
RTSS	Reactor Trip Switchgear System
RWT	Refueling Water Tank
SAT	Standby Auxiliary Transformer
SBEACS	Shield Building Exhaust Air Cleanup System
SBO	Station Black Out
SC(P)	Shutdown Cooling (Pump)
SCS	Shutdown Cooling System
SDC	Shutdown Cooling
SDM	SHUTDOWN MARGIN
SFHM	Spent Fuel Handling Machine
SFP	Spent Fuel Pool
SFPCCS	Spent Fuel Pool Cooling and Cleanup System
SFPWL	Spent Fuel Pool Water Level
SG	Steam Generator
SI(P)	Safety Injection (Pump)
SIAS	Safety Injection Actuation Signal
SIS	Safety Injection System
SIT	Safety Injection Tank
SL	Safety Limit
SR	Surveillance Requirement
SRM	Source Range Monitor
SRP	Standard Review Plan
STE	Special Test Exceptions
STS	Standard Technical Specifications
SWS	Service Water System
TS	Technical Specifications
TSTF	Technical Specifications Task Force
TSP	Trisodium Phosphate
UAT	Unit Auxiliary Transformer
UHS	Ultimate Heat Sink
VOPT	Variable Overpower Trip

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 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 Specifications (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 specifications (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 LCO values (such as completion times). These differences in values between the APR1400 TS and those of NUREG-1432 are conservative and therefore do not require justification. Though the section listed for the APR1400 might have a different number than 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 than NUREG-1432

NUREG-1432		APR1400 TS		Remark
SR Section	Value	SR Section	Value	
N/A	N/A	3.1.1.2	24 hours	
N/A	N/A	3.1.1.3	24 hours	
N/A	N/A	3.1.7.2	24 hours	RITS not applied
N/A	N/A	3.1.8.1	12 hours	RITS not applied
3.1.8.2	7 days	3.1.9.2	24 hours	RITS not applied
N/A	N/A	3.1.9.3	2 hours	APR1400 specific condition for STE
N/A	N/A	3.1.9.4	12 hours	APR1400 specific condition for STE
N/A	N/A	3.1.11.1	15 minutes	APR1400 specific condition for STE
N/A	N/A	3.1.11.2	15 minutes	APR1400 specific condition for STE
N/A	N/A	3.1.12.1	12 hours	RITS not applied
3.2.2.1	70% RTP	3.2.2.1	80% RTP	APR1400 specific condition
3.3.1.7	92 days	3.3.1.7	31 days	
3.3.1.8	92 days	3.3.1.8	31 days	
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	3.3.6.1	31 days	RITS not applied
3.3.13.2	92 days	3.3.13.2	31 days	RITS not applied
3.4.9.2	18 months	3.4.9.2	92 days	RITS not applied
3.4.15.2	92 days	3.4.14.3	31 days	
3.9.3.1	None 7 days	3.9.3.1	100 hours prior to the start of movement of irradiated fuel Once per 7 days	
N/A	N/A	3.9.7.1	7 days	RITS not applied

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

NUREG-1432		APR1400 TS		Remark
LCO Section	Value	LCO Section	Value	
N/A	N/A	3.1.12 A.1 3.1.12 A.2 3.1.12 A.3	Immediately Immediately 4 hours	
3.2.3 B.2	16 hours	3.2.3 B.2	8 hours	CTS value used
3.4.13 b	1 gpm	3.4.12 b	0.5 gpm	APR1400 specific condition for STE (DCD 15.1.5)
3.5.1 B.1	24 hours	3.5.1 B.1	1 hour	RITS not applied
3.5.2 A.1	7 days	3.5.2 A.1	72 hours	RITS not applied
3.7.12 A.1	30 days	3.7.12 A.1	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, the 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 LCOs 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 192-212, Table titled, "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity"].

$\bar{E}$ 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 TSTF-490, Rev. 0, “Deletion of E Bar Definition and Revision to RCS Specific Activity Tech Spec”. TSTF-490 recommends the following changes: 1) revise the definition of DE I-131, 2) delete the definition of “E-Bar”, 3) add a new definition for DE Xe-133, and 4) revise 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.

APR1400 TS LCO 3.4.15 is related to this deviation.

2.3 OPERABLE – OPERABILITY

In NUREG-1432, the term 'division' has not been used. In the APR1400 TS, 'division' is added and used which is defined as follows.

A division is a set of trains, performing various safety functions, separated both mechanically and electrically from another division. The separation between the divisions is provided geographically

or by physical barrier. The Class 1E onsite power system consists of two redundant divisions (Division 1 and Division 2) and each division is further broken down into Train A and Train C for Division 1 and Trains B and D for Division 2.

3 Use of current Tech. Spec.

There are 23 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. APR1400 TS Table 1.1-1 and LCO 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 APR1400 TS uses 31 days. Completion Times in APR1400 TS LCOs 3.3.11, 3.3.12, 3.6.2, 3.6.3 and 3.8.6 and Surveillance Frequencies for numerous APR1400 TS LCOs are related on this deviation.

3.3 End States

TSTF-422 “Risk-Informed Modification to Selected Action End States for CEOG PWRs” 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. Required Actions and/or Completion Times in APR1400 TS LCOs 3.3.5, 3.3.6, 3.3.8, 3.3.9, 3.6.2, 3.6.3, 3.6.4, 3.6.5, 3.6.6, 3.7.7, 3.7.8, 3.7.9, 3.7.10, 3.7.11, 3.7.12, 3.8.1, 3.8.4 and 3.8.7 are related to this deviation.

4 Core Operating Limits Report Items

In the APR1400 TS, some parameters are described based on input parameters of the DCD Chapter 15 safety analysis, whereas NUREG-1432 defines these parameters as being provided in the COLR. These deviations are listed below.

- LCO 3.1.1 SHUTDOWN MARGIN (SDM)
- 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 (Table II-3) shows these items which are generally not included in Table III-1.

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

NUREG-1432	Related Sections	APR1400 TS	Related Sections	Remark
Full/Part length CEA	1.1, 3.1.4, 3.1.7, 3.1.8, 3.1.9, 3.3.3,	Full/Part Strength CEA	1.1, 3.1.4, 3.1.7, 3.1.9, 3.1.10, 3.1.11, 3.3.3, 4.2.2, 5.6.3	
CRIS	3.3.9, 5.5.19	CREVAS	3.3.9, 5.5.19	
CPIS	3.3.8, 5.5.19	CPIAS	3.3.8, 5.5.19	
FHIS	3.3.10, 5.5.19	FHEVAS	3.3.10, 5.5.19	
Remote Shutdown System	3.3.12	Remote Shutdown Display and Control	3.3.12	
PAM	3.3.11, 5.6.5	AMI	3.3.11, 5.6.5	
RWT	3.5.4, 3.5.5	IRWST	3.3.11, 3.3.12, 3.4.16, 3.5.2, 3.5.4, 3.5.5	

NUREG-1432	Related Sections	APR1400 TS	Related Sections	Remark
Containment Spray and Cooling System	3.6.6	Containment Spray System	3.6.6, 5.5.2	Containment Cooling function is included in the Containment Spray System
ADV	3.7.4	MSADV	3.7.4, 3.3.11, 3.3.12	
Service Water System	3.7.8	Essential Service Water System	3.3.12, 3.7.8	
ECW	3.7.10	ECWS	3.7.10	
PREACS	3.7.13, 3.7.15	ABCAEES	3.7.12, 5.5.11	
FBACS	3.3.10, 3.7.14	FHAEES	3.7.13, 5.5.11	
FHIS	3.3.10, 5.5.19	FHEVAS	3.3.10, 5.5.19	
DG	1.1, 3.3.7, 3.8.1, 3.8.2, 3.8.3, 5.5.19	EDG	1.1, 3.3.7, 3.3.12, 3.8.1, 3.8.2, 3.8.3, 5.5.19	
Battery Parameters	3.8.6	Battery Cell Parameters	3.8.6	

6 Technical Specifications Task Force (TSTF) Travelers

The APR1400 TS adopts the approved technical specifications task force travelers that are included in NUREG-1432 Rev. 4. TSTFs that are not included in the APR1400 TS are indicated in Table II-4 with technical rationale. APR1400 TS status of applicable TSTF travelers that have been approved since NUREG-1432 Rev. 4 is indicated in Table II-5.

Table II-4 TSTFs included in NUREG-1432 Rev. 4 that are not included in APR1400

Approved TSTF Traveler	Short Title	Status for APR1400	Technical Rationale
TSTF-30-A, Rev. 3	Extend the Completion Time for inoperable isolation valve to a closed system to 72 hours	Not Incorporated	Risk Informed Technical Specification is not applied. Instead, NUREG-1432 Rev. 1 is used.
TSTF-51-A, Rev. 3	Revise containment requirements during handling irradiated fuel and core alterations	Not Incorporated	Risk Informed Technical Specification is not applied. Instead, NUREG-1432 Rev. 1 is used.
TSTF-68-A, Rev. 2	Containment Personnel Airlock Doors Open During Fuel Movement	Not Incorporated	Risk Informed Technical Specification is not applied. Instead, NUREG-1432 Rev. 1 is used.
TSTF-207-A, Rev. 5	Completion Time for Restoration of Various Excessive Leakage Rates	Not Incorporated	Not applicable to APR1400 since it has no secondary containment and has no containment penetrations with more than two CIVs. Instead, NUREG-1432 Rev. 1 is used.
TSTF-373-A, Rev. 2	Increase CIV Completion Time in Accordance With CE-NPSD-1168	Not Incorporated	Risk Informed Technical Specification is not applied. Instead, NUREG-1432 Rev. 1 is used.
TSTF-422-A, Rev. 2	Change in Technical Specifications End States (CE-NPSD-1186)	Not Incorporated	Not applied because the APR1400 design-specific analysis for modification of end state was not performed. Instead, NUREG-1432 Rev. 1 is used.

Table II-5 APR1400 status of TSTFs that have been approved since NUREG-1432 Rev. 4

Approved TSTF Traveler	Short Title	Status for APR1400	Technical Rationale
TSTF-425-A, Rev. 3	Relocate Surveillance Frequencies to Licensee Control-RITSTF Initiative 5b	Not Incorporated	Risk Informed Technical Specification is not applied for APR1400 DCD.
TSTF-426-A, Rev. 5	Revise or Add Actions to Preclude Entry into LCO 3.0.3 - RITSTF Initiatives 6b & 6c	Not Incorporated	Risk Informed Technical Specification is not applied for APR1400 DCD.
TSTF-490-A, Rev. 0	Deletion of E Bar Definition and Revision to RCS Specific ActivityTech Spec	Incorporated	In the APR1400, RCS specific activity specification is revised in accordance with TSTF-490-A, Rev. 0.
TSTF-505-A, Rev. 1	Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b	Not Incorporated	Risk Informed Technical Specification is not applied for APR1400 DCD.
TSTF-510-A, Rev. 2	Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection	Incorporated	In the APR1400, SG Program is revised in accordance with TSTF-510-A, Rev. 2.
TSTF-522-A, Rev. 0	Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month	Incorporated	TSTF-522-A, Rev. 0 is applied to APR1400 Technical Specifications.
TSTF-523-A, Rev. 2	Generic Letter 2008-01, Managing Gas Accumulation	Incorporated	TSTF-523-A (Managing Gas Accumulation) is applied to APR1400 Technical Specifications.
TSTF-529-A, Rev. 4	Clarify Use and Application Rules	Not Incorporated	Risk Informed Technical Specification is not applied for APR1400 DCD.

Approved TSTF Traveler	Short Title	Status for APR1400	Technical Rationale
TSTF-545-A, Rev. 3	TS Inservice Testing Program Removal & Clarify SR Usage Rule Application to Section 5.5 Testing	Not Incorporated	Not applied because this change does not increase operational safety.

III. SYSTEM LEVEL DEVIATIONS AND JUSTIFICATION

STS are generally applicable to the APR1400 design. However, system level differences between STS and the APR1400 Technical Specifications exist to reflect design features that are different from 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) cabinets, 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 the reactor trip circuit breaker (RTCB). Measurement channels consist of the sensor and transmitter providing a process value to bistable logics. Bistable logics provide a trip signal to RPS logic comparing the process value with a 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 a trip signal to RTCB 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 RTCB opens the trip switchgear based on a trip signal from RPS logic. The RTCB consists of undervoltage trip equipment and shunt trip equipment. The PPS interfaces with the undervoltage trip device of the RTCB. The diverse protection system (DPS) interfaces with the shunt trip device of the RTCB.

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 a trip signal to ESFAS logic comparing the process value with a 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 justifications

1.2.1 In the APR1400, the “Loss of Load” RPS trip function is not used so the related contents are deleted. This deviation is related to APR1400 TS LCO 3.3.1.

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. 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. This deviation is related to APR1400 TS LCOs 3.3.5 and 3.3.6.

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 SR 3.3.1.7 has been changed to “Not required to be performed for Logarithmic Power Level – High until 2 hours after reducing logarithmic power below 1E-3% and only if reactor trip circuit breakers (RTCBs) are open.” This deviation is related to APR1400 TS LCO 3.3.1.

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. This deviation is related to APR1400 TS LCO 3.3.1.

1.2.5 Coincidence Logic

APR1400 RPS has four Coincidence Logic channels instead of six Matrix Logic channels. This deviation is related to APR1400 TS LCOs 3.3.4 and 3.3.6.

1.2.6 Actuation Logic

Some components cannot be tested during power operation since their actuation might lead to plant trip or equipment damage. Actuation Logic subgroups not tested during power operation must be tested in accordance with the Note of SR 3.3.6.2. Subgroup testing of each actuation logic channel A, C and B, D is performed 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. This deviation is related to APR1400 TS LCO 3.3.6.

A channel is an arrangement of components and modules as required to generate a single protective action signal when required by a generating station condition. A channel loses its identity where single protective action signals are combined. Chapter 7 in DCD Tier 2, GTS and bases use the word "channel" or "division" for the portion of the circuit from the local coincidence logic to the actuation logic. The words "channel" and "division" are interchangeable regarding the portion from the local coincidence logic to the actuation logic.

1.2.7 Diverse Manual ESF Actuation Signal

APR1400 instrumentation and control (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. This deviation is related to APR1400 TS LCO 3.3.6.

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.) This deviation is related to APR1400 TS LCO 3.3.3.

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 justifications

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” as discussed in Section II.2.2. This deviation is related to APR1400 definitions and TS LCO 3.4.15.

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 than the pressurizer safety valves in the STS. In the APR1400 TS LCO 3.4.10 APPLICABILITY section, the 72 hours exception is based on 18 hours of outage time for each of the four valves (APR1400 adapts 4 POSRVs). The 18-hour period is determined based on operating experience. This deviation is related to APR1400 TS LCO 3.4.10.

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 DVI nozzles 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 SIS is designed such that two diagonal SI pumps (i.e., SI pumps 1,3 or 2,4) in conjunction with the SITs provide 100 percent of the minimum injection flow rate to the core required to meet the system functions.

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. During shutdown cooling operations following a small break LOCA, the SI pumps continue injecting into the reactor vessel downcomer to provide makeup for spillage out the break.

3.2 Major differences and 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 Chapter 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 and LCO 3.5.3)

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 diagonal SIS trains is credited because the safety analysis acceptance criteria cannot be satisfied should a cold leg break occur with the only two OPERABLE DVI nozzles being

adjacent to the faulted cold leg due to core bypass flow that could occur. Full flow from one SI pump and three SITs is used in 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. APR1400 is based on ECCS consisting of four SIPs supported by four EDGs. Two trains located diagonally with respect to the reactor vessel or three trains are assumed OPERABLE in the safety analysis.

For LCO 3.5.2 CONDITION B, 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.

This deviation is related to APR1400 TS LCOs 3.5.2 and 3.5.3.

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 CONDITIONS A & C in NUREG-1432 are integrated into CONDITION A in 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. This is CONDITION B in APR1400.
- Due to the extension of the applicable MODES, a CONDITION for these MODES is added as CONDITION D.

- The REQUIRED ACTION of the APR1400 TS is a 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 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 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 a DBA. One AC generator provides power to the permanent non-safety buses during a LOOP or to one Class 1E train during a 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 justifications

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 APR1400 design, the condition with three or more AC sources inoperable is divided into two different cases.

This deviation is related to APR1400 TS LCOs 3.8.1 and 3.8.2.

4.2.2 The term "Train A" and “Train B” used in NUREG-1432 is replaced by "Division I" and “Division II” in APR1400. Between divisions, independence and redundancy are maintained.

For DC systems, the term “subsystem(s)” used in NUREG-1432 is replaced by “Division(s)” in APR1400.

This deviation is related to APR1400 TS LCOs 3.8.1, 3.8.2, 3.8.4, 3.8.5, 3.8.6, 3.8.7 and 3.8.9.

These changes are not included in Table III-1.

4.2.3 For the following LCOs and SRs, the specific values of the STS enclosed in brackets are changed to 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 main steam atmospheric dump valves (MSADVs) 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 justifications

5.2.1 RCS Loops – MODE 5

A CSP can be realigned to be used as a Shutdown Cooling Pump (SCP) because the SCPs and CSPs are interchangeable.

This deviation is related to APR1400 TS LCOs 3.4.7 and 3.4.8.

5.2.2 Low Temperature Overpressure Protection (LTOP) System (LCO 3.4.11)

- 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 flow restrictors. 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 Specifications.
- Relief valves for LTOP function are used in 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 3.0.4.b is deleted.

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

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

5.2.4 Refueling Water Level (LCO 3.9.6)

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

6.2.1 Containment Spray and Cooling System (LCO 3.6.6)

In APR1400, a 72 hour Completion Time applies for one containment spray division inoperable instead of the 7 day Completion Time in NUREG-1432, because APR1400 does not adopt 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 trisodium phosphate (TSP), which is stored in the holdup volume tank (HVT), the Spray Additive System is not applied to 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 applied to APR1400.

6.2.4 Iodine Cleanup System (ICS) (LCO 3.6.10)

The removal of fission products (e.g. iodine) is accomplished by the Containment Spray System. Therefore, the Iodine Cleanup System is not applied to 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 (non-nuclear safety class) components.

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 the 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 (0.0025 rem) 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 locally. 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) or 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 the filter and the demineralizer or one of them, as well as the boron concentration.

7.2 Major differences and justifications

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 consists of two 100 percent capacity cooling towers. CONDITION B of 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 Technical Specifications (Rev. 3)	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	
	CHANNEL CALIBRATION A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY and the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps.	CHANNEL CALIBRATION A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel, including the required sensor, alarm, and trip functions, and shall include the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in-place cross calibration of the sensing elements and normal calibration of the remaining adjustable devices in the channel. Whenever a sensing element is replaced, the next required in-place cross calibration consists of comparing the other sensing elements with the recently installed sensing element. The CHANNEL CALIBRATION may be performed by means of any series		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		of sequential, overlapping, or total channel steps so that the entire channel is calibrated.		
	CHANNEL FUNCTIONAL TEST a. Analog and bistable channels - the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY, and b. Digital computer channels - the use of diagnostic programs to test digital computer hardware and the injection of simulated process data into the channel to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps.	CHANNEL FUNCTIONAL TEST a. Analog and bistable logic channels – the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY, including required alarms, interlocks, display and trip functions. b. Digital computer channels – the use of diagnostic programs to test digital computer hardware and the injection of simulated process data into the channel to verify OPERABILITY, including alarms and trip functions. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is tested.		
	ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions,	ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME The ESF RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions,		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. 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.	pump discharge pressures reach their required values, etc.). Times shall include emergency diesel generator starting and sequence loading delays, where applicable. 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.		
	MODE A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.	MODE A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, reactor coolant cold leg temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in reactor vessel.		Changed from “average reactor coolant temperature” to “reactor coolant cold leg temperature”

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	OPERABLE – OPERABILITY A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).	OPERABLE – OPERABILITY A system, subsystem, division, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, train, component, or device to perform its specified function(s) are also capable of performing their related support function(s).	See II.2.3	Response to RAI No. 130-8065 Question 16-30 (Revision 1) committed to add to deviation report and to provide further explanation.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	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 input to 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 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.	APR1400 has no methodology for response time verification without measurement.	
	Table 1.1-1 AVERAGE REACTOR COOLANT TEMPERATURE (°F) > [200] > [200]	Table 1.1-1 REACTOR COOLANT COLD LEG TEMPERATURES > 99°C (210°F) ≤ 99°C (210°F)	See II.3.1	
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	2.1.1.1 In MODES 1 and 2, departure from nucleate	2.1.1.1 In MODES 1 and 2, departure from nucleate		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	boiling ratio (DNBR) shall be maintained at ≥ [1.19].	boiling ratio (DNBR) shall be maintained ≥ 1.29.		
	2.1.1.2 In MODES 1 and 2, the peak fuel centerline temperature shall be maintained at < [5080]°F, 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].	2.1.1.2 In MODES 1 and 2 the peak fuel centerline temperature shall be maintained at < 2,804.4°C (5,080°F), decreasing by 32.2°C (58°F) per 10,000 MWD/MTU for burnup and adjusted for burnable poison per CENPD-275-P, Revision 1-P-A.	Ref. CENPD-382-P-A is related to Erbium BA. Only Gd BA is considered in APR1400.	
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 3.0.4	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 components, consideration of the results, determination of the acceptability of entering the MODE or other specified	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 ACTIONS or that are part of a shutdown of the unit. Exceptions to this Specification are	LCO 3.0.4 is based on NUREG-1432, Revision 1 (Second paragraph, third sentence) and also on Revision 2. Since risk informed TS are not applied to APR1400 generic TS, the non-risk informed last paragraph, which was removed by TSTF-359-A, Revision 9 (which was incorporated in CE-STS Revision 3), is retained.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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.	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.		
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		
LCO 3.0.9	-	Same as NUREG-1432		
3.0 SURVEILLANCE REQUIREMENT APPLICABILITY				
SR 3.0.1	-	Same as NUREG-1432		
SR 3.0.2	-	Same as NUREG-1432		
SR 3.0.3	If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay	If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is less. This delay period is		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours and the risk impact shall be managed.	permitted to allow performance of the Surveillance.		
SR 3.0.4	None	Entry into a MODE or other specified Condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequencies except as provided by SR 3.0.3. When an LCO is not met due to Surveillances not having been met, entry into a MODE or other specified Condition in the Applicability shall only be made in accordance with LCO 3.0.4. This provision shall not prevent entry into 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. 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 based on NUREG-1432, Revision 2. Since risk informed TS are not applied to APR1400 generic TS, the non-risk informed last paragraph, which was removed by TSTF-359-A, Revision 9, is retained.	
3.1 REACTIVITY CONTROL SYSTEMS				
3.1.1 SHUTDOWN MARGIN (SDM)	LCO 3.1.1 SDM shall be within the limits specified in the COLR.	LCO 3.1.1 a. SDM shall be within the limits specified in the COLR.	The SDM specifications according to RTCB condition reflect the assumptions of the	Related CONDITION (with associated

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		b. k effective assuming the inserted control element assembly (CEA) of the highest worth is fully withdrawn (k_{N-1}) shall be < 0.99. c. With reactor trip circuit breakers (RTCBs) closed: Reactor criticality shall not be achieved with shutdown group CEAs movement.	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. 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.	REQUIRED ACTION and COMPLETION TIME) and related SURVEILLANCE (and FREQUENCY) are added.
3.1.2 Reactivity Balance	REQUIRED ACTION A.2 Establish appropriate operating restrictions and SRs.	REQUIRED ACTION A.2 Establish appropriate operating restrictions and SRs for continued operation.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	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 3.1.3 The MTC shall be maintained within the lower limit specified in the COLR and the upper limit that varies linearly from 0.9E-4 Δk/k/°C (0.5E-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 APR1400.	
	SURVEILLANCE SR 3.1.3.1 Verify MTC is within the upper limit specified in the COLR. SR 3.1.3.2 ----------NOTE---------- If the MTC is more negative than the limit specified in the COLR when extrapolated to the end of cycle, SR 3.1.3.2 may be repeated. Shutdown must occur prior to exceeding the minimum allowable boron concentration at which MTC is projected to exceed the lower limit. ---------- Verify MTC is within the lower limit specified in the COLR.	SURVEILLANCE SR 3.1.3.1 Verify MTC is within the upper limit specified in LCO 3.1.3. SR 3.1.3.2 ----------NOTE---------- If the MTC is more negative than the COLR limit when extrapolated to the end of cycle, SR 3.1.3.2 may be repeated. Shutdown must occur prior to exceeding the minimum allowable boron concentration at which MTC is projected to exceed the lower limit. ---------- Verify MTC is within the lower limit specified in the COLR.	See II.4	
3.1.4 Control Element Assembly	SURVEILLANCE SR 3.1.4.5	SURVEILLANCE SR 3.1.4.5	This SR confirms the required CEA drop time assumed in the	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
Alignment (CEA)	Verify each full length CEA drop time ≤ [3.5] seconds and the arithmetic average of all full length CEA drop times ≤ [3.2] seconds.	Verify each full strength CEA drop time from the fully withdrawn position to the 90% insertion position is ≤ 4 seconds.	safety analysis. This CEA drop time is in Figure 4.2-14 of DCD Tier 2.	
	Figure 3.1.4-1 ----------NOTE---------- When core power is reduced to 60% RTP per this limit curve, further reduction is not required by this Specification. ----------	Figure 3.1.4-1 ----------NOTE---------- When core power is reduced to 55% RTP per this limit curve, further reduction is not required by this Specification. ----------	Each power plant has a different core power level which requires no further reduction with respect to CEA deviation. The power level depends upon which power level that is secured as the initial thermal margin to compensate for the thermal margin decrement caused by the long-term xenon redistribution after the operator's intervention to counteract the CEA deviation. For the case of the APR1400 plant, when core power is below 55% RTP, initial thermal margin can encompass the thermal margin decrement by xenon redistribution after the CEA deviation. Further power reduction is not required when core power is reduced to 55% RTP.	
3.1.5 Shutdown Control Element Assembly (CEA) Insertion Limits	FREQUENCY SR 3.1.5.1 12 hours	FREQUENCY SR 3.1.5.1 12 hours AND Once within 15 minutes prior to withdrawal of any CEAs in	A FREQUENCY is added to ensure that required SDM is maintained by verifying each shutdown CEA is withdrawn greater than or equal to 367.7 cm (144.75 in) (SR 3.1.5.1) within 15 minutes prior to withdrawal of any CEA in	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		regulating groups during an approach to reactor criticality.	regulating groups during an approach to reactor criticality.	
3.1.6 Regulating Control Element Assembly (CEA) Insertion Limits	LCO 3.1.6 b. With COLSS out of service, the regulating CEA groups shall be limited to the short term steady state insertion limit and associated time restraints specified in the COLR.	LCO 3.1.6 b. With COLSS out of service, the regulating CEA groups shall be limited to the withdrawal sequence, insertion limits, and associated time restraints specified in the COLR.	The withdrawal sequence should be maintained with COLSS out of service, as well as with COLSS in service.	
	SURVEILLANCE SR 3.1.6.1 ----------NOTE---------- Not required to be performed until 12 hours after entry into MODE 2. ----------	SURVEILLANCE SR 3.1.6.1 ----------NOTE---------- Not required to be performed prior to entry into MODE 2. ----------	The NOTE in APR1400 GTS SR 3.1.6.1 is equivalent to CE-STS SR 3.1.6.1 NOTE because the interval for Frequency (12 hours) is same as the allowed time after entry into MODE 2 in STS. Therefore, 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. B. Part length CEA groups inserted between the long term steady state insertion limit and the transient insertion limit for intervals ≥ 7 ettective full power days (EFPD) per 30 EFPD or ≥ 14 EFPD per 365 EFPD interval.	CONDITION None A. Part strength CEA groups inserted between the long term steady state insertion limit and the transient insertion limit for accumulated times > 7 ettective full power days (EFPD) per 30 EFPD interval or > 14 EFPD per 365 EFPD interval.	The CONDITION is not needed for APR1400 since the transient insertion of part strength CEAs is not restricted up to the full insertion in APR1400. APR1400 GTS corrected inaccurate expression ‘intervals’ in STS with ‘accumulated times’ and added ‘interval’ after ’30 EFPD’ for clarification and accuracy. ‘Greater than or equal to’ symbols (≥) in STS are typos and are replaced with ‘greater than’ symbols (>) in GTS.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	SURVEILLANCE None	SURVEILLANCE SR 3.1.7.2 Verify the accumulated times during which the part strength CEA groups are inserted beyond the long term steady state insertion limit.	The surveillance requirement for the verification of the accumulated time beyond the long term steady state insertion limits is added to be consistent with CONDITION A of ACTIONS.	Related FREQUENCY is added.
Addition - Charging Flow	None	LCO 3.1.8 Charging flow shall be maintained below 681.4 L/min (180 gpm). APPLICABILITY MODES 1, 2, 3, 4, and 5.	Charging flow restriction during MODES 1,2,3,4 and 5 is an assumption of initial condition for safety analysis as described in the APR1400 DCD Tier 2, Section 15.4.6.	Related ACTIONS and SURVEILLANCE REQUIREMENTS 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 3.1.9 During performance of criticality test or measurement of control element assembly (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.	
	None	LCO 3.3.1, “Reactor Protection System (RPS) Instrumentation - Operating” (Only applied to Trip Functions 2, 14, and 15 in Table 3.3.1-1), and	The STE for LCO 3.3.1 for RPS Instrumentation is added.	
	None	LCO 3.3.2, “Reactor Protection System (RPS) Instrumentation - Shutdown” (Only applied to Trip Function 1 in Table 3.3.2-1),	The STE for LCO 3.3.2 for RPS Instrumentation is added.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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.	
	SURVEILLANCE None	SURVEILLANCE SR 3.1.9.3 ----------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.	SR 3.1.9.3 is added due to the criticality test.	
	None	SR 3.1.9.4 Perform CHANNEL FUNCTIONAL TESTS of each logarithmic and variable overpower neutron flux monitoring channel.	SR 3.1.9.4 is added due to the application of STE for RPS Instrumentation LCO 3.3.1 and 3.3.2.	
3.1.9 Special Test Exceptions (STE) - MODES 1 and 2 (Digital)	LCO 3.1.9 None	LCO 3.1.10 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)	
Addition - Special Test Exception (STE) – Reactivity Coefficient Testing	None	LCO 3.1.11 During performance of PHYSICS TESTS, the requirements of: LCO 3.1.6, "Regulating Control Element Assembly (CEA) Insertion Limits," LCO 3.1.7, "Part Strength CEA	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	Related ACTIONS and SURVEILLANCE REQUIREMENTS are added.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		Insertion Limits," and LCO 3.4.1, "RCS Pressure, Temperature and Flow limits" (LCOs 3.4.1.b and 3.4.1.c, RCS Cold Leg Temperature only), may be suspended, provided Linear Heat Rate (LHR) and Departure from Nucleate Boiling Ratio (DNBR) do not exceed the limits specified in: LCO 3.2.1, "Linear Heat Rate (LHR)," and LCO 3.2.4, "Departure from Nucleate Boiling Ratio (DNBR)." APPLICABILITY MODE 1 with THERMAL POWER > 20% RTP. ACTIONS CONDITION A. LHR or DNBR not within limits. B. Required Action and associated Completion Time not met. REQUIRED ACTION A.1 Reduce THERMAL POWER to restore LHR and DNBR to within limits. B.1 Suspend PHYSICS TESTS. COMPLETION TIME	APR1400, so the LCO 3.4.1.b may be suspended.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		15 minutes 1 hour SURVEILLANCE SR 3.1.11.1 ----------NOTE---------- Only required to be performed when Core Operating Limits Supervisory System (COLSS) is out of service. With COLSS in service, LHR is continuously monitored. ---------- Verify LHR, as indicated on any OPERABLE Core Protection Calculator local power density channel, is within the limit specified in the COLR. SR 3.1.11.2 ----------NOTE---------- Only required to be performed when COLSS is out of service. With COLSS in service, DNBR is continuously monitored. ---------- Verify DNBR, as indicated on any OPERABLE Core Protection Calculator DNBR channel, is within the limits of Figure 3.2.4-2 or Figure 3.2.4-3 of the COLR, as applicable. FREQUENCY 15 minutes 15 minutes		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
Addition - Unborated Water Source Isolation Valve – MODES 4 and 5	None	LCO 3.1.12 The CV-186 valve used to isolate unborated water sources shall be secured in the closed position. APPLICABILITY MODES 4 and 5 with all RCPs idle. ACTIONS CONDITION A. Valve not secured in closed position. REQUIRED ACTION A.1 Suspend all operations involving positive reactivity changes AND A.2 Initiate actions to secure valve in closed position. AND A.3 Perform SDM verification in accordance with SR 3.1.1.1. COMPLETION TIME Immediately Immediately 4 hours SURVEILLANCE REQUIREMENTS		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		SURVEILLANCE SR 3.1.12.1 Verify the valve that isolates unborated water sources is secured in the closed position. FREQUENCY 12 hours		
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 LPD channels are monitored to ensure that the LHR limit is not exceeded.	
	SURVEILLANCE SR 3.2.1.1 Verify LHR, as indicated on each OPERABLE local power density channel, is within its limit.	SURVEILLANCE SR 3.2.1.1 Verify LHR, as indicated on any OPERABLE local power density channel, is within its limit.	SR 3.2.1.1 is revised from 'each' to 'any' for clarification.	
3.2.2 Planar Radial Peaking Factors (F_{xy})	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 APR1400.	
3.2.3 Azimuthal Power Tilt (T_q)	REQUIRED ACTION B.2 Reduce Linear Power Level - High trip setpoints to ≤ 55% RTP.	REQUIRED ACTION B.2 Reduce variable overpower trip (VOPT) setpoints to ≤ 55% RTP.		
	SURVEILLANCE SR 3.2.3.1 ----------NOTE----------	SURVEILLANCE SR 3.2.3.1 ----------NOTE----------		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	Only required to be met when COLSS is out of service. With COLSS in service, this parameter is continuously monitored. ----------	Only applicable when Core Operating Limits Supervisory System (COLSS) is out of service. With COLSS in service, this parameter is continuously monitored. ----------		
3.2.4 Departure From Nucleate Boiling Ratio (DNBR)	LCO 3.2.4 a. Maintaining Core Operating Limit Supervisory System (COLSS) calculated core power less than or equal to COLSS calculated core power operating limit based on DNBR (when COLSS is in service, and either one or both control element assembly calculators (CEACs) are 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 the COLR (when COLSS is in-service and neither CEAC is OPERABLE)	LCO 3.2.4 a. Core Operating Limit Supervisory System (COLSS) In Service: 1. Maintaining COLSS calculated core power less than or equal to COLSS calculated core power operating limit based on DNBR when at least one control element assembly calculator (CEAC) is OPERABLE in each OPERABLE core protection calculator (CPC) channel; or 2. 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 the CEAC requirements of LCO 3.2.4.a.1 are not met.	COLSS calculated core power operating limit is specified as a function of thermal power in Figure 3.2.4-1 for APR1400. Thus, figure index is increased compared to NUREG-1432.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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	b. COLSS Out of Service: 1. Operating within the region of acceptable operation of Figure 3.2.4-2 specified in the COLR using any OPERABLE CPC channel when at least one CEAC is OPERABLE in each OPERABLE CPC channel; 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).	2. Operating within the region of acceptable operation of Figure 3.2.4-3 specified in the COLR using any OPERABLE CPC channel (with both CEACs inoperable) when the CEAC requirements of LCO 3.2.4.b.1 are not met.		
	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 any OPERABLE DNBR channel, is within the limits of Figure 3.2.4-2 or 3.2.4-3 of the COLR, as applicable.	COLSS calculated core power operating limit is specified as a function of thermal power in Figure 3.2.4-1 for APR1400. Thus, figure index is increased compared to NUREG-1432.	
3.2.5 AXIAL SHAPE INDEX (ASI)	-	Same as NUREG-1432		
3.3 INSTRUMENTATION				
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 automatic 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.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	CONDITION C. One or more Functions with one automatic bypass removal channel inoperable. REQUIRED ACTION C.1 Disable bypass channel. C.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	CONDITION C. One or more Functions with one automatic operating bypass removal channel inoperable. REQUIRED ACTION C.1 Disable affected bypass channel. C.2.2 Restore automatic 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.	
	CONDITION D. One or more Functions with two automatic bypass removal channels inoperable. REQUIRED ACTION D.1 Disable bypass channels.	CONDITION One or more Functions with two automatic operating bypass removal channels inoperable. REQUIRED ACTION D.1 Disable affected bypass channels.		
	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 APR1400, 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 functions.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	F. One or more CPC channels with three or more autorestarts during a 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.	
	G. Required Action and associated Completion Time not met.	E. Required Action and associated Completion Time not met.		
	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 ----------NOTE---------- Not required to be performed until 12 hours after THERMAL POWER ≥ 70% RTP. ----------	SR 3.3.1.2 ----------NOTE---------- Not required to be performed until 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 APR1400. 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 Technical Specifications (Rev. 3)	Justification	Remark
	SR 3.3.1.4 ----------NOTE---------- 1. Not required to be performed until 12 hours after THERMAL POWER ≥ 20% RTP. 2. The daily calibration may be suspended during PHYSICS TESTS, provided the calibration is performed upon reaching each major test power plateau and prior to proceeding to the next major test power plateau. ---------- 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 ----------NOTES---------- 1. Not required to be performed until 12 hours after THERMAL POWER ≥ 15% RTP. 2. The daily power calibration may be suspended during PHYSICS TESTS, provided calibration is performed upon reaching each major test power plateau and prior to proceeding to the next major test power plateau. ---------- Perform the daily power calibration by calculating the core THERMAL POWER from the daily secondary heat balance measurement (a calorimetric) and adjusting the linear power, CPC ΔT power, and CPC neutron flux power channels to agree with the calculated THERMAL POWER if any channel indicated more than 0.5% RTP less than the calculated THERMAL POWER.	The SR is changed to clarify the meaning, considering operability and safety.	
	SR 3.3.1.5 ----------NOTE---------- Not required to be performed until 12 hours after THERMAL POWER ≥ 70% RTP. ----------	SR 3.3.1.5 ----------NOTE---------- Not required to be performed until 12 hours after THERMAL POWER ≥ 80% RTP. ----------	THERMAL POWER for heat balance calibration is considered.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	SR 3.3.1.7 ----------NOTE---------- 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. ---------- Perform CHANNEL FUNCTIONAL TEST on each channel except Loss of Load and power range neutron flux in accordance with the Setpoint Control Program.	SR 3.3.1.7 ----------NOTE---------- 2. Not required to be performed for Logarithmic Power Level – High until 2 hours after reducing logarithmic power below 1E-3% and only if reactor trip circuit breakers (RTCBs) are open. ---------- Perform CHANNEL FUNCTIONAL TEST for each RPS instrumentation channel in accordance with the Setpoint Control Program.	See III.1.2.3 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 7.2-1 Tier 2, Table 7.2-4
	SR 3.3.1.8 ----------NOTE---------- Neutron detectors are excluded from the CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION of the power range neutron flux channels in accordance with the Setpoint Control Program.	SR 3.3.1.8 ----------NOTE---------- Excore neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION of linear power of excore neutron flux channel in accordance with the Setpoint Control Program.		
	SR 3.3.1.9 ----------NOTE---------- [Not required to be performed until 2 hours after THERMAL POWER ≥ 55% RTP. ---------- Perform CHANNEL FUNCTIONAL TEST for Loss of Load Function in accordance with the Setpoint	None		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	Control Program.			
	SR 3.3.1.10 ----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION on each channel, including bypass removal functions in accordance with the Setpoint Control Program.	SR 3.3.1.9 ----------NOTE---------- Excore neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION on each trip channel, including automatic operating bypass removal functions in accordance with the Setpoint Control Program.		
	SR 3.3.1.11	SR 3.3.1.10		
	SR 3.3.1.12 Using the incore detectors, verify the shape annealing matrix elements to be used by the CPCs.	SR 3.3.1.11 Using incore detectors, verify shape annealing matrix elements to be used by the CPCs in accordance with the Setpoint Control Program.		
	SR 3.3.1.13 Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal function.	SR 3.3.1.12 Perform CHANNEL FUNCTIONAL TEST on each automatic operating bypass removal channel.		
	SR 3.3.1.14 ----------NOTE---------- Neutron detectors are excluded. ----------	SR 3.3.1.13 ----------NOTE---------- Excore neutron detectors are excluded. ----------		
	Table 3.3.1-1 1. Linear Power Level – High 8. Steam Generator #1 Level – Low	Table 3.3.1-1 1. Variable Overpower 8. Steam Generator #1 Water Level		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	9. Steam Generator #2 Level – Low 10 Reactor Coolant Flow, Steam Generator #1 - Low(c) 11. Reactor Coolant Flow, Steam Generator #2 – Low(c) 12. Loss of Load (turbine stop valve control oil pressure) (d) 13. Local Power Density – High 14. Departure From Nucleate(c) Boiling Ratio (DNBR) – Low(c)	– Low 9. Steam Generator #2 Water Level – Low 10. Steam Generator #1 Water Level – High 11. Steam Generator #2 Water Level – High 12. Reactor Coolant Flow, Steam Generator #1 – Low 13. Reactor Coolant Flow, Steam Generator #2 – Low 14. Local Power Density – High(c)(d) 15. Departure From Nucleate Boiling Ratio (DNBR) – Low(c)(d)		
	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 logarithmic power is > 1E-3%. Operating bypass shall be automatically removed when logarithmic power is ≤ 1E-3%. Trip may be manually bypassed during PHYSICS TESTS pursuant to LCO 3.1.9, “Special Test Exception (STE) – SHUTDOWN MARGIN (SDM).”	See III.1.2.3 LCO 3.1.9 states that trip function 2, “Logarithmic Power Level – High”, in Table 3.3.1-1 is applied to the special test exception.	Pointers to SURVEILLANCE REQUIREMENTS are updated.
	Note (b) The setpoint may be decreased to a minimum value of [300] psia, as	Note (b) Pressurizer Pressure – Low trip setpoint may be decreased as	See III.1.2.4	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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 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.	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 increased automatically to the normal setpoint as pressurizer pressure is increased.		
	Note (c) Bypass may be enabled when logarithmic power is < [1E-04]% and shall be capable of automatic removal whenever logarithmic power is < [1E-4]%. Bypass shall be removed prior to raising logarithmic power to a value ≥ [1E-4]%. 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) Trip may be manually bypassed when logarithmic power is < 1E-4%. Operating bypass shall be automatically removed when logarithmic power is ≥ 1E-4%. During testing pursuant to LCO 3.1.9, trip may be bypassed below 5% RTP. Operating bypass shall be automatically removed when THERMAL POWER is > 5% RTP.	LCO 3.1.9 states that trip function 2, “Logarithmic Power Level – High”, in Table 3.3.1-1 is applied to the special test exception.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	Note (d) Bypass may be enabled when THERMAL POWER is < [55]% RTP and shall be capable of automatic removal whenever THERMAL POWER is < [55]% RTP. Bypass shall be removed prior to raising THERMAL POWER to a value ≥ [55]% RTP.	Note (d) The OPERABILITY of the Local Power Density – High and DNBR – Low Functions includes the CPC auxiliary trips.		
3.3.2 Reactor Protective System (RPS) Instrumentation – Shutdown	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 associated automatic operating 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.	
	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 Technical Specifications (Rev. 3)	Justification	Remark
	ACTIONS None	ACTIONS ----------NOTE---------- Separate Condition entry is allowed for each RPS Function. ----------	NOTE 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.	
	CONDITION A. One RPS logarithmic power level trip channel inoperable. B. Two RPS logarithmic power level trip channels inoperable. C. One automatic bypass removal channel inoperable. D. Two automatic bypass removal channels inoperable.	CONDITION A. One or more Functions with one automatic RPS trip channel inoperable. B. One or more Functions with two automatic RPS trip channels inoperable. C. One automatic operating bypass removal channel inoperable. D. Two automatic operating bypass removal channels inoperable.	Trip functions are described in detail as shown in Table 3.3.2-1.	
	REQUIRED ACTION A.1 Place channel in bypass or trip. A.2 Restore channel to OPERABLE status. B.1 Place one channel in bypass and place the other in trip C.1 Disable bypass channel.	REQUIRED ACTION A.1 Place trip channel in bypass or trip. A.2 Restore trip channel to OPERABLE status. B.1 Place one trip channel in bypass and the other in trip. C.1 Disable affected bypass channel.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	C.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status. D.1 Disable bypass channels.	C.2.2 Restore automatic operating bypass removal channel and associated automatic trip channel to OPERABLE status. D.1 Disable affected bypass channels.		
	SURVEILLANCE None	SURVEILLANCE ----------NOTE---------- Refer to Table 3.3.2-1 to determine which SR shall be performed for each RPS Function. ---------- SR 3.3.2.1 Perform CHANNEL CHECK of each RPS instrument channel. SR 3.3.2.2 Perform CHANNEL FUNCTIONAL TEST on each RPS trip channel in accordance with the Setpoint Control Program. SR 3.3.2.3 Perform CHANNEL FUNCTIONAL TEST on each automatic operating bypass removal function. SR 3.3.2.4 Perform CHANNEL CALIBRATION on each RPS trip channel, including automatic operating bypass removal function in	Note is added to refer to table 3.3.2-1 for each SR.	Table 3.3.2-1 is added.
	SR 3.3.2.1 Perform a CHANNEL CHECK of each logarithmic power channel. SR 3.3.2.2 Perform a CHANNEL FUNCTIONAL TEST on each logarithmic power channel in accordance with the Setpoint Control Program. SR 3.3.2.3 Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal function. SR 3.3.2.4 Perform a CHANNEL CALIBRATION on each logarithmic power channel, including bypass removal function in accordance			

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	with the Setpoint Control Program.	accordance with the Setpoint Control Program.		
	None	Table 3.3.2-1		
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. AND A.2 Restore CEAC to OPERABLE status.	REQUIRED ACTION A.1 Declare affected CPCS channel(s) inoperable. OR 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. AND A.2.2 Restore CEAC to OPERABLE status.	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 Technical Specifications (Rev. 3)	Justification	Remark
	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. AND B.3 Verify the "RSPT/CEAC Inoperable" addressable constant in each core protection calculator (CPC) is set to indicate that both	REQUIRED ACTION B.1 Declare affected channel(s) inoperable. OR B.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. AND B.2.2 Verify departure from nucleate boiling ratio requirement of LCO 3.2.4 is met and Reactor Power Cutback System (RPCS) is disabled. AND B.2.3 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 power control, when CEA group #5 may be inserted to a maximum of	See III.1.2.8. B.1 is added to specify the case both CEACs inoperable in one or more CPCS channels. Same action as in SR 3.1.4.1. Completion time 4 hours used instead of 7 inches and 12 hours See II.5 #6 is changed into #5 which is the last control group in APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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.	323.9 cm (127.5 in). AND B.2.4 Verify addressable constant in each affected CPC is set to indicate that both CEACs are inoperable and "RSPT/CEAC inoperable" status is indicated. AND B.2.5 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.	See III.1.2.8 "Standby" in APR1400 is "OFF" in CEDMCS of STS.	Current TS value used
	CONDITION C. Receipt of a CPC channel B or C cabinet high temperature alarm.	CONDITION C. Required Action and associated Completion Time of Condition B not met.	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 Technical Specifications (Rev. 3)	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 APR1400, when high temperature alarm of CPC is generated. Due to the platform change, there is no auto restart function in APR1400. 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 APR1400, when high temperature alarm of CPC is generated. Due to the platform change, there is no auto restart function in APR1400. 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		
	CONDITION E. Required Action and associated Completion Time of Condition B, C, or D not met. REQUIRED ACTION E.1 Be in MODE 3.	CONDITION None		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	COMPLETION TIME 6 hours			
	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 APR1400. 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 Technical Specifications (Rev. 3)	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 circuit breakers (RTCBs), and four channels of Manual Trip 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---------- RTCBs 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 Manual Trip, RTCB, or RPS logic inoperable in MODE 1 or 2.	The RTCB condition for channel functional test is added. Testing on the OPERABLE channels cannot be performed without causing a reactor trip, unless the RTCBs in the inoperable channels are closed to permit testing. Therefore, the Note has been added specifying that the RTCBs associated with one inoperable channel may be closed for up to 1 hour for the performance of an RPS CHANNEL FUNCTIONAL TEST.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	C. One channel of manual Trip, RTCBs, or Initiation Logic inoperable in MODE 3, 4, or 5.	B. ----------NOTE---------- RTCBs 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 Manual trip, RTCB, or RPS logic inoperable in MODE 3, 4, or 5.	The RTCB condition for channel function test is added. Testing on the OPERABLE channels cannot be performed without causing a reactor trip, unless the RTCBs in the inoperable channels are closed to permit testing. Therefore, the Note has been added specifying that the RTCBs associated with one inoperable channel may be closed for up to 1 hour for the performance of an RPS CHANNEL FUNCTIONAL TEST.	
	D. Two channels of Manual Trip, RTCBs, or Initiation Logic affecting the same trip leg inoperable.	None		
	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.	C. Required Action and associated Completion Time of Condition A not met. OR One or more Functions with more than one channel of Manual Trip, RTCB, or RPS logic inoperable.	See III.1.2.5	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	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 CHANNEL FUNCTION TEST on each RPS logic channel and RTCB channel.	The SRs for RPS logic channel and RTCB channel are merged into SR 3.3.4.1.	
	SR 3.3.4.3 SR 3.3.4.4	SR 3.3.4.2 SR 3.3.4.3	The SRs for RPS logic channel and RTCB channel are merged into SR 3.3.4.1, subsequent SRs are renumbered and APR1400 SR 3.3.4.4 shall be deleted.	
3.3.5 Engineered Safety Features Actuation System (ESFAS) Instrumentation	LCO 3.3.5 Four ESFAS trip and bypass removal channels for each Function in Table 3.3.5-1 shall be OPERABLE.	LCO 3.3.5 Four ESFAS trip and associated automatic operating bypass removal channels for each Function in Table 3.3.5-1 shall be OPERABLE.		
	CONDITION C. One or more Functions with one automatic bypass removal channel inoperable. D. One or more Functions with two automatic bypass removal channels inoperable. None	CONDITION C. One or more Functions with one automatic operating bypass removal channel inoperable. D. One or more Functions with two automatic operating bypass removal channels inoperable. F. Required Action and associated Completion Time not met.		
	REQUIRED ACTION A.1 Place channel in bypass or trip. A.2 Restore channel to OPERABLE status.	REQUIRED ACTION A.1 Place trip channel in bypass or trip. A.2 Restore trip channel to OPERABLE status.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	B.1 Place one channel in bypass and the other in trip. C.1 Disable bypass channel. C.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status. D.1 Disable bypass channels. E.2 Be in MODE 4. None None	B.1 Place one trip channel in bypass and the other in trip. C.1 Disable affected bypass channel. C.2.2 Restore automatic operating bypass removal channel and associated automatic trip channel to OPERABLE status. D.1 Disable affected bypass channels. E.2 Be in MODE 4 without reliance on SGs for heat removal. F.1 Be in MODE 3. F.2 Be in MODE 5.		
	None	(For Item E.1) ----------NOTE---------- Only applicable to Functions 5 and 6 of Table 3.3.5-1. ----------	Applicable MODES for AFAS are extended from MODES 1, 2, and 3 to MODES 1, 2, 3, and 4 with reliance on SGs for heat removal in order to enhance the safety of nuclear power plants.	
	None	(For Item F.1) ----------NOTE---------- Only applicable to Functions 1, 2, 3, and 4 of Table 3.3.5-1 ----------	Applicable MODES for ESFAS functions such as SIAS, CIAS, 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
	SURVEILLANCE SR 3.3.5.3 Perform a CHANNEL CALIBRATION of each ESFAS channel, including bypass removal functions in accordance with the Setpoint Control Program.	SURVEILLANCE SR 3.3.5.3 Perform CHANNEL CALIBRATION of each ESFAS channel, including automatic operating bypass removal function in accordance with the Setpoint Control Program.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	SR 3.3.5.4 Verify ESF RESPONSE TIME is within limits. SR 3.3.5.5 Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal channel.	SR 3.3.5.4 Verify ESFAS RESPONSE TIME is within limits. SR 3.3.5.5 Perform CHANNEL FUNCTIONAL TEST on each automatic operating bypass removal channel.		
	Table 3.3.5-1 APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS: 1,2,3	Table 3.3.5-1 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.	In APR1400 notes (b) and (d) are related to the Applicable MODES.
	Table 3.3.5-1 1. Safety Injection Actuation Signal[(a)] 1.b. Pressurizer Pressure – low[(b)] 2.b. Automatic SIAS 3.b. Pressurizer Pressure – low[(b)]	Table 3.3.5-1 1. Safety Injection Actuation Signal 1.b. Pressurizer Pressure – Low[(a)] None 3.b. Pressurizer Pressure – Low[(a)]		
	Table 3.3.5-1 None	Table 3.3.5-1 4.c Steam Generator Level – High		
	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) b. SG Pressure Difference – High [c. Steam Generator Pressure - Low 7. Emergency Feedwater Actuation Signal SG #2 (EFAS-2) b. SG Pressure Difference – High	Table 3.3.5-1 5. Auxiliary Feedwater Actuation Signal SG #1 (AFAS-1) None None 6. Auxiliary Feedwater Actuation Signal SG #2 (AFAS-2) None	See III.1.2.2	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	[c. Steam Generator Pressure - Low	None		Tier 2, Table 7.2-4, Note (5) Tier 2, Table 7.2-1
	Table 3.3.5-1 Note (a) Automatic SIAS also initiates a Containment Cooling Actuation Signal (CCAS).	N/A	See III.1.2.2	
	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 (a) 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	
	Table 3.3.5-1 Note (d) The Main Steam Isolation Signal (MSIS) Function (Steam Generator Pressure - Low and Containment Pressure - High signals) is not required to be OPERABLE when all	Table 3.3.5-1 Note (b) Main Steam Isolation Signal (MSIS) Function (Steam Generator Pressure – Low, Containment Pressure – High, and Steam Generator Level – High signals) is not required to		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	associated valves isolated by the MSIS Function are closed and [de-activated].	be OPERABLE when all associated valves isolated by the MSIS Function are closed and deactivated.		
	Table 3.3.5-1 Note None	Table 3.3.5-1 Note (d) When a steam generator is relied upon for heat removal.		
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 The ESFAS Coincidence Logic, Initiation Logic, Actuation Logic, Manual Trip and Diverse Manual ESF Actuation channels required for each Function in Table 3.3.6-1 shall be OPERABLE.	See III.1.2.5	
	ACTIONS ----------NOTE---------- Separate Condition entry is allowed for each Function. ----------	ACTIONS ----------NOTE---------- Separate Condition entry is allowed for each ESFAS Function and for each Diverse Manual ESF Actuation Function. ----------		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	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 Diverse Manual ESF Actuation Functions with one channel inoperable. E. Required Action and associated Completion Time of Condition A, B, C, or D not met. OR One or more Functions with two or more Actuation Logic channels inoperable.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	REQUIRED ACTION E.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4. COMPLETION TIME E.2 12 hours	REQUIRED ACTION E.2 ----------NOTE---------- Only applicable to Functions 5, 6, 7.c, and 7.d of Table 3.3.6-1. ---------- Be in MODE 4 without reliance upon SGs for heat removal. AND E.3 ----------NOTE---------- Only applicable to Functions 1, 2, 3, 4, 7.a, 7.b, 7.e, and 7.f of Table 3.3.6-1. ---------- Be in MODE 5. COMPLETION TIME E.2 36 hours E.3 36 hours		
	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	SURVEILLANCE SR 3.3.6.2 ----------NOTES---------- 1. Components exempt from testing during operation shall be tested once every 18 months (MODE 6) or in	See III.1.2.6	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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.	MODE 5 if not tested within the previous 62 days. 2. The pair of Actuation Logic subgroup channels A and C and the pair of Actuation Logic subgroup channels B and D shall be tested on a staggered basis. --- Perform a verification of the OPERABILITY of subgroup for Actuation signal of each Actuation Logic channel.		
	SR 3.3.6.3 Perform a CHANNEL FUNCTIONAL TEST on each ESFAS Manual Trip channel.	SR 3.3.6.3 Perform CHANNEL FUNCTIONAL TEST on each Diverse Manual ESF 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.	
	Table 3.3.6-1 FUNCTION 1. Safety Injection Actuation Signal a. Matrix Logic b. Initiation Logic c. Actuation logic d. Manual trip 2. Containment Isolation Actuation Signal a. Matrix Logic b. Initiation Logic c. Actuation logic d. Manual trip	Table 3.3.6-1 FUNCTION 1. Safety Injection Actuation Signal a. Coincidence Logic b. Initiation Logic c. Actuation Logic d. Manual Trip 2. Containment Spray Actuation Signal a. Coincidence Logic b. Initiation Logic c. Actuation Logic d. Manual Trip	See III.1.2.2	In APR1400 REQUIRED CHANNELS are listed for each FUNCTION and APPLICABLE MODES are updated.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	3. Containment Cooling Actuation Signal[(a)] a. Initiation Logic b. Actuation logic c. Manual trip 4. Recirculation Actuation Signal a. Matrix Logic b. Initiation Logic c. Actuation logic d. Manual trip 5. Containment Spray Actuation Signal[(b)] a. Matrix Logic b. Initiation Logic c. Actuation logic d. Manual trip	3. Containment Isolation Actuation Signal a. Coincidence Logic b. Initiation Logic c. Actuation Logic d. Manual Trip		
	6. Main Steam Isolation Signal a. Matrix Logic b. Initiation Logic c. Actuation logic d. Manual trip 7. Emergency Feedwater Actuation Signal SG #1 (EFAS-1) a. Matrix Logic b. Initiation Logic c. Actuation logic d. Manual trip 8. Emergency Feedwater Actuation Signal SG #2 (EFAS-2) a. Matrix Logic b. Initiation Logic c. Actuation logic d. Manual trip	4. Main Steam Isolation Signal a. Coincidence Logic b. Initiation Logic c. Actuation Logic d. Manual Trip 5. Auxiliary Feedwater Actuation Signal SG #1 (AFAS-1) a. Coincidence Logic 4[(a)] b. Initiation Logic 4[(a)] c. Actuation Logic 4[(a)] d. Manual Trip 4[(a)] 6. Auxiliary Feedwater Actuation Signal SG #2 (AFAS-2) a. Coincidence Logic 4[(a)] b. Initiation Logic 4[(a)] c. Actuation Logic 4[(a)] d. Manual Trip 4[(a)] 7. Diverse Manual ESF Actuation Signal a. Safety Injection		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	[(a)] Automatic SIAS also initiates CCAS [(b)] Automatic SIAS also required for automatic CSAS initiation.	b. Containment Spray c. Auxiliary Feedwater (SG #1) 4[(a)] d. Auxiliary Feedwater (SG #2) 4[(a)] e. Main Steam Isolation per main steam isolation valve (MSIV) f. Containment Isolation [(a)] When a steam generator is relied upon for heat removal		
3.3.7 Diesel Generator (DG) - Loss of Voltage Start (LOVS)	-	Same as NUREG-1432		
3.3.8 Containment Purge Isolation Signal (CPIS)	LCO 3.3.8 One CPIS channel shall be OPERABLE.	LCO 3.3.8 One CPIAS instrument division with two area radiation monitor channels, one Manual Actuation division, and one Actuation Logic division shall be OPERABLE.		
	APPLICABILITY MODES 1, 2, 3, and 4, During movement of [recently] irradiated fuel assemblies within containment. ----------NOTE---------- Only required when the penetration is not isolated by at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	APPLICABILITY MODES 1, 2, 3, and 4, MODE 5 with RCS loops not filled when relying on LCO 3.6.7.c.2, MODE 6 when relying on LCO 3.6.7.c.2 or LCO 3.9.3.c.2. ----------NOTE---------- Only required when the associated containment purge or exhaust line penetration flow path is not isolated by at least one closed and deactivated automatic valve,		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	----------	closed manual valve, or blind flange. ----------		
	CONDITION A. CPIS Manual Trip, Actuation Logic, or one or more required channels of radiation monitors inoperable in MODES 1, 2, 3, and 4.	CONDITION A. CPIAS required Manual Actuation division, required Actuation Logic division, or required instrument division with one or more required area radiation monitor channels inoperable in MODES 1, 2, 3, and 4.		
	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.
	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 required Manual Actuation division, required Actuation Logic division, or required instrument division with one or more required area radiation monitor channels inoperable during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment, or in MODE 5 with LCO 3.6.7.c.2 not met or in MODE 6 with LCO 3.6.7.c.2 or LCO 3.9.3.c.2 not met.	See II.2.1	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	REQUIRED ACTION C.2 Suspend movement of [recently] irradiated fuel assemblies in containment.	REQUIRED ACTION C.2.1 Suspend CORE ALTERATIONS. AND C.2.2 Suspend movement of irradiated fuel assemblies in containment.	See II.2.1	
	SURVEILLANCE SR 3.3.8.1 Perform a CHANNEL CHECK on required containment area and gaseous radiation monitor channel.	SURVEILLANCE SR 3.3.8.1 Perform CHANNEL CHECK on required containment upper operating area radiation monitor channel and operating area radiation monitor channel.		
	SR 3.3.8.2 Perform a CHANNEL CHECK on required containment particulate and iodine radiation monitor channel.	N/A		
	SR 3.3.8.3 ----------NOTE---------- Only required to be met in MODES 1, 2, 3, and 4. ---------- Perform a CHANNEL FUNCTIONAL TEST on each required containment radiation monitor channel in accordance with the Setpoint Control Program.	SR 3.3.8.2 ----------NOTE---------- Only required to be met in MODES 1, 2, 3, and 4. ---------- Perform CHANNEL FUNCTIONAL TEST on each required upper operating area radiation monitor channel and each required operating area radiation monitor channel in accordance with the Setpoint Control Program.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	SR 3.3.8.4 ----------NOTE---------- Only required to be met during movement of irradiated fuel assemblies within containment. ---------- Perform a CHANNEL FUNCTIONAL TEST on required containment radiation monitor channel in accordance with the Setpoint Control Program.	SR 3.3.8.3 ----------NOTE---------- Only required to be met during CORE ALTERATIONS and during movement of irradiated fuel assemblies within containment, and in MODE 5 with RCS loops not filled when relying on LCO 3.6.7.c.2, and in MODE 6 when relying on LCO 3.6.7.c.2 or LCO 3.9.3.c.2. ---------- Perform CHANNEL FUNCTIONAL TEST on each required upper operating area radiation monitor channel and each required operating area radiation monitor channel in accordance with the Setpoint Control Program.	See II.2.1	
	SR 3.3.8.5 ----------NOTE---------- Surveillance of Actuation Logic shall include the actuation of each initiation relay and verification of the proper operation of each initiation relay. ---------- Perform a CHANNEL FUNCTIONAL TEST on required CPIS Actuation Logic channel.	SR 3.3.8.4 ----------NOTE---------- Surveillance of Actuation Logic shall include actuation of each initiation circuit and verification of proper operation of each initiation circuit. ---------- Perform CHANNEL FUNCTIONAL TEST on required CPIAS Actuation Logic division.		
	SR 3.3.8.8 Perform CHANNEL FUNCTIONAL TEST on required CPIS Manual Trip channel.	SR 3.3.8.7 Perform CHANNEL FUNCTIONAL TEST on required CPIAS Manual Actuation division.		
3.3.9 Control Room	LCO 3.3.9	LCO 3.3.9		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
Isolation Signal (CRIS)	One CRIS channel shall be OPERABLE.	One CREVAS instrument division with one radiation monitor channel, one Manual Actuation division, and one Actuation Logic division shall be OPERABLE.		
	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	
	CONDITION A. CRIS Manual Trip, Actuation Logic, or [one or more required channels of particulate/iodine or gaseous] radiation monitors inoperable in MODES 1, 2, 3, or 4.	CONDITION A. CREVAS required Manual Actuation division, required Actuation Logic division, or required instrument division with one required radiation monitor channel inoperable in MODE 1, 2, 3, or 4.		
	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. ---------- Place one CREACS train in emergency radiation protection mode.	REQUIRED ACTION A.1 Place one Control Room Area heating, ventilation, and air conditioning (HVAC) System train in emergency operation mode.	The REQUIRED ACTION reflects APR1400 design feature. APR1400 does not have toxic gas protection mode.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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.
	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 required Manual Actuation division, required Actuation Logic division, or required instrument division with one required radiation monitor channel inoperable during CORE ALTERATIONS or movement of irradiated fuel assemblies.	See II.2.1	
	REQUIRED ACTION C.1 ----------NOTE---------- Place CREACS in toxic gas protection mode if automatic transfer to toxic gas protection mode inoperable. ---------- Place one CREACS train in emergency radiation protection mode. C.2.2 ----------NOTE---------- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. ---------- Suspend positive reactivity additions.	REQUIRED ACTION C.1 Place one Control Room Area HVAC System train in emergency operation mode. C.2.2 Suspend positive reactivity additions.	The REQUIRED ACTION reflects APR1400 design feature.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	None	C.2.3 Suspend CORE ALTERATIONS.	See II.2.1	
	SURVEILLANCE SR 3.3.9.3 ----------NOTES---------- 1. Surveillance of Actuation Logic shall include the verification of the proper operation of each initiation relay. 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. ---------- Perform a CHANNEL FUNCTIONAL TEST on required CRIS Actuation Logic channel.	SURVEILLANCE SR 3.3.9.3 ----------NOTE---------- Surveillance of Actuation Logic shall include verification of proper operation of each initiation circuit. ---------- Perform CHANNEL FUNCTIONAL TEST on required CREVAS Actuation Logic division.	The SR reflects APR1400 design feature.	
	SR 3.3.9.5 Perform a CHANNEL FUNCTIONAL TEST on required CRIS Manual Trip channel.	SR 3.3.9.5 Perform CHANNEL FUNCTIONAL TEST on required CREVAS Manual Actuation division.		
	SR 3.3.9.6 [Verify that response time of required CRIS channel is within limits.	SR 3.3.9.6 Verify that the response time of required CREVAS division is within limits.		
3.3.10 Fuel Handling Isolation Signal (FHIS)	LCO 3.3.10 One FHIS channel shall be OPERABLE.	LCO 3.3.10 One FHEVAS instrument division with one radiation monitor channel, one Manual Actuation division, and one Actuation Logic division shall be OPERABLE.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	APPLICABILITY [MODES 1, 2, 3, and 4,] During movement of [recently] irradiated fuel in the fuel building.	APPLICABILITY During movement of irradiated fuel in the fuel handling area.		
	ACTION ----------NOTE---------- LCO 3.0.3 is not applicable. ---------- CONDITION 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 CONDITION None	The deviations reflect APR1400 design feature. Area radiation monitor is designed for 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
	C. Actuation Logic, Manual Trip, or [one or more required channels of particulate/iodine and gaseous] radiation monitors inoperable during movement of [recently] irradiated fuel Assemblies.	A. Required Manual Actuation division, required Actuation Logic division, or required instrument division with required radiation monitor channel inoperable.		
	REQUIRED ACTION C.1 Place one OPERABLE FBACS train in operation. OR C.2. Suspend movement of [recently] irradiated fuel assemblies in the fuel building.	REQUIRED ACTION A.1 Place one OPERABLE Fuel Handling Area heating, ventilation, and air conditioning (HVAC) System train in emergency operation mode. OR A.2. Suspend movement of		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		irradiated fuel assemblies in fuel handling area.		
	SURVEILLANCE SR 3.3.10.3 ----------NOTE---------- Testing of Actuation Logic shall include the actuation of each initiation relay and verification of the proper operation of each ignition relay. --- Perform a CHANNEL FUNCTIONAL TEST on required FHIS Actuation Logic channel. SR 3.3.10.4 Perform a CHANNEL FUNCTIONAL TEST on required FHIS Manual Trip logic. SR 3.3.10.6 [verify response time of required FHIS channel is within limits.	SURVEILLANCE SR 3.3.10.3 ----------NOTE---------- Testing of Actuation Logic shall include actuation of each initiation circuit and verification of proper operation of each initiation circuit. --- Perform CHANNEL FUNCTIONAL TEST on required FHEVAS Actuation Logic division. SR 3.3.10.4 Perform CHANNEL FUNCTIONAL TEST on required FHEVAS Manual Actuation division. SR 3.3.10.6 Verify that the response time of required FHEVAS division is within limits.		
3.3.11 Post Accident Monitoring (PAM) Instrumentation	LCO 3.3.11 The PAM instrumentation for each Function in Table 3.3.11-1 shall be OPERABLE.	LCO 3.3.11 The AMI measurement channels for each Function in Table 3.3.11-1 shall be OPERABLE.		Changed to “measurement channel” throughout.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	ACTION ----------NOTE---------- Separate Condition entry is allowed for each Function. ----------	ACTION ----------NOTES---------- 1. LCO 3.0.4 is not applicable. 2. Separate Condition entry is allowed for each Function. ----------	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
	Table 3.3.11-1 FUNCTION 1. [Wide Range] Neutron Flux 2. Reactor Coolant System Hot Leg Temperature 3. Reactor Coolant System Cold Leg Temperature 4. Reactor Coolant System Pressure (wide range) 5. Reactor Vessel Water Level 6. Containment Sump Water Level (wide range) 7. Containment Pressure (wide range) 8. Penetration Flow Path	Table 3.3.11-1 FUNCTION 1. Logarithmic Reactor Power (neutron flux) 2. Hot Leg temperature (Wide Range) 3. Cold Leg temperature (Wide Range) 4. Reactor Coolant System Pressure 5. Reactor Vessel Level (RV Closure Head Level/RV Plenum Level) 6. Reactor Cavity Level 7. Containment Pressure (Wide Range) 8. Containment Pressure	NUREG-1432 Rev. 4 had followed RG 1.97 Rev. 3 (1983). On the other hand, APR1400 DCD is adapted in accordance with RG 1.97 Rev. 4 (2006). A few variations are added in APR1400 DCD.	Added FUNCTIONS and associated requirements. Tier 2, Table 7.5-1

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	Containment Isolation Valve Position 9. Containment Area Radiation (high range) 10. Pressurizer Level 11. Steam Generator Water Level (wide range) 12. Condensate Storage Tank Level 13. Core Exit Temperature – Quadrant [1] 14. Core Exit Temperature – Quadrant [2] 15. Core Exit Temperature – Quadrant [3] 16. Core Exit Temperature – Quadrant [4] 17. Emergency Feedwater Flow	(Extended Wide Range) 9. Containment Isolation Valve Position 10. Containment Upper Operating Area Radiation 11. Pressurizer Level 12. Steam Generator Level (Wide Range) 13. Holdup Volume Tank Level 14. Core Exit Temperature – Quadrant 1 15. Core Exit Temperature – Quadrant 2 16. Core Exit Temperature – Quadrant 3 17. Core Exit Temperature – Quadrant 4 18. Steam Generator Pressure 19. RCS Saturation Margin 20. Core Exit Temperature Saturation Margin 21. Reactor Vessel Upper Head Saturation Margin 22. Pressurizer Pressure (Wide Range) 23. In-containment Refueling Water Storage Tank (IRWST) Level 24. IRWST Temperature 25. Containment Water Level 26. Containment Operating Area Radiation (For Fuel Handling Accident) 27. Spent Fuel Pool Radiation 28. Safety Injection Pump (SIP) Direct Vessel Injection (DVI) Flow Rate		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		29. Main Steam Atmospheric Steam Dump Valve Position 30. Auxiliary Feedwater Flow 31. Hydrogen Concentration 32. Containment Atmosphere Temperature 33. 4.16 kV Switchgear Voltage 34. DC Bus Voltage 35. Instrument Power Bus Voltage		
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 APR1400.	Tier 2, 7.5.1.1
	ACTION ----------NOTE---------- Separate Condition entry is allowed for each Function. ----------	ACTION ----------NOTES---------- 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.	
	SURVEILLANCE SR 3.3.12.2 Verify each required control circuit and transfer switch is capable of performing the intended function. SR 3.3.12.4 [Perform CHANNEL FUNCTIONAL TEST of the reactor trip circuit breaker open/closed indication.	SURVEILLANCE SR 3.3.12.2 Verify that the required indication, control circuit, and transfer switch is capable of performing the intended function. SR 3.3.12.4 Perform CHANNEL FUNCTIONAL TEST of reactor trip switch gear open/closed indication.		Changed instrument channel to measurement channel.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	None	Table 3.3.12-1	Table 3.3.12-1 is added to describe the list for Remote Shutdown Display and Control in APR1400.	
3.3.13 [Logarithmic] Power Monitoring Channels	-	Same as NUREG-1432		
Addition - Boron Dilution Alarms	None	LCO 3.3.14 Two Boron Dilution Alarm System (BDAS) channels shall be OPERABLE.	The OPERABILITY of BDAS channels is necessary to meet the assumptions of the safety analyses as described in the APR1400 DCD Tier 2, Section 15.4.6.	Related ACTIONS and SURVEILLANCE REQUIREMENTS are added.
		APPLICABILITY MODE 3 within 1 hour after the neutron flux is within the startup range following a reactor shutdown, MODES 4 and 5.		
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 (T_{cold}), and RCS total flow rate shall be within the limits specified below. a. Pressurizer pressure ≥ 154.7 kg/cm^{2}A (2,201 psia) and ≤ 161.6 kg/cm^{2}A (2,299 psia); b. T_{cold} ≥ 286.7°C (548°F) and ≤ 293.3°C (560°F) for	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)

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		THERMAL POWER < 90% RTP c. T_{cold} ≥ 289.4°C (553°F) and ≤ 293.3°C (560°F) for THERMAL POWER ≥ 90% RTP; and d. RCS total flow rate ≥ 75.6E6 kg/hr (166.6E6 lb/hr).		
	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 T_{cold}, MODE 2 with k_{eff} ≥ 1.0 for T_{cold}, MODE 1 for RCS total flow rate. ----------NOTE---------- Pressurizer pressure limit in MODE 1 does not apply during: a. THERMAL POWER ramp > 5% RTP per minute or b. THERMAL POWER step > 10% RTP. ----------	Core power as an initial condition of safety analyses for 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)
	CONDITION A. Pressurizer Pressure or RCS flow rate not within limits.	CONDITION A. RCS total flow rate not within limits.	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 T_{cold} 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	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
			not-applicable MODE.	
	REQUIRED ACTION A.1 Restore parameter(s) to within limit. C.1 Restore cold leg temperature to within limits. D.1 Reduce THERMAL POWER to ≤ [30]% RTP.	REQUIRED ACTION A.1 Restore RCS total flow rate to within limits. C.1 Restore parameter(s) to within limit. 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 T_{cold} ≥ 286.7°C (548°F) and ≤ 293.3°C (560°F) for < 90% RTP or ≥ 289.4°C (553°F) and ≤ 293.3°C (560°F) for ≥ 90% RTP.		APR1400 specific value used
	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 ≥ 75.6E6 kg/hr (166.6E6 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 ≥ 75.6E6 kg/hr (166.6E6 lb/hr).	Higher power is desirable for more accurate measurements	Current TS value used

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
3.4.2 RCS Minimum Temperature for Criticality	LCO 3.4.2 Each RCS loop average temperature (T_{avg}) shall be ≥ [520]°F.	LCO 3.4.2 Each RCS cold leg temperature (T_{cold}) shall be ≥ 286.7°C (548°F).	See II.3.1	
	APPLICABILITY MODE 1 with T_{avg} in one or more RCS loops < [535]°F, MODE 2 with T_{avg} in one or more RCS loops < [535]°F 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.	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.		
	SURVEILLANCE SR 3.4.2.1 Verify RCS T_{avg} in each loop ≥ [520]°F. FREQUENCY SR 3.4.2.1 [12 hours OR In accordance with the Surveillance Frequency Control Program]	SURVEILLANCE SR 3.4.2.1 Verify RCS T_{cold} in each loop is ≥ 286.7°C (548°F). FREQUENCY SR 3.4.2.1 Once within 15 minutes prior to achieving criticality AND 30 minutes with the reactor critical and T_{cold} < 289.4°C (553°F). AND 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	REQUIRED ACTION B.2. Be in MODE 5 with RCS pressure < [500] psig.	REQUIRED ACTION B.2. Be in MODE 5 with RCS pressure < 33.7 kg/cm^{2}A (479 psia).		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
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 in operation with two reactor coolant pumps operating in each loop.	More specific information is described for "in operation".	
3.4.5 RCS Loops – MODE 3	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 that would cause reduction of the RCS boron concentration below that required to meet the SDM of LCO 3.1.1.	The meaning of the REQUIRED ACTION is practically the same.	
	SURVEILLANCE SR 3.4.5.1 Verify one RCS loop is in operation. SR 3.4.5.2 Verify secondary side water level in each steam generator ≥ [25]%.	SURVEILLANCE SR 3.4.5.1 Verify required RCS loop is in operation. SR 3.4.5.2 Verify secondary side water level in each steam generator ≥ 25% wide range indications.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
3.4.6 RCS Loops – MODE 4	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 leg temperatures. ----------	LCO 3.4.6 ----------NOTE---------- 2. No RCP shall be started with any RCS cold leg temperatures less than or equal to the Low Temperature Overpressure Protection (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 consistent with the analyses.	There is no PZR level limit for RCP operation since LTOP analysis assumes the PZR is filled solid. Thus, the level limit is eliminated.
	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. ----------	REQUIRED ACTION None	Natural circulation cooldown in MODE 4 is not analyzed.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	Initiate action to make at least one steam generator available for decay heat removal via natural circulation.			
	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.	
	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.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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 that would cause reduction of the RCS boron concentration below that required to meet the SDM of LCO 3.1.1.		
	SURVEILLANCE SR 3.4.6.1 Verify required RCS loop or SDC train is in operation.	SURVEILLANCE 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.	
	SR 3.4.6.2 Verify secondary side water level in required SG(s) is ≥ [25]%.	SR 3.4.6.2 Verify secondary side water level in required SG(s) is ≥ 25% wide range indication.		
	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 SC train locations susceptible to gas accumulation are sufficiently filled with water. FREQUENCY 31 days	TSTF-523 (Managing Gas Accumulation) is applied to APR1400 Technical Specifications.	
3.4.7 RCS Loops – MODE 5, Loops Filled	LCO 3.4.7 b. The secondary side water level of each steam generator SG shall be ≥ 25%. ----------NOTE---------- 1. The SDC pump of the train in operation may be removed from operation for ≤ 1 hour per 8 hour period provided:	LCO 3.4.7 b. The secondary side water level of each steam generator (SG) shall be ≥ 25% wide range indication. ----------NOTE---------- 1. The SC pump of the train in operation may be removed from operation for ≤ 1 hour per 8 hour period provided:		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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	a. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than that required to meet the SDM of LCO 3.1.1; and		
	LCO 3.4.7 ----------NOTE---------- 3. No reactor coolant pump (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. The secondary side water temperature in each SG is < [100]°F above each of the RCS cold leg temperatures. 4. All SDC trains may not be in operation during planned heatup to MODE 4 when at least one RCS loop is in operation.	LCO 3.4.7 ----------NOTE---------- 3. No reactor coolant pump (RCP) shall be started with one or more of the RCS cold leg temperatures less than or equal to the Low Temperature Overpressure Protection (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. 4. All SC trains may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.	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 consistent with the analyses.	
	LCO 3.4.7 None	LCO 3.4.7 ----------NOTE---------- 5. A containment spray pump can be manually realigned to meet the requirement of a SC pump. ----------	See III.5.2.1.	
	REQUIRED ACTION C.1 Suspend operations that would cause introduction of coolant into	REQUIRED ACTION C.1 Suspend all operations involving reduction in RCS boron		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.	concentration.		
	SURVEILLANCE SR 3.4.7.1 Verify required SDC train is in operation.	SURVEILLANCE SR 3.4.7.1 Verify one SC train is in operation with circulating reactor coolant at a flow rate of ≥ 15,710 L/min (4,150 gpm).		
	SR 3.4.7.2 Verify required SG secondary side water level is ≥ [25]%.	SR 3.4.7.2 Verify required SG secondary side water level ≥ 25% wide range indication.		
	None	SR 3.4.7.4 Verify required SC train locations susceptible to gas accumulation are sufficiently filled with water. FREQUENCY 31 days	TSTF-523 (Managing Gas Accumulation) is applied to APR1400 Technical Specifications.	
3.4.8 RCS Loops – MODE 5, Loops Not Filled	LCO 3.4.8 Two shutdown cooling (SDC) trains shall be OPERABLE and one SDC train shall be in operation.	LCO 3.4.8 The heat removal system shall be in the following status: a. Two shutdown cooling (SC) trains shall be OPERABLE and one SC train shall be in operation; and b. The containment spray pump in the same electrical division as the operating SC train shall be OPERABLE.		
	None.	----------NOTE---------- 3. The containment spray pump in the same electrical division as the	See III.5.2.1	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		SC train in operation may be manually aligned to meet the requirements of its associated SC pump. 4. Operation in the mid-loop condition (RCS level ≤ 36.30 m (119 ft 1 in)) is allowed if the time after reactor shutdown is ≥ 96 hours and core exit temperature is maintained ≤ 57.2°C (135°F). ----------		
	CONDITION B. No Required SDC train OPERABLE. OR Required SDC train not in operation.	CONDITION B. Two SC trains inoperable. OR No SC train in operation.	The meanings of the CONDITION are practically the same.	
	None	C. Containment Spray pump in the same electrical division as the operating SC train inoperable. D. Required Action and associated Completion Time of Required Action C.3 not met. E. Core exit temperature > 57.2°C (135°F) during mid-loop operation. OR RCS level ≤ 36.30 m (119 ft 1 in) with < 96 hours after reactor shutdown.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	REQUIRED ACTION None	REQUIRED ACTION AND B.3 Initiate action to raise RCS level to > 38.72 m (127 ft 1/4 in).	If shutdown cooling pump cannot be restored, RCS level should be raised. This will place the plant in a conservative position with respective to decay heat removal.	
	None	C.1 If the containment spray pump in the same electrical division as the alternate SC train is OPERABLE, initiate action to place the alternate SC train in operation. AND C.2 Monitor SC System performance. AND C.3 Restore containment spray pump to OPERABLE status.		
	None	D.1 Raise RCS level > 38.72 m (127 ft 1/4 in).		
	None	E.1 Initiate action to restore core exit temperature to ≤ 57.2°C (135°F). AND E.2 Initiate action to raise RCS level above mid-loop condition (> 36.30 m (119 ft 1 in)).		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	SURVEILLANCE None	SURVEILLANCE SR 3.4.8.1 ----------NOTE---------- Only required to be met when in mid-loop operation. ---------- Verify core exit temperature is ≤ 57.2°C (135°F). FREQUENCY 15 minutes		
	SR 3.4.8.1 Verify required SDC train is in operation.	SR 3.4.8.2 Verify one SC train is in operation with circulating reactor coolant at a flow rate of ≥ 14,385 L/min (3,800 gpm) and < 15,710 L/min (4,150 gpm).		
	SR 3.4.8.2 Verify correct breaker alignment and indicated power available to each required SDC pump.	SR 3.4.8.3 Verify correct breaker alignment and indicated power available to the required SC pump.		
	None	SR 3.4.8.4 Verify correct breaker alignment and indicated power available to the required containment spray pump that is not in operation. FREQUENCY 24 hours		
	None	SR 3.4.8.5 Verify required SC train locations susceptible to gas accumulation are sufficiently filled with water. FREQUENCY 31 days	TSTF-523 (Managing Gas Accumulation) is applied to APR1400 Technical Specifications.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
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 ≥ 200 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 200 kW is sufficient to add heat for controlling pressurizer pressure for APR1400.	APR1400 specific value used
	CONDITION None.	CONDITION B. Required Action and associated Completion Time of Condition A not met.	The deviations reflect the APR1400 plant specific operating practice.	
	B. One [required] group of pressurizer heaters inoperable.	C. One required group of pressurizer backup heaters inoperable.		
	C. Required Action and associated Completion Time of Condition B not met.	D. Required Action and associated Completion Time of Condition C not met.		
	REQUIRED ACTION None.	REQUIRED ACTION A.1 Restore pressurizer water level within limit. COMPLETION TIME 1 hour	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 the 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 Technical Specifications (Rev. 3)	Justification	Remark
			placed in MODES 3 with the reactor trip circuit breakers open within 6 hours, and in MODE 4 within 12 hours.	
	A.1 Be in MODE 3 with reactor trip breakers open. AND A.2 Be in MODE 4.	B.1 Be in MODE 3 with reactor trip switch gears open. AND B.2 Be in MODE 4.	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 the safety analyses. If PZR water level cannot be restored to within the limits in 1 hour, the plant is placed in MODES 3 with the reactor trip circuit breakers open within 6 hours, and in MODE 4 within 12 hours.	
	B.1 Restore [required] group of pressurizer heaters to OPERABLE status. C.1 Be in MODE 3. AND C.2 Be in MODE 4.	C.1 Restore required group of pressurizer backup heaters to OPERABLE status. D.1 Be in MODE 3. AND D.2 Be in MODE 4.		
	SURVEILLANCE SR 3.4.9.1 Verify pressurizer water level is < [60]%.	SURVEILLANCE SR 3.4.9.1 Verify pressurizer water level ≥ 25% and ≤ 56%.		
	----------REVIEWER'S NOTE--------- The frequency for performing pressurizer heater capacity testing shall be either 18 months or 92			

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	days, depending on whether or not the plant has dedicated safety-related heaters. For dedicated safety-related heaters, which do not normally operate, 92 days is applied. For nondedicated safety-related heaters, which normally operate, 18 months is applied. --- SR 3.4.9.2 Verify capacity of each required group of pressurizer heaters ≥ [150] kW.	SR 3.4.9.2 Verify capacity of each required group of pressurizer backup heaters ≥ 200 kW.		
	SR 3.4.9.3 [Verify required pressurizer heaters are capable of being powered from an emergency power supply.	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 POSRVs 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 psia) and ≤176.3 kg/cm^{2}A (2,507 psia). b. The opening time of pressurizer POSRV shall be ≤ 0.5 seconds, including dead time.	The setpoint range is a APR1400 specific characteristic and the valve type is different. Pressurizer Pilot Operated Safety Relief Valve (POSRV) is applied in APR1400. The opening time is specified in the Design Specification and verified by test for APR1400	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
			plant.	
	APPLICABILITY ----------NOTE---------- The lift settings are not required to be within LCO limits during 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	APPLICABILITY ----------NOTE---------- The opening time measurement and lift pressure setting of each POSRV 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.	The meanings of the APPLICABILITY are practically the same. The 72 hours exception is based on 18 hours outage time for each of the four valves (APR1400 adapts 4 POSRVs). The 18 hours period is determined based on operating experience. See III.2.2.2	
	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 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 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	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 Technical Specifications (Rev. 3)	Justification	Remark
		valves – open, c. Spring-loaded pilot valves – close, and d. Motor-operated pilot valves – close.		
	None	SR 3.4.10.2 Verify electric power disconnections of the following motor-operated valves: a. Motor-operated isolation valves and b. Upstream valve of motor-operated pilot valves.		
	None	SR 3.4.10.3 For each pressurizer POSRV: a. Verify lift pressure settings of each of the two spring-loaded pilot valves are set ≥ 171.1 kg/cm^{2}A (2,433 psia) and ≤ 176.3 kg/cm^{2}A (2,507 psia). b. Adjust each spring-loaded pilot valve, as necessary, so that the lift pressure setting is ≥ 172.4 kg/cm^{2}A (2,451.4 psia) and ≤ 175.0 kg/cm^{2}A (2,488.5 psia). c. Verify opening time of pressurizer POSRV is ≤ 0.5 seconds, including dead time.		
	None	SR 3.4.10.4 Verify alarm devices for valve positions and electric power connections of the following valves:		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		a. Motor-operated isolation valves – power connection alarm, b. Upstream valve of motor-operated pilot valves – power connection alarm, and c. Manual isolation valves – not fully open alarm.		
	None	SR 3.4.10.5 Verify position indicators of the following valves are operated normally: a. Main valves, b. Spring-loaded pilot valves, c. Motor-operated pilot valves, and d. Motor-operated isolation valves and manual isolation valves.		
	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 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	LCO 3.4.11 LTOP System shall be OPERABLE as follows:	See III.5.2.2	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	(SITs) isolated, and: ----------NOTES---------- 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 specified in the PTLR, or b. RCS depressurized and an RCS vent of ≥ 180.6 cm^2 (28 in^2) established.		
	ACTIONS ----------NOTE---------- LCO 3.0.4.b is not applicable to PORVs when entering MODE 4. ----------	ACTIONS None	See III.5.2.2	
	CONDITION A. Two or more HPSI pumps capable of injecting into the RCS.	CONDITION None	See III.5.2.2	
	B. Two or more charging pumps capable of injecting into the RCS.	None	See III.5.2.2	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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 III.5.2.2	
	D. Required Action and associated Completion Time of Time of Condition C not met.	None	See III.5.2.2	
	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 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 APR1400.	
	G. Two required PORVs inoperable. <u>OR</u> Required Action and associated Completion Time of Condition A, [B], D, E, or F not met. <u>OR</u> LTOP System inoperable for any reason other than Condition A, [B], C, D, E, or F.	C. Required Action and associated Completion Time of Condition A or B 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 taken such as establishing a vent immediately. Different valve name is used in APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	SURVEILLANCE SR 3.4.12.1 Verify a maximum of one HPSI pump is capable of injecting into the RCS.	SURVEILLANCE None	See III.5.2.2	
	SR 3.4.12.2 Verify a maximum of one charging pump is capable of injecting into the RCS.	None		
	SR 3.4.12.3 Verify each SIT isolated.	None		
	SR 3.4.12.4 Verify required RCS vent ≥ [1.3] square inches is open.	SR 3.4.11.1 ----------NOTE---------- Only required to be met when complying with LCO 3.4.11.a. ---------- Verify both SCS suction isolation valves in both SCS suction flow paths are open. SR 3.4.11.2 ----------NOTE---------- Only required to be met when complying with LCO 3.4.11.b. ---------- 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 equal to the LTOP enable	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 Technical Specifications (Rev. 3)	Justification	Remark
	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 3.4.11.3 ----------NOTE---------- Only required to be met when complying with LCO 3.4.11.a. ---------- Verify the lift 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.	
3.4.13 RCS Operational LEAKAGE	-	Same as NUREG-1432		3.4.12 for APR1400.
3.4.14 RCS Pressure Isolation Valve (PIV) Leakage	APPLICABILITY MODE 4, except valves in the shutdown cooling (SDC) flow path when in, or during the transition to or from, the SDC mode of operation	APPLICABILITY MODE 4, except valves in the shutdown cooling (SC) flow paths when in SC operation or during the transition to or from SC operation.		3.4.13 for APR1400.
	REQUIRED ACTION ----------NOTE---------- Each valve used to satisfy Required Action A.1 and Required Action A.2 must have been verified to meet SR 3.4.14.1 and be on the RCS pressure boundary [or the high pressure portion of the system]. ---------- A.2 [Isolate the high pressure portion of the affected system from the low pressure portion by use of a second closed	REQUIRED ACTION ----------NOTE---------- Each valve used to satisfy Required Actions A.1 and A.2 must have been verified to meet the Surveillance and Frequency of SR 3.4.13.1 and be on the reactor coolant pressure boundary. ---------- A.2	An isolation may cause a loss of Residual Heat Removal (RHR). The (automatic) isolation function is not used in APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	manual, deactivated automatic, or check valve. [or] Restore RCS PIV to within limits.	Restore RCS PIV leakage to within limit.		
	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 APR1400. OPP for SCS is performed by LTOP relief valves.	
	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.	
	SURVEILLANCE SR 3.4.14.1 Verify leakage from each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ [2215] psia and ≤ [2255] psia.	SURVEILLANCE SR 3.4.13.1 Verify leakage from each RCS PIV is equivalent to ≤ 1.89 L/min (0.5 gpm) per nominal 2.54 cm (1 in) of valve size up to a maximum of 18.9 L/min (5 gpm) at an RCS pressure ≥ 156.8 kg/cm^{2}A (2,230 psia) and ≤ 159.6 kg/cm^{2}A (2,270 psia).		
	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	FREQUENCY SR 3.4.13.1 18 months AND Prior to entering MODE 2 whenever unit has been in	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 Technical Specifications (Rev. 3)	Justification	Remark
	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	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		
	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---------- Not required if SC suction line isolation valves are open for Low Temperature Overpressure Protection (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}A (450 psia).	There is no auto closure interlock in APR1400.	
	SR 3.4.14.3 ----------NOTE----------	None	There is no auto closure interlock in APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	[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.			
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 monitor b. One containment atmosphere radioactivity monitor (gaseous or particulate), and c. One containment air cooler condensate flow rate monitor.]	LCO 3.4.14 The following RCS leakage detection instrumentation shall be OPERABLE: a. One containment sump (level) monitor, b. One containment atmosphere radioactivity (particulate) monitor, and c. One containment atmosphere humidity monitor.	1. For item 'a', Containment sump means containment sump level. Therefore they are the same. 2. For item 'c', the method used in APR1400 is one of the methods described in RG 1.45 Rev. 1.	
	CONDITION A. Containment sump monitor inoperable. B. Required containment atmosphere radioactivity monitor inoperable. C. [Containment air cooler condensate flow rate monitor inoperable. ----------NOTE---------- Only applicable when the containment atmosphere gaseous radiation monitor is the only	CONDITION A. Required containment sump (level) monitor inoperable. B. Required containment atmosphere radioactivity (particulate) monitor inoperable. C. Required containment atmosphere humidity monitor inoperable.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	OPERABLE monitor. ---------- D. Containment sump monitor inoperable. AND [Containment air cooler condensate flow rate monitor inoperable.] E. [Required containment atmosphere radioactivity monitor inoperable. AND [Containment air cooler condensate flow rate monitor inoperable.] F. Required Action and associated Completion Time not met. G. All required monitors inoperable.	D. Required containment sump (level) monitor inoperable. AND Required containment atmosphere humidity monitor inoperable. E. Required containment atmosphere radioactivity (particulate) monitor inoperable. AND Required containment atmosphere humidity monitor inoperable. F. Required containment sump (level) monitor inoperable. AND Required containment atmosphere radioactivity (particulate) monitor inoperable. G. Required Action and associated Completion Time not met. H. All required monitors inoperable.		
	REQUIRED ACTION A.2 Restore containment sump monitor to OPERABLE status.	REQUIRED ACTION A.2 Restore required containment sump (level) monitor to OPERABLE status.		
	B.2.1 Restore required containment atmosphere radioactivity monitor to OPERABLE status. OR	B.2 Restore required containment atmosphere radioactivity (particulate) monitor to OPERABLE status.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	[B.2.2 Verify containment air cooler condensate flow rate monitor is OPERABLE.			
	C.1 Perform SR 3.4.15.1. OR C.2 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ---------- Perform SR 3.4.13.1.	C.1.1 Perform SR 3.4.14.1. OR C.1.2 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation. ---------- Perform SR 3.4.12.1. AND C.2 Restore required containment atmosphere humidity monitor to OPERABLE status.		
	D.1 Analyze grab samples of the containment atmosphere. AND D.2.1 Restore containment sump monitor to OPERABLE status. OR [D.2.2 Restore containment air cooler condensate flow rate monitor to OPERABLE status.]	D.1 Restore required containment sump (level) monitor to OPERABLE status. OR D.2 Restore required containment atmosphere humidity monitor to OPERABLE status.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	E.1 Restore required containment atmosphere radioactivity monitor to OPERABLE status. OR E.2 Restore containment air cooler condensate flow rate monitor to OPERABLE status.	E.1 Restore required containment atmosphere radioactivity (particulate) monitor to OPERABLE status. OR E.2 Restore required containment atmosphere humidity monitor to OPERABLE status.		
	None	F.1 Restore required containment sump (level) monitor to OPERABLE status. OR F.2 Restore required containment atmosphere radioactivity (particulate) monitor to OPERABLE status.		
	F.1 Be in MODE 3. AND F.2 Be in MODE 5.	G.1 Be in MODE 3. AND G.2 Be in MODE 5.		
	G.1 Enter LCO 3.0.3.	H.1 Enter LCO 3.0.3.		
	SURVEILLANCE None	SURVEILLANCE 3.4.14.2 Perform CHANNEL CHECK of the required containment atmosphere humidity monitor.		
	None	3.4.14.4 Perform CHANNEL FUNCTIONAL TEST of the required containment atmosphere humidity monitor		
	None	3.4.14.7		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		Perform CHANNEL CALIBRATION of the required containment atmosphere humidity monitor.		
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 The specific activity of the reactor coolant shall be limited to: a. DOSE EQUIVALENT I-131 specific activity ≤ 3.7E4 Bq/g (1.0 μCi/g) and b. DOSE EQUIVALENT XE-133 specific activity ≤ 1.11E7 Bq/g (297.3 μCi/g).	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.		
	CONDITION B. Required Action and associated Completion Time of Condition A not met. OR DOSE EQUIVALENT I-131 in the unacceptable region of Figure 3.4.16-1. C. Gross specific activity of the reactor coolant not within limit.	CONDITION B. DOSE EQUIVALENT XE-133 > 1.11E7 Bq/g (297.3 μCi/g). C. Required Action and associated Completion Time of Condition A or B not met. OR DOSE EQUIVALENT I-131 > 2.22E6 Bq/g (60 μCi/g).	See II.2.2	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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 ≤ 2.22E6 Bq/g (60 μCi/g). AND A.2 Restore DOSE EQUIVALENT I-131 to within limit.	In order to be consistent with TSTF-490, Rev. 0, the relevant phrases are modified.	
	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.	In order to be consistent with TSTF-490, Rev. 0, the relevant phrases are modified. - Related COMPLETION TIME is changed.	
	C.1 Be in MODE 3 with T_{avg} < 500°F.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	In order to be consistent with TSTF-490, Rev. 0, the relevant phrases are modified. - Related COMPLETION TIME is changed.	
	SURVEILLANCE SR 3.4.16.1 Verify reactor coolant gross specific activity ≤ 100/Ē μCi/gm.	SURVEILLANCE SR 3.4.15.1 ----------NOTE---------- Only required to be performed in MODE 1. ---------- Verify reactor coolant DOSE EQUIVALENT XE-133 specific activity ≤ 1.11E7 Bq/g (297.3 μCi/g).	In order to be consistent with the TSTF-490, Rev. 0, the contents are modified.	
	SR 3.4.16.3 ----------NOTE---------- Not required to be performed until	None	In order to be consistent with the TSTF-490, Rev. 0, this item is deleted.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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 $\bar{E}$ 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.		- The definition of $\bar{E}$ is deleted in "1.1 Definitions".	
	Figure 3.4.16-1	None	In order to be consistent with TSTF-490, Rev. 0, the figure is deleted.	
Addition - Reactor Coolant Gas Vent (RCGV) Function	None	LCO 3.4.16 The following RCGV flow paths shall be OPERABLE: a. Two flow paths from the reactor vessel closure head to the in-containment refueling water storage tank (IRWST), and b. Two flow paths from the pressurizer steam space to the IRWST. APPLICABILITY MODES 1,2 and 3, MODE 4 with Shutdown Cooling (SC) System not aligned for Low Temperature Overpressure Protection (LTOP) of the reactor coolant pressure boundary (RCPB).	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 SCS. Therefore it is controlled by LCO for operability.	Related ACTIONS and SURVEILLANCE REQUIREMENTS are added.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
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. APR1400 performs Natural Circulation test at Hot Standby condition, so these STEs are not required.	
3.4.18 Steam Generator (SG) Tube Integrity	LCO 3.4.18 SG tube integrity shall be maintained. AND All SG tubes satisfying the tube repair criteria shall be plugged [or repaired] in accordance with the Steam Generator Program.	LCO 3.4.17 SG tube integrity shall be maintained. AND All SG tubes satisfying the tube plugging criteria shall be plugged in accordance with the Steam Generator Program.	APR1400 does not have a repair method approved by NRC.	
	CONDITION A. One or more SG tubes satisfying the tube repair criteria and not plugged [or repaired] in accordance with the Steam	CONDITION A. One or more SG tubes satisfying the tube plugging criteria and not plugged in accordance with the Steam Generator Program.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	Generator Program.			
	SURVEILLANCE A. verify that each SG tube that satisfies the tube repair criteria is plugged [or repaired] in accordance with the Steam Generator Program.	SURVEILLANCE A. Verify each inspected SG tube that satisfies tube plugging criteria is plugged in accordance with Steam Generator Program.		
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	
	CONDITION A. One SIT inoperable due to boron concentration not within limits. OR One SIT inoperable due to the inability to verify water level or pressure.	CONDITION A. One SIT inoperable due to boron concentration not within limits. OR One SIT inoperable due to B-10 isotopic concentration not within limits. OR One SIT inoperable due to the inability to verify water level or pressure.		Second part of condition added by RAI 496-8630, Question 6.03-10, Revision 2.
	REQUIRED ACTION C.2 Reduce with pressurizer pressure to < [700] psia.	REQUIRED ACTION C.2 Reduce pressurizer pressure to < 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 Technical Specifications (Rev. 3)	Justification	Remark
	COMPLETION TIME 2 hours	COMPLETION TIME 12 hours	12 hours from NUREG-1432 Rev. 2 is used rather than 2 hours from NUREG-1432 Rev. 3, 4. 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.	
	SURVEILLANCE SR 3.5.1.2 Verify borated water volume in each SIT is ≥ [28% narrow range (1802 cubic feet) and ≤ 72% narrow range (1914 cubic feet)].	SURVEILLANCE SR 3.5.1.2 Verify borated water volume in each SIT is ≥ 29% and ≤ 69% (% narrow range).		
	SR 3.5.1.3 Verify nitrogen cover pressure in each SIT is ≥ [615] psig and ≤ [655] psig.	SR 3.5.1.3 Verify nitrogen cover-pressure in each SIT is ≥ 40.6 kg/cm^{2}G (578 psig) and ≤ 43.9 kg/cm^{2}G (624 psig).		
	SR 3.5.1.4 Verify boron concentration in each SIT is ≥ [1500] ppm and ≤ [2800] ppm.	SR 3.5.1.4 Verify boron concentration in each SIT is ≥ 2,300 ppm and ≤ 4,400 ppm.		
	SR 3.5.1.3 Verify power is removed from each SIT isolation valve operator when pressurizer pressure is ≥ [2000] psia.	SR 3.5.1.5 Verify power is removed from each SIT isolation valve operator when pressurizer pressure is ≥ 50.3 kg/cm^{2}A (715 psia).		
	None	SR 3.5.1.6 Verify isotopic concentration of B-10 in each SIT is within the limit specified in the COLR. FREQUENCY 24 months	Periodic verification that the isotopic concentration of Boron-10 in each SIT is within the limit specified in the COLR ensures that the Boron-10 isotopic concentration assumed	Added by RAI 496-8630, Question 6.03-10, Revision 2.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
			in the safety analysis is available. Since Boron-10 in the SITs is not directly exposed to a significant neutron flux and the IRWST water used as inventory for the SITs is only mixed with the reactor coolant during refueling outages, the Frequency of 24 months is considered conservative. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk.	
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, MODE 3 with pressurizer pressure ≥ [1700] psia.	APPLICABILITY MODES 1, 2, and 3.	See Section III.3.2.2	
	CONDITION -----REVIEWER'S NOTE----- The adoption of this Condition is contingent upon implementation of a program to perform a contemporaneous assessment of the overall impact on safety of proposed plant configurations prior to performing and during performance of maintenance activities that remove equipment from service. ---------- A. One LPSI subsystem Inoperable.	CONDITION A. One train inoperable.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	B. One or more trains inoperable for reasons other than Condition A. C. Required Action and associated Completion Time not met. D. Less than 100% of the ECCS flow equivalent to a single OPERABLE train available.	B. Two trains inoperable and diagonally oriented with respect to the reactor vessel (Trains 1 and 3, or Trains 2 and 4). C. Required Action and associated Completion Time of Condition A or B not met. D. Two or more trains inoperable for reasons other than Condition B.		
	REQUIRED ACTION A.1 Restore subsystem to OPERABLE status.	REQUIRED ACTION A.1 Restore train to OPERABLE status.	See III.3.2.2	
	B.1 Restore train(s) to OPERABLE status.	B.1. Verify two trains diagonally oriented with respect to the reactor vessel are OPERABLE. AND B.2. Restore trains to OPERABLE status.		
	C.2 Reduce pressurizer pressure to < [1700] psia.	C.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 close position: SI-321, SI-331, SI-604, and SI-609.	The valves with power to the valve operator removed are not applicable for APR1400.	
	SR 3.5.2.2	SR 3.5.2.2 ----------NOTE---------- Not required to be met for system	Activities for gas accumulation management are considered.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		vent flow paths opened under administrative control. --- Verify each SIS manual, power-operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in correct position.		
	Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.			
	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 Technical Specification	
	SR 3.5.2.4 Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	SR 3.5.2.4 Verify each SIS pump develops required differential pressure on minimum flow of 123.8 kg/cm^{2}D (1,761 psid).		
	SR 3.5.2.5 [Verify each charging pump develops a flow of ≥ [36] gpm at a discharge pressure of ≥ [2200] psig.	SR 3.5.2.5 Verify each SIS pump develops a flow of ≥ 3,407 L/min (900 gpm) at a differential pressure ≥ 86.9 kg/cm^{2}D (1,236 psid).	The SI pumps are tested at rated flow condition (in addition to the miniflow condition) during power 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 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.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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 inspection, that the IRWST, holdup volume tank (HVT), IRWST strainers, HVT trash racks and IRWST spillway are not restricted by debris and strainers and trash racks show no evidence of structural distress or abnormal corrosion.		
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	
	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	
	A. Required HPSI train inoperable.	A. Required SIS trains inoperable.		
	B. Required Action and associated Completion Time not met.	B. Required Action and associated Completion Time of Condition A not met.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	REQUIRED ACTION A.1 Restore required HPSI train to OPERABLE status. B.1 Be in MODE 5	REQUIRED ACTION A.1 Restore required SIS trains to OPERABLE status. 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°C (135°F).	See III.3.2.2	
	SURVEILLANCE SR 3.5.3.1 The following SRs are applicable: [SR 3.5.2.1] SR 3.5.2.2 [SR 3.5.2.3] SR 3.5.2.4 SR 3.5.2.6 SR 3.5.2.7 [SR 3.5.2.9] SR 3.5.2.10	SURVEILLANCE SR 3.5.3.1 The following SRs are applicable: SR 3.5.2.1, SR 3.5.2.2, SR 3.5.2.3, SR 3.5.2.4, SR 3.5.2.5, SR 3.5.2.6, SR 3.5.2.7, and SR 3.5.2.8.		
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	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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 B-10 isotopic concentration not within limits. OR IRWST 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. E. Required Action and associated Completion Time of Condition C or D not met.	C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	See III.3.2.3	
	D. RWT inoperable for reasons other than Condition A or C.	B. IRWST 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 ----------NOTE---------- 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.	REQUIRED ACTION None C.1 Be in MODE 3.	See III.3.2.3	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	AND E.2 Be in MODE 5.	AND C.2 Be in MODE 5.		
	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°C (135°F).	See III.3.2.3	
	SURVEILLANCE SR 3.5.4.1 ----------NOTE---------- [Only required to be performed when ambient air temperature is ≥ [40]°F or ≤ [100]°F.] ---------- Verify RWT borated water temperature is ≥ [40]°F and ≤ [100]°F. SR 3.5.4.2 Verify RWT borated water volume is ≥ [362,800 gallons, (88)%] [above the ECCS suction connection]. SR 3.5.4.3 Verify RWT boron concentration is ≥ [1720] ppm and ≤ [2500] ppm. None	SURVEILLANCE SR 3.5.4.1 None Verify IRWST water temperature is ≥ 10°C (50°F) and ≤ 49°C (120°F). SR 3.5.4.2 Verify IRWST water volume is ≥ 2,373.5 m^3 (627,000 gal) and ≤ 2,540.6 m^3 (671,162 gal) (i.e., ≥ 74.43% and ≤ 79.67%). SR 3.5.4.3 Verify IRWST boron concentration is ≥ 4,000 ppm and ≤ 4,400 ppm. SR 3.5.4.4 Verify isotopic concentration of B-10 in the IRWST is within the limit specified in the COLR.	The NOTE is not necessary for APR1400 since the IRWST is located in the reactor containment building and is not affected by changing the ambient air temperature.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		FREQUENCY 24 months		
3.5.5 Trisodium Phosphate (TSP)	LCO 3.5.4 The TSP baskets shall contain ≥ [291] ft^3 of active TSP. SURVEILLANCE SR 3.5.5.1 Verify the TSP baskets contain ≥ [291] ft^3 of trisodium phosphate.	LCO 3.5.4 The TSP baskets shall contain ≥ 29.5 m^3 (1,042 ft^3) of active TSP. SURVEILLANCE SR 3.5.5.1 Verify the TSP baskets contain ≥ 29.5 m^3 (1,042 ft^3) of TSP.	This is an intrinsic design characteristic of APR1400. The required volume of TSP for 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	
	COMPLETION TIME D.2 12 hours	COMPLETION TIME D.2 36 hours	See II.3.3	
3.6.3 Containment Isolation Valves	ACTIONS ----------NOTES---------- 1. Penetration flow paths [except for [24] inch purge valve penetration flow paths] may be unisolated intermittently under administrative controls.	ACTIONS ----------NOTES---------- 1. Penetration flow paths (except for 1219.2 mm (48 in) purge valve penetration flow paths) may be unisolated intermittently under administrative controls.	The NOTE reflects APR1400 plant specific design. - NUREG-1432 : 42 inch - APR1400 : 48 inch	
	CONDITION A. ----------NOTE---------- Only applicable to the [containment sump supply valves to the ECCS and	CONDITION A. ----------NOTE---------- Only applicable to penetration flow paths with two or more containment isolation valves.	Condition A of NUREG-1432 only applicable to the containment isolation valves that do not meet the conditions to	Related REQUIRED ACTION and COMPLETION

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	containment spray pumps]. --- One or more penetration flow paths with one containment isolation valve inoperable.	--- One or more penetration flow paths with one containment isolation valve inoperable (except for purge valve leakage not within limit).	extend the Completion Time to 7 days. APR1400 does not adopt NUREG-1432.	TIME are changed.
	B. ----------NOTE---------- Only applicable to penetration flow paths with two [or more] containment isolation valves. --- 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.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. ----------NOTE---------- Only applicable to those penetration flow paths with two or more containment isolation valves. --- One or more penetration flow paths with two containment isolation valves inoperable (except for purge valve leakage not within limit). REQUIRED ACTION None COMPLETION TIME	 See II.3.3 See II.3.3	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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]	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] containment isolation valves inoperable [for reasons other than Condition[s] E [and F]]. REQUIRED ACTION None	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 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.	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 conservative.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	COMPLETION TIME C.1 1 hour None	COMPLETION TIME C.1 4 hours C.2 Once per 31 days	See II.3.3	
	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.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	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 affected 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 resilient seal purge valves closed to comply with Required Action D.1. COMPLETION TIME D.1 24 hours	See II.3.3	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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 None	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 containment D.3 Once per 92 days		
	E. [One or more secondary containment bypass leakage [or purge valve leakage] not within limit.	None		
	F. [One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.	None		
	G. Required Action and associated Completion Time not met. REQUIRED ACTION G.1 Be in MODE 3.	E. Required Action and associated Completion Time not met. REQUIRED ACTION E. 1 Be in MODE 3.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	AND G.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4. COMPLETION TIME G.2 12 hours	E.2 Be in MODE 5. COMPLETION TIME E.2 36 hours		
	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 pressurized to ≥ [psig].	None	The SR is not applicable because it deals with dual containments.	
3.6.4 Containment Pressure	LCO 3.6.4 Containment pressure shall be ≥ -0.3 psig and ≤ +1.5 psig.	LCO 3.6.4 Containment pressure shall be ≥ -0.007 kg/cm^{2}G (-0.1 psig) and ≤ +0.07 kg/cm^{2}G (+1.0 psig).		
	REQUIRED ACTION B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ----------	REQUIRED ACTION B.2 None	For application of MODE 4, the guidance, as specified in Section 11 of NUMARC 93-01 and WCAP-16364-NP, shall be followed.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	Be in MODE 4. COMPLETION TIME B.2 12 hours	Be in MODE 5. COMPLETION TIME B.2 36 hours	(Same reason described in LCO 3.6.2) Same reason described in LCO 3.6.2 (See LCO 3.6.2)	
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	
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.	Containment Cooling function is included in the Containment Spray System. "Train" is changed to "Division".	Item name is changed. - Containment Spray and Cooling System → Containment Spray System Containment Spray System provides the heat removal function from containment atmosphere following a LOCA. Containment Cooling System does not apply for APR1400.
	COMPLETION TIME A.1 [7] days	COMPLETION TIME A.1 72 hours	See III.6.2.1	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	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	
	CONDITION C. One containment cooling train inoperable.	CONDITION None	Containment Cooling function is included in the Containment Spray System.	
	D. One containment spray and one containment cooling train inoperable.	None		
	E. Two containment cooling trains inoperable.	None		
	F. Required Action and associated Completion Time of Condition C, D, or E not met.	None		
	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".	
	SURVEILLANCE SR 3.6.6.1 None SR 3.6.6.2 Operate each containment cooling train fan	SURVEILLANCE SR 3.6.6.1 ---------- NOTE ---------- Not required to be met for system vent flow paths opened under administrative control. ---------- None	Containment Cooling function is included in the Containment Spray System.	NOTE was added to SR 3.6.6.1 by RAI 478-8568, Question 16-140, Revision 1. Activities for gas accumulation management are considered.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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 3.6.6.4 [Verify the containment spray piping is full of water to the [100] ft level in the containment spray header. SR 3.6.6.8 Verify each containment cooling train starts automatically on an actual or simulated actuation signal. None	None SR 3.6.6.6 Verify the containment spray piping is full of water to the 26.213 m (86 ft) level in the containment spray header. None SR 3.6.6.7 Verify containment spray locations susceptible to gas accumulation are sufficiently filled with water.		SR 3.6.6.7 added by RAI 478-8568, Question 16-140, Revision 1.
3.6.7 Spray Additive System	LCO 3.6.7 The Spray Additive System shall be OPERABLE.	None	See III.6.2.2	
Addition - Containment Penetrations - Shutdown Operations	None	3.6.7 Containment Penetrations - Shutdown 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	During reduced RCS inventory operation, a release of fission products within the containment to the environment is restricted.	Related ACTIONS and SURVEILLANCE REQUIREMENTS are added.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		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, or blind flange, or 2. Exhausting through OPERABLE Containment Purge System air cleaning units (ACUs), and is capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System. APPLICABILITY MODE 5 with any Reactor Coolant System (RCS) loop not filled, MODE 6 with the water level < 7.0 m (23 ft) above the top of the reactor vessel flange. ----------NOTE---------- The equipment hatch shall be closed and held in place by a minimum of [four bolts] before opening the pressurizer manway in MODE 5. ----------		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
3.6.8 Shield Building Exhaust Air Cleanup System (SBEACS)	-	None	APR1400 does not have this system.	
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	APR1400 does not have this system.	
3.6.12 Vacuum Relief Valves	-	None	APR1400 does not have this system.	
3.7 PLANT SYSTEMS				
3.7.1 Main Steam Safety Valves (MSSVs)	CONDITION B Required Action and associated Completion Time not met. OR One or more steam generators with less than [two] MSSVs OPERABLE.	CONDITION B Required Action and associated Completion Time not met. OR One or more steam generators with less than five MSSVs OPERABLE.		
	REQUIRED ACTION A.2 Reduce the [variable overpower trip – high] setpoint [ceiling] in accordance with Table 3.7.1-1.	REQUIRED ACTION A.2 Reduce maximum variable overpower trip setpoint in accordance with Table 3.7.1-1.		
	SURVEILLANCE SR 3.7.1.1 Verify each required MSSV lift setpoint per Table 3.7.1-2 in accordance with the Inservice Testing Program. Following testing, lift settings shall be within ± 1%.	SURVEILLANCE SR 3.7.1.1 Verify each required MSSV is within ±3% of the lift setting value stated in Table 3.7.1-2, in accordance with the In-service Testing Program. If the lift setting is found to be outside the calibration	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 Technical Specifications (Rev. 3)	Justification	Remark
		tolerance of ±1% of the lift setting value stated in Table 3.7.1-2, the valve lift setting shall be reset to within the calibration tolerance.		
	Table 3.7.1-2 LIFT SETTING (psig ± [3]%) None	Table 3.7.1-2 LIFT SETTING (psig ±1%) ----------NOTE---------- Each MSSV's as-found lift setting shall be within ±3% of the lift setting value stated in Table 3.7.1-2 for the valve to be considered OPERABLE. The valve's lift setting shall be reset to within the calibration tolerance of ±1% of the lift setting value stated in Table 3.7.1-2 if the lift setting is found to be outside the calibration tolerance. ----------		
3.7.2 Main Steam Isolation Valves (MSIVs)	LCO 3.7.2 [Two] MSIVs shall be OPERABLE.	LCO 3.7.2 Four MSIVs shall be OPERABLE.		
3.7.3 Main Feedwater Isolation Valves (MFIVs) [and [MFIV] Bypass Valves]	-	Same as NUREG-1432		MFIV bypass valves not included in APR1400.
3.7.4 Atmospheric Dump Valves (ADVs)	REQUIRED ACTION None A.1 Restore MSADV line to OPERABLE status.	REQUIRED ACTION A.1 ----------NOTE---------- LCO 3.0.4 is not applicable. ---------- Restore MSADV line to OPERABLE status.	A Note has been added in the ACTION to exclude the MODE change restriction of LCO 3.0.4. This exception allows entry into the applicable MODE while relying on the ACTIONS with one MSADV line inoperable. This	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
			exception is acceptable due to the redundant design of MSADV lines and the ability to restore the MSADV within 7 days while the plant remains at, or proceeds to, power operation.	
3.7.5 Auxiliary Feedwater (AFW) System	LCO 3.7.5 [Three] AFW trains shall be OPERABLE. ----------NOTE---------- Only one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4. ----------	LCO 3.7.5 Two auxiliary feedwater (AFW) divisions, each with one motor driven train and one turbine driven train, shall be OPERABLE. ----------NOTE---------- Only the motor driven train of one AFW division is required to be OPERABLE in MODE 4. ----------	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)	
	ACTIONS ----------NOTE---------- LCO 3.0.4.b is not applicable. ----------	ACTIONS None	Risk informed Technical Specification is not applied for APR1400. (Refer to the justification of LCO 3.0.4.)	
	CONDITION A. [Turbine driven AFW train inoperable due to one inoperable steam supply. OR ----------NOTE---------- Only applicable if MODE 2 has not been entered following refueling. ---------- One turbine driven AFW pump	CONDITION A. One AFW division with one train inoperable in MODE 1, 2, or 3.		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	inoperable in MODE 3 following refueling. REQUIRED ACTION A.1 Restore affected equipment to OPERABLE status. COMPLETION TIME 7 days]	 REQUIRED ACTION A.1 Restore train to OPERABLE status. COMPLETION TIME [72] hours		
	B. One AFW train inoperable in MODE 1, 2, or 3 [for reasons other than Condition A]. REQUIRED ACTION B.1 Restore AFW train to OPERABLE status.	B. Two AFW divisions with one train inoperable in MODE 1, 2, or 3. REQUIRED ACTION B.1 Restore two trains of an AFW division to OPERABLE status.		
	C. Turbine driven AFW train inoperable due to one inoperable steam supply. AND One motor driven AFW train inoperable. REQUIRED ACTION C.1 Restore the steam supply to the turbine driven train to OPERABLE status. COMPLETION TIME [24 or 48] hours OR	C. One AFW division with two trains inoperable in MODE 1, 2, or 3. REQUIRED ACTION C.1 Restore one train of affected AFW division to OPERABLE status. COMPLETION TIME [24] hours		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	C.2 Restore the motor driven AFW train to OPERABLE status. COMPLETION TIME [24 or 48] hours			
	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.] REQUIRED ACTION D.1 Be in MODE 3. AND D.2 Be in MODE 4.	D. Required Action and associated Completion Time of Condition A, B, or C not met. OR Three AFW trains inoperable in MODE 1, 2, or 3. REQUIRED ACTION D.1 Be in MODE 3. AND D.2 Be in MODE 4 without reliance upon SGs for heat removal.		
	E. [[Three] AFW trains inoperable in MODE 1, 2, or 3. REQUIRED ACTION E.1 Initiate action to restore one AFW train to OPERABLE status.	E. Four AFW trains inoperable in MODE 1, 2, or 3. REQUIRED ACTION E.1 Initiate action to restore one AFW train to OPERABLE status.		
	F. Required AFW train inoperable in MODE 4. REQUIRED ACTION F.1 ----------NOTE----------	F. Two AFW motor driven trains inoperable in MODE 4. REQUIRED ACTION ----------NOTE----------		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ---------- Initiate action to restore one AFW train to OPERABLE status.	LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW motor driven train is restored to OPERABLE status. ---------- F.1 Initiate action to restore one AFW motor driven train to OPERABLE status.		
	SURVEILLANCE SR 3.7.5.1 Verify each AFW manual, power operated, and automatic valve in each water flow path and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	SURVEILLANCE SR 3.7.5.1 Verify each manual, power-operated, and automatic valve in the flow path of each AFW train and in the steam supply flow path of each AFW turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.		
	SR 3.7.5.2 ----------NOTE---------- Not required to be performed for the turbine driven AFW pump until [24] hours after reaching [800] psig in the steam generators. ---------- Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.	SR 3.7.5.2 ----------NOTE---------- Not required to be performed for AFW turbine driven pumps until 24 hours after reaching 69.25 kg/cm^2G (985 psig) in steam generators. ---------- Verify developed head of each AFW pump at flow test point is greater than or equal to required developed head.		
	SR 3.7.5.3 ----------NOTES---------- 1. Not required to be performed for	SR 3.7.5.3 ----------NOTE---------- Not required to be met in MODE 4		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	the turbine driven AFW pump until [24] hours after reaching [800] psig in the steam generators. 2. Not required to be met in MODE 4 when steam generator is relied upon for heat removal. ----------	when steam generator is relied upon for heat removal. ----------		
	SR 3.7.5.4 ----------NOTES---------- 1. Not required to be performed for the turbine driven AFW pump until [24] hours after reaching [800] psig in the steam generators. 2. Not required to be met in MODE 4 when steam generator is relied upon for heat removal. ---------- Verify each AFW pump starts automatically on an actual or simulated actuation signal when in MODE 1, 2, or 3.	SR 3.7.5.4 ----------NOTES---------- 1. Not required to be performed for AFW turbine driven pumps until 24 hours after reaching 69.25 kg/cm^{2}G (985 psig) in steam generators. 2. Not required to be met in MODE 4 when steam generator is relied upon for heat removal. ---------- Verify each AFW pump starts automatically on an actual or simulated actuation signal.		
	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.	SR 3.7.5.5 Verify proper alignment of required flow paths of each train of each AFW division by verifying flow from the associated auxiliary feedwater storage tank to the associated steam generator.	AFW is supplied from its exclusive AFWST in APR1400 design.	
3.7.6 Condensate Storage Tank (CST)	LCO 3.7.6 The CST shall be OPERABLE.	LCO 3.7.6 Two AFWSTs shall be OPERABLE.	Design concept and configuration for AFWS are different between NUREG-1432 and APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
			- NUREG-1432: A common CST is 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 backup water supply and the other AFWST. AND A.2 Restore AFWST to OPERABLE status.		
	SURVEILLANCE SR 3.7.6.1 Verify CST level is ≥ [350,000] gal.	SURVEILLANCE SR 3.7.6.1 Verify each AFWST level is ≥ 1,524,165 L (400,000 gal).		
3.7.7 Component Cooling Water (CCW) System	LCO 3.7.7 Two CCW trains shall be OPERABLE.	LCO 3.7.7 Two component cooling water (CCW) divisions shall be OPERABLE.	"Train" is changed to "Division".	
	REQUIRED ACTION A.1 ----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for shutdown cooling made inoperable by	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.	This is an intrinsic design characteristic of APR1400. "Train" is changed to "Division".	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	CCW. ---------- Restore CCW train to OPERABLE status.	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.		
	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)	LCO 3.7.8 Two SFS trains shall be OPERABLE.	LCO 3.7.8 Two ESWS divisions shall be OPERABLE.	"Train" is changed to "Division".	
	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	
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 COMPLETION TIMEs are changed.
	B. Required Action and associated Completion Time of Condition A	B. [Required Action and associated Completion Time of Condition A	See III.7.2.1	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	or B not met.	not met. OR] UHS inoperable [for reasons other than Condition A.]		
	---------REVIEWER'S NOTES-------- The [ ]°F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit. ---------- 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 ≥ [7.90 m (25.93 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 Technical Specifications (Rev. 3)	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)].		
	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 correct position.]	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	
	None	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.]		
	None	SR 3.7.9.6 [Verify each cooling tower fan starts automatically on an actual or simulated actuation signal.]		
3.7.10 Essential Chilled Water (ECW)	3.7.10 Essential Chilled Water (ECW)	3.7.10 Essential Chilled Water System (ECWS)	"Train" is changed to "Division".	
	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	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
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 Heating, Ventilation, and Air Conditioning (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 3.7.11 Two CREACS trains shall be OPERABLE.	LCO 3.7.11 Two Control Room Emergency Makeup Air Cleaning System (CREACS) divisions and two Control Room Supply and Return System (CRSRS) divisions of the CRHS shall be OPERABLE.	LCO 3.7.11 and LCO 3.7.12 of NUREG-1432 are combined into LCO 3.7.11 of APR1400.	
	APPLICABILITY During movement of [recently] irradiated fuel assemblies.	APPLICABILITY During movement of irradiated fuel assemblies.		
	CONDITION A. One CREACS train inoperable for reasons other than Condition B.	CONDITION A. One CREACS division inoperable for reasons other than Condition C.		
	None	B. One CRSRS division inoperable. REQUIRED ACTION B.1 Restore CRSRS division to OPERABLE status. COMPLETION TIME 7 days		
	B. One or more CREACS trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4. REQUIRED ACTION B.2 Verify mitigating actions	C. One or two CREACS divisions inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4. REQUIRED ACTION C.2 Verify mitigating actions to		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.	ensure CRE occupant exposures to radiological, [toxic gas,] and smoke hazards will not exceed limits.		
	C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4. REQUIRED ACTION C.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	D. Required Action and associated Completion Time of Condition A, B, or C not met in MODE 1, 2, 3 or 4. REQUIRED ACTION D.2 None Be in MODE 5.	See II.3.3	
	D. Required Action and associated Completion Time of Condition A not met [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies. REQUIRED ACTION D.1 ----------NOTE---------- Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. ---------- Place OPERABLE CREACS train in emergency radiation protection mode. OR D.2 Suspend movement of [recently] irradiated fuel assemblies.	E. Required Action and associated Completion Time of Condition A or B not met [in MODE 5 or 6, or] during movement of irradiated fuel assemblies. REQUIRED ACTION [----------NOTE---------- Place CRHS in toxic gas isolation mode if automatic transfer to toxic gas isolation mode is inoperable. ----------] E.1 Place CREACS and CRSRS of an OPERABLE CRHS division in emergency mode. OR E.2[.1] Suspend movement of irradiated fuel assemblies.	The NOTE for toxic gas isolation mode is enclosed in brackets as a COL action item in APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		[AND E.2.2 Suspend operations with a potential for releasing radioactivity from the Gaseous Radwaste System.	The bracketed Required ACTION E.2.2 is added as a COL action item in APR1400.	
	E. Two CREACS trains inoperable [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies. OR One or more CREACS trains inoperable due to an inoperable CRE boundary [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies. REQUIRED ACTION E.1 Suspend movement of [recently] irradiated fuel assemblies.	F. Two CREACS divisions inoperable [in MODE 5 or 6, or] during movement of irradiated fuel assemblies. OR One or two CREACS divisions inoperable due to inoperable CRE boundary [in MODE 5 or 6, or] during movement of irradiated fuel assemblies. REQUIRED ACTION F.1 Suspend movement of irradiated fuel assemblies. [AND F.2 Suspend operations with a potential for releasing radioactivity from the Gaseous Radwaste System.	The bracketed Required ACTION F.2 is added as a COL action item in APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	F. Two CREACS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	G. Two CREACS divisions inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition C. OR Two CRSRS divisions inoperable in MODE 1, 2, 3, or 4.		
	SURVEILLANCE SR 3.7.11.1 Operate each CREACS train for [≥ 10 continuous hours with heaters operating or (for systems without heaters) ≥ 15 minutes].	SURVEILLANCE SR 3.7.11.1 Operate each CREACS division for ≥ 15 minutes with heaters operating.	TSTF-522-A, Rev. 0 (Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month) is applied to APR1400 NRC DCD Technical Specifications.	
	SR 3.7.11.3 Verify each CREACS train actuates on an actual or simulated actuation signal.	SR 3.7.11.3 Verify active components in each CRHS division actuate on an actual or simulated actuation signal.		
	None	SR 3.7.11.5 Verify each CRSRS division has the capacity to remove design heat load.	SR 3.7.11.5 from combining 3.7.11 (CREACS) and 3.7.12 (CREATCS) of NUREG-1432 into 3.7.11 (CRHS) of APR1400 and reflects SR 3.7.12.1 of NUREG-1432.	
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 Heating, Ventilation, and Air Conditioning (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 Two Control Room Emergency Makeup Air Cleaning System	LCO 3.7.11 and LCO 3.7.12 of NUREG-1432 are combined into LCO 3.7.11 of APR1400.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		(CREACS) divisions and two Control Room Supply and Return System (CRSRS) divisions of the CRHS shall be OPERABLE.		
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 Two ECCS PREACS trains shall be OPERABLE. ----------NOTE---------- The ECCS pump room boundary may be opened intermittently under administrative control. ----------	LCO 3.7.12 Two ABCAEES divisions shall be OPERABLE. ----------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 A. One ECCS PREACS train inoperable. B. Two ECCS PREACS trains inoperable due to inoperable ECCS pump room boundary.	CONDITION A. One ABCAEES division inoperable. B. Two ABCAEES divisions inoperable due to inoperable mechanical penetration room or safety-related mechanical equipment room boundary.		
	REQUIRED ACTION A.1 Restore ECCS PREACS train to OPERABLE status. B.1 Restore ECCS pump room boundary to OPERABLE status.	REQUIRED ACTION A.1 Restore inoperable ABCAEES division to OPERABLE status. B.1 Restore mechanical penetration room and safety-related mechanical equipment room boundary to		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	C.2.---------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. ---------- Be in MODE 4.	operable status. C.2. None Be in MODE 5.	See II.3.3	
	SURVEILLANCE SR 3.7.13.1 Operate each ECCS PREACS train for [≥ 10 continuous hours with heaters operating or (for systems without heaters) ≥ 15 minutes].	SURVEILLANCE SR 3.7.12.1 Operate each ABCAEES division for ≥ 15 minutes with heaters operating.	TSTF-522-A, Rev. 0 (Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month) is applied to APR1400 NRC DCD Technical Specifications.	
	SR 3.7.13.4 Verify one ECCS PREACS train can maintain a negative pressure ≥ [ ] inches water gauge relative to atmospheric pressure during the [post accident] mode of operation at a flow rate of ≤ [20,000] cfm.	SR 3.7.12.4 Verify the mechanical penetration rooms and the safety-related mechanical equipment rooms can be maintained at a pressure of ≤ -6.35 mm (-0.25 inches) water gauge with respect to the adjacent areas using one ABCAEES division during post-accident mode of operation at a flow rate of ≤ 5,097 cmh (3,000 cfm) within 300 seconds after a start signal.		
	SR 3.7.13.5 [Verify each ECCS PREACS filter bypass damper can be opened.	None	The filter bypass damper is not used in ABCAEES of APR1400.	
3.7.14 Fuel Building Air Cleanup System (FBACS)	LCO 3.7.14 Two FBACS trains shall be OPERABLE. APPLICABILITY [MODES 1, 2, 3, and 4,] During movement of [recently] irradiated fuel assemblies.	LCO 3.7.13 Two FHAEES divisions shall be OPERABLE APPLICABILITY During movement of irradiated fuel assemblies in the fuel handling area.	"Train" is changed to "Division".	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	CONDITION A. One FBACS train inoperable. B. Two FBACS trains inoperable due to inoperable fuel building boundary in MODE 1, 2, 3, or 4. 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. D. Required Action and Associated Completion Time [of Condition A] not met during movement of [recently] irradiated fuel assemblies in the fuel building. E. Two FBACS trains inoperable during movement of [recently] irradiated fuel assemblies in the fuel building.	CONDITION A. One FHAEES division inoperable. None None B. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in fuel handling area. C. Two FHAEES divisions inoperable during movement of irradiated fuel assemblies in fuel handling area.		Related REQUIRED ACTIONs and COMPLETION TIMEs are deleted.
	SURVEILLANCE SR 3.7.14.1 Operate each FBACS train for [≥ 10 continuous hours with heaters operating or (for systems without heaters) ≥ 15 minutes].	SURVEILLANCE SR 3.7.13.1 Operate each FHAEES division for ≥ 15 minutes with heaters operating.	TSTF-522-A, Rev. 0 (Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month) is applied to APR1400 NRC DCD Technical Specifications.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	SR 3.7.14.4 Verify one FBACS train can maintain a negative pressure ≥ [ ] inches water gauge with respect to atmospheric pressure, during the [post accident] mode of operation at a flow rate ≤ [3000] cfm.	SR 3.7.13.4 Verify one FHAEES division can maintain a slightly negative pressure with respect to atmospheric pressure during post-accident mode of operation at a flow rate of 8,495 cmh (5,000 cfm).		
	SR 3.7.14.5 [Verify each FBACS filter bypass damper can be opened.	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 intermittently under administrative control. ----------	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.	
	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	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
			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 (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. ACTIONS CONDITION	LCO 3.7.15 The spent fuel pool (SFP) boron concentration shall be ≥ 2,150 ppm and the SFP B-10 isotopic concentration shall be ≥ 19.9% (atomic percent). ACTIONS ----------NOTE---------- LCO 3.0.3 is not applicable. ---------- CONDITION	This is an intrinsic design characteristic of APR1400.	This item is equivalent to 3.7.15 Spent Fuel Pool Boron Concentration of APR1400.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	A. Spent fuel pool boron concentration not within limit. REQUIRED ACTION ----------NOTE---------- LCO 3.0.3 is not applicable. ---------- A.1 Suspend movement of fuel assemblies in the fuel storage pool. AND A.2.1 Initiate action to restore fuel storage pool boron concentration to within limit. OR A.2.2 Initiate action to perform a fuel storage pool verification. SURVEILLANCE None	A. Spent fuel pool boron concentration not within limits. OR Spent fuel pool B-10 isotopic concentration not within limits. REQUIRED ACTION A.1 Suspend movement of fuel assemblies in spent fuel pool. AND A.2.1 Initiate action to restore spent fuel pool boron concentration and B-10 isotopic concentration to within limits. OR A.2.2 Initiate action to perform a spent fuel pool verification. SURVEILLANCE SR 3.7.15.2 Verify isotopic concentration of B-10 in the SFP is ≥ 19.9% (atomic percent).		
3.7.18 Spent Fuel Pool Storage	REQUIRED ACTION A.1 ----------NOTE---------- LCO 3.0.3 is not applicable.	REQUIRED ACTION A.1 ----------NOTE---------- LCO 3.0.3 is not applicable.	The action is defined for the storage location or moving destination of noncomplying fuel.	This item is equivalent to 3.7.16 Spent Fuel

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	---------- Initiate action to move the noncomplying fuel assembly from [Region 2].	---------- Initiate action to move the noncomplying fuel from Region II to Region I.		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 [c. Automatic load sequencers for Train A and Train B.]	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 c. Four automatic load sequencers for EDG A, EDG B, EDG C, and EDG D.	See III.4.2.1.	
	ACTIONS ----------NOTE---------- LCO 3.0.4.b is not applicable to DGs. ----------	ACTIONS None	See III.4.2.1.	
	CONDITION B. One [required] DG inoperable.	CONDITION B. One or two EDGs in one division inoperable.	See III.4.2.1.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	D. One [required] offsite circuit inoperable. AND One [required] DG inoperable.	D. One offsite circuit inoperable. AND One or two EDGs in one division inoperable.	See III.4.2.1.	
	E. Two [required] DGs inoperable.	E. One or two EDGs in each division inoperable.	See III.4.2.1.	
	F. ----------NOTE---------- [This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event. --- One [required] [automatic load sequencer] inoperable.	F. None One automatic load sequencer inoperable.		
	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 two EDGs in each division inoperable	See III.4.2.1. .	
	REQUIRED ACTION G.2.---------NOTE---------- LCO 3.0.4.a is not applicable when entering MODE 4. --- Be in MODE 4.	REQUIRED ACTION G.2. None Be in MODE 5.	See II.3.3	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	SURVEILLANCE SR 3.8.1.2 Verify each DG starts from standby conditions and achieves steady state voltage ≥ [3740] V and ≤ [4580] V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	SURVEILLANCE SR 3.8.1.2 Verify each EDG starts from standby conditions and achieves steady state voltage ≥ 3,744 V and ≤ 4,576 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.		
	SR 3.8.1.3 Verify each DG is synchronized and loaded, and operates for ≥ 60 minutes at a load ≥ [4500] kW and ≤ [5000] kW.	SR 3.8.1.3 Verify each EDG is synchronized and loaded, and operates for ≥ 60 minutes at a load ≥ 90% rating and ≤ 100% rating.		
	SR 3.8.1.4 Verify each day tank [and engine mounted tank] contains ≥ [220] gal of fuel oil.	SR 3.8.1.4 Verify each day tank contains ≥ [2,404 L (635 gal)] of fuel oil.	See III.4.2.3. 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 3.8.1.5 Check for and remove accumulated water from each day tank [and engine mounted tank].	SR 3.8.1.5 Check for and remove accumulated water and sediment from each day tank and engine mounted tank.		
	SR 3.8.1.7 a. In ≤ [10] seconds, voltage ≥ [3740] V and frequency ≥ [58.8] Hz and b. Steady state voltage ≥ [3740] V, and ≤ [4580] V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	SR 3.8.1.7 a. In ≤ 17 seconds, voltage ≥ 3,744 V and frequency ≥ 58.8 Hz, and b. Steady state voltage ≥ 3,744 V, and ≤ 4,576 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	See III.4.2.3.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	SR 3.8.1.9 b. Within [3] seconds following load rejection, the voltage is ≥ [3740] V and ≤ [4580] V, and	SR 3.8.1.9 b. Within 3 seconds following load rejection, the voltage is ≥ 3,744 V and ≤ 4,576 V, and		
	SR 3.8.1.10 Verify each DG does not trip, and voltage is maintained ≤ [5000] V during and following a load rejection of ≥ [4500] kW and ≤ [5000] kW.	SR 3.8.1.10 Verify each EDG does not trip, and voltage is maintained ≤ 4,576 V during and following a load rejection of ≥ 90% rating and ≤ 100% rating.		
	SR 3.8.1.11 ----------NOTES---------- 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- c. 1. Energizes permanently connected loads in ≤ [10] seconds, c. 3. Maintains steady state voltage ≥ [3740] V and ≤ [4580] V,	SR 3.8.1.11 ----------NOTES---------- 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- c. 1. energizes permanently-connected loads in ≤ 19 seconds, c. 3. maintains steady state voltage ≥ 3744 V and ≤ 4576 V,	See III.4.2.3.	
	SR 3.8.1.12 ----------NOTES---------- 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may	SR 3.8.1.12 ----------NOTES---------- 2. [This Surveillance shall not be performed in MODE 1 or 2. However, portions of the Surveillance may be performed	See III.4.2.3.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- a. In ≤ [10] seconds after auto-start and during tests, achieves voltage ≥ [3740] V and frequency ≥ [58.8] Hz, b. Achieves steady state voltage ≥ [3740] V and ≤ [4580] V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz,	to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.] ---------- a. In ≤ 17 seconds after auto-start and during tests, achieves voltage ≥ 3,744 V and frequency ≥ 58.8 Hz, b. Achieves steady state voltage ≥ 3744 V and ≤ 4576 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz,		
	SR 3.8.1.13 ----------NOTE---------- [This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.] ----------	SR 3.8.1.13 ----------NOTE---------- [This Surveillance shall not be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.] ----------		
	SR 3.8.1.14 ----------NOTES---------- 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY	SR 3.8.1.14 ----------NOTES---------- 2. This Surveillance shall not be performed in MODE 1 or 2. However, this Surveillance may be performed to reestablish OPERABILITY provided an		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- a. For ≥ [2] hours loaded ≥ [5250] kW and ≤ [5500] kW and b. For the remaining hours of the test loaded ≥ [4500] kW and ≤ [5000] kW.	assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- a. For ≥ 2 hours loaded ≥ 105% rating and ≤ 110% rating and; b. For the remaining hours of the test loaded ≥ 90% rating and ≤ 100% rating.		
	SR 3.8.1.15 ----------NOTES---------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ [2] hours loaded ≥ [4500] kW and ≤ [5000] kW. Momentary transients outside of load range do not invalidate this test. ---------- a. In ≤ [10] seconds, voltage ≥ [3740] V and frequency ≥ [58.8] Hz and b. Steady state voltage ≥ [3740] V and ≤ [4580] V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	SR 3.8.1.15 ----------NOTES---------- 1. This Surveillance shall be performed within 5 minutes of shutting down the EDG after the EDG has operated in ≥ 2 hours loaded ≥ 90% rating and ≤ 100% rating. Momentary transients outside of load range do not invalidate this test. ---------- a. In ≤ 17 seconds, voltage ≥ 3,744 V and frequency ≥ 58.8 Hz. b. Steady state voltage ≥ 3,744 V and ≤ 4,576 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	See III.4.2.3.	
	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.4.2.3.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	c. 3. achieves steady state voltage ≥ [3740] V and ≤ [4580] V,	c. 3. achieves steady state voltage ≥ 3,744 V and ≤ 4,576 V,		
	SR 3.8.1.20 a. In ≤ [10] seconds, voltage ≥ [3740] V and frequency ≥ [58.8] Hz and b. Steady state voltage ≥ [3740] V and ≤ [4580] V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	SR 3.8.1.20 a. In ≤ 17 seconds, voltage ≥ 3,744 V and frequency ≥ 58.8 Hz and b. Steady state voltage ≥ 3,744 V and ≤ 4,576 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	See III.4.2.3.	
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. APPLICABILITY During movement of [recently] irradiated fuel assemblies.	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. APPLICABILITY During movement of irradiated fuel assemblies.	See III.4.2.1.	[recently] irradiated changed to irradiated.
	CONDITION B. One required DG inoperable.	CONDITION B. One or two required EDGs in 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 < [40.77 kg/cm^{2}G (580 psig)] and ≥ [8.78 kg/cm^{2}G (125 psig)].	See III.4.2.3. 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.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	SURVEILLANCE SR 3.8.3.4 Verify each DG air start receiver pressure is ≥ [225] psig.	SURVEILLANCE SR 3.8.3.4 Verify each EDG air start receiver pressure is ≥ [40.77 kg/cm^{2}G (580 psig)].	See III.4.2.3. 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.	
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	
	SURVEILLANCE 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.	SURVEILLANCE 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.4.2.3.	
3.8.5 DC Sources – Shutdown	LCO 3.8.5 [One DC electrical power subsystem shall be OPERABLE.] -------REVIEWER'S NOTE---------- This second option above applies for plants having a pre-ITS licensing basis (CTS) for electrical power requirements during shutdown conditions that required	LCO 3.8.5 None		[recently] irradiated changed to irradiated.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	only one DC electrical power subsystem to be OPERABLE. Action A and the bracketed optional wording in Condition B are also eliminated for this case. The first option above is adopted for plants that have a CTS requiring the same level of DC electrical power subsystem support as is required for power operating conditions. ---------- APPLICABILITY During movement of [recently] irradiated fuel assemblies.	 APPLICABILITY During movement of irradiated fuel assemblies.		
3.8.6 Battery Parameters	-	Same as NUREG-1432		Train A and Train B electrical power Subsystem changed to Division I and Division II. Some editorial differences have been introduced in CONDITIONS A, C, and F.
3.8.7 Inverters – Operating	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	Train A and Train B changed to Division I and Division II. In addition to the change from Train A and B to Division I and Division II, the LCO was modified to

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
				specify the number of inverters that are required.
3.8.8 Inverters – Shutdown	LCO 3.8.8 [One] inverter[s] shall be OPERABLE.] -------REVIEWER'S NOTE---------- This second option above applies for plants having a pre-ITS licensing basis (CTS) for electrical power requirements during shutdown conditions that required only [one] inverter to be OPERABLE. The "[or more]" optional wording in Condition A is also eliminated for this case. The first option above is adopted for plants that have a CTS requiring the same level of DC electrical power subsystem/inverter support as is required for power operating conditions. ---------- APPLICABILITY During movement of [recently] irradiated fuel assemblies.	LCO 3.8.8 None APPLICABILITY During movement of irradiated fuel assemblies.		[recently] irradiated changed to irradiated.
3.8.9 Distribution Systems – Operating	-	Same as NUREG-1432		Train A and Train B changed to Division I and Division II
3.8.10 Distribution Systems – Shutdown	APPLICABILITY During movement of [recently] irradiated fuel assemblies.	APPLICABILITY During movement of irradiated fuel assemblies.		[recently] irradiated changed to irradiated.
3.9 REFUELING OPERATIONS				

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
3.9.1 Boron Concentration	-	Same as NUREG-1432		Refueling cavity changed to refueling pool
3.9.2 Nuclear Instrumentation	LCO 3.9.2 Two source range monitors (SRMs) shall be OPERABLE.	LCO 3.9.2 Two startup channels of the Ex-core Neutron Flux Monitoring System (ENFMS) shall be OPERABLE.		SRM changed to startup channels of ENFMS
3.9.3 Containment Penetrations	LCO 3.9.3 ----------NOTE---------- Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls. ---------- APPLICABILITY None During movement of [recently] irradiated fuel assemblies within containment.	LCO 3.9.3 None APPLICABILITY During CORE ALTERATIONS, During movement of irradiated fuel assemblies within containment.		
	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.		
	SURVEILLANCE SR 3.9.3.2 ----------NOTE----------	SURVEILLANCE SR 3.9.3.2 None		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	Not required to be met for containment purge and exhaust valve(s) in penetrations closed to comply with LCO 3.9.3.c.1. ----------			
	FREQUENCY SR 3.9.3.1 None 7 days	FREQUENCY SR 3.9.3.1 Within 100 hours prior to the start of movement of irradiated fuel within containment AND Once per 7 days during CORE ALTERATIONS or movement of irradiated fuel within containment	Conservative surveillance frequency is used in APR1400.	
3.9.4 Shutdown Cooling (SDC) and Coolant Circulation – High Water Level	REQUIRED ACTION A.4 Close equipment hatch and secure with [four] bolts. AND A.5 Close one door in each air lock. AND A.6.1 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.	REQUIRED ACTION A.4 Place the containment building penetrations in the required status as specified in LCO 3.6.7. None	Details about actions of containment building penetrations exist in LCO 3.6.7. Therefore Required Action A.4 refers to LCO 3.6.7.	For better coordination between TS 3.9.4 and TS 3.6.7, the required action is described briefly.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	OR A.6.2 Verify each penetration is capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System.			
	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 SC 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 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 APR1400.
	SURVEILLANCE None	SURVEILLANCE SR 3.9.4.2 Verify required SC train piping locations susceptible to gas accumulation are sufficiently filled with water.	TSTF-523 (Managing Gas Accumulation) is applied to APR1400 Technical Specification.	
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	LCO 3.9.5 The heat removal system shall be in the following status: a. Two shutdown cooling (SC) trains shall be OPERABLE and one SC train shall be in operation. b. When Reactor Coolant System (RCS) level is < 38.72 m (127 ft 1/4 in), the containment spray pump in the same electrical division as an operating SC 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.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	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. ----------			
	CONDITION B. No SDC loop OPERABLE or in operation.	CONDITION B. Two SC trains inoperable. OR No SC train in 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	REQUIRED ACTION B.3 Initiate action to raise RCS level to ≥ 38.72 m (127 ft 1/4 in). AND B.4 Place the containment building penetrations in the required status as specified in LCO 3.6.7.	This enhances safety and prevents boron dilution event during reduced inventory operation. 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 Technical Specifications (Rev. 3)	Justification	Remark
	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.			
	CONDITION None	CONDITION C. Containment spray pump in the same electrical division as an operating SC train inoperable with RCS level < 38.72 m (127 ft 1/4 in).	See III.5.2.3	
	REQUIRED ACTION None	REQUIRED ACTION C.1 If the containment spray pump in the same electrical division as the alternate SC train is OPERABLE, initiate action to place the alternate SC train in operation. COMPLETION TIME Immediately AND REQUIRED ACTION C.2 Monitor SC System performance. COMPLETION TIME Every 30 minutes AND	See III.5.2.3	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		REQUIRED ACTION C.3 Restore containment spray pump to OPERABLE status. COMPLETION TIME 48 hours		
	CONDITION None	CONDITION D. Required Action and associated Completion Time of Required Action C.3 not met.	See III.5.2.3	
	REQUIRED ACTION None	REQUIRED ACTION D.1 Raise RCS level to ≥ 38.72 m (127 ft 1/4 in). COMPLETION TIME 6 hours	This places the plant in a conservative position with respect to providing decay heat removal.	
	SURVEILLANCE SR 3.9.5.1 Verify required SDC loops are OPERABLE and one SDC loop is in operation.	SURVEILLANCE SR 3.9.5.1 Verify required SC trains are OPERABLE and one SC train is in operation with circulating reactor coolant at a flow rate of ≥ 15,709 L/min (4,150 gpm) at RCS level ≥ 38.72 m (127 ft 1/4 in) or ≥ 14,385 L/min (3,800 gpm) and < 15,710 L/min (4,150 gpm) at RCS level < 38.72 m (127 ft 1/4 in).	This flow value is established to ensure adequate decay heat removal and to prevent boron mixing and also to address the air ingestion in the hot leg when the RCS water inventory is maintained at the lowest permitted level on safety/accident analysis.	An explicit numerical value for SC pump flow is added.
	None	SR 3.9.5.3 Verify correct breaker alignment and indicated power available to the required CS pump. FREQUENCY 24 hours at RCS level < 38.72 m (127 ft 1/4 in)	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.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	None	SR 3.9.5.4 Verify required SC train piping locations susceptible to gas accumulation are sufficiently filled with water. FREQUENCY 31 days	TSTF-523 (Managing Gas Accumulation) is applied to APR1400 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.5.2.4	
	REQUIRED ACTION None A.1 Suspend movement of [recently] irradiated fuel assemblies within containment. None	REQUIRED ACTION A.1 Suspend CORE ALTERATIONS. 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 II.2.1 See III.5.2.4 See III.5.2.4	
Addition - Unborated Water Source Isolation Valve – MODE 6	None	LCO 3.9.7 The CV-186 valve used to isolate unborated water sources shall be secured in the closed position.	This operating restriction is an assumption of initial condition for safety analysis as described in the APR1400 DCD Tier 2,	Related ACTIONS and SURVEILLANCE REQUIREMENTS

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		APPLICABILITY MODE 6	Section 15.4.6.	are added.
Addition - Decay Time	None	LCO 3.9.8 The reactor shall be subcritical for ≥ 100 hours. APPLICABILITY During movement of irradiated fuel assemblies in the reactor pressure vessel.		Related ACTIONS and SURVEILLANCE REQUIREMENTS are added.
4.0 DESIGN FEATURES				
4.1 Site Location	-	Same as NUREG-1432		
4.2 Reactor Core	4.2.1 The reactor shall contain [217] fuel assemblies. Each assembly shall consist of a matrix of [Zircalloy or ZIRLO] fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO2) as fuel material.	4.2.1 The reactor shall contain 241 fuel assemblies. Each assembly shall consist of a matrix of zirconium alloy clad fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO2) as fuel material.	The items reflect APR1400 design.	
	4.2.2 The reactor core shall contain [91] control element assemblies (CEAs). The control material shall be [silver indium cadmium, boron carbide, or hafnium metal] as approved by the NRC.	4.2.2 The reactor core shall contain 81 full strength and 12 part strength control element assemblies (CEAs). The control material of full strength and part strength CEAs shall be boron carbide and Inconel Alloy 625, respectively.	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. K_{eff} ≤ 0.95 if fully flooded with	4.3.1.1 a. Fuel assemblies having a maximum U-235 enrichment of 5 weight percent; b. k_{eff} < 1.0 if flooded with	4.3.1.1 a. The item is specific for APR1400 design. (DCD Tier 2, Section 9.1.1) b. This change is to incorporate	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR],	unborated water and k_{eff} ≤ 0.95 if flooded with water borated to 1231 ppm enriched, which includes an allowance for uncertainties;	SRP 9.1.1 Rev. 3. (DCD Tier 2, Section 9.1.1)	
	[c. A nominal [9] inch center to center distance between fuel assemblies placed in [the high density fuel storage racks],]	c. A nominal (27.5 cm (10.83 in)) center-to-center distance between fuel assemblies placed in Region I of the spent fuel storage racks;	c. Based on the result of the criticality analysis and the detailed design of the fuel storage racks for APR1400.	
	[d. A nominal [10.4] inch center to center distance between fuel assemblies placed in [the low density fuel storage racks],]	d. A nominal (22.5 cm (8.86 in)) center-to-center distance between fuel assemblies placed in Region II of the spent fuel storage racks;	d. Based on the result of the criticality analysis and the detailed design of the fuel storage racks for APR1400.	
	[e. New or partially spent fuel assemblies with a discharge burnup in the “acceptable range” of Figure [3.7.18-1] may be allowed unrestricted storage in [either] fuel storage rack(s), and]	e. Fuel assemblies with a discharge burnup in the "acceptable domain" of Figure 3.7.16-1 may be allowed unrestricted storage in Region I or Region II of Figure 4.3-1; and		
	[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].]	f. New or partially spent fuel assemblies with a discharge burnup in the "unacceptable domain" of Figure 3.7.16-1 shall be stored only in Region I of Figure 4.3-1.	f. Refer to the response to RAI 12-7977, Question 16-24, Item 14.	
	4.3.1.2 a. Fuel assemblies having a maximum U-235 enrichment of [4.5] weight percent, b. K_{eff} ≤ 0.98 if fully flooded with	4.3.1.2 a. Fuel assemblies having a maximum U-235 enrichment of 5 weight percent; b. k_{eff} ≤ 0.95 if fully flooded with	4.3.1.2 a. The item is specific for APR1400 design. (DCD Tier 2, Section 9.1.1) b. APR1400 criterion is more	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR],	unborated water, or mist, which includes an allowance for uncertainties as described in FSAR Section 9.1 “Fuel Storage and Handling.”;	conservative than that of NUREG-1432. (DCD Tier 2, Section 9.1.1)	
	d. A nominal [10] inch center to center distance between fuel assemblies placed in the storage racks.	d. A nominal center-to-center distance between fuel assemblies placed in the new fuel storage racks of 35.5 cm (14 in).	d. Based on the result of the criticality analysis and the detailed design of the fuel storage racks for APR1400.	
	4.3.2 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation [23 ft].	4.3.2 The spent fuel pool is designed and shall be maintained to prevent inadvertent draining of the pool below a water level of 7 m (23 ft) above the top of the spent fuel storage rack.		
	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.	4.3.3 The spent fuel pool is designed and shall be maintained with a storage capacity limited to no more than 1,792 fuel assemblies.	4.3.3 The item is specific for APR1400 design. (DCD Tier 2, Section 9.1.1)	
	None	Figure 4.3-1	Figure is added for 4.3.1.1.e. and 4.3.1.1.f.	
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		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
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 gpm] per SG. 5.5.9.d.1 Inspect 100% of the tubes in each SG during the first refueling outage following SG replacement. 5.5.9.d.2 [Inspect 100% of the tubes at sequential periods of 60 effective full power months. The first sequential period shall be considered to begin after the first inservice inspection of the SGs. No SG shall operate for more than 24 effective full power months or one refueling outage (whichever is less) without being inspected.] Inspect 100% of the tubes at sequential periods of 120, 90, and, thereafter, 60 effective full power months. The first sequential period	5.5.9 Steam Generator (SG) Program b.2. ~ Leakage is not to exceed 1.14 L/min (0.3 gpm) per SG. 5.5.9.d.1 Inspect 100% of the tubes in each SG during the first refueling outage following SG installation. 5.5.9.d.2 After the first refueling outage following SG installation, inspect each SG at least every 72 effective full power months or at least every third refueling outage (whichever results in more frequent inspections). In addition, the minimum number of tubes inspected at each scheduled inspection shall be the number of tubes in all SGs divided by the number of SG inspection outages scheduled in each inspection period as defined in a, b, c and d below. If a degradation	APR1400 design characteristics are reflected. APR1400 doesn't have a repair method approved by NRC. TSTF-510 Rev. 2 (Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection) is applied to APR1400 NRC DC Technical Specifications.	Plugging, not repair, is specified for APR1400. Operational leakage is specified in LCO 3.4.12 for APR1400. Alternate tube repair criteria are not listed. Inspection descriptions differ.

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	shall be considered to begin after the first inservice inspection of the SGs. In addition, inspect 50% of the tubes by the refueling outage nearest the midpoint of the period and the remaining 50% by the refueling outage nearest the end of the period. No SG shall operate for more than 48 effective full power months or two refueling outages (whichever is less) without being inspected.] Inspect 100% of the tubes at sequential periods of 144, 108, 72, and, thereafter, 60 effective full power months. The first sequential period shall be considered to begin after the first inservice inspection of the SGs. In addition, inspect 50% of the tubes by the refueling outage nearest the midpoint of the period and the remaining 50% by the refueling outage nearest the end of the period. No SG shall operate for more than 72 effective full power months or three refueling outages (whichever is less) without being inspected.]	assessment indicates the potential for a type of degradation to occur at a location not previously inspected with a technique capable of detecting this type of degradation at this location and that may satisfy the applicable tube plugging criteria, the minimum number of locations inspected with such a capable inspection technique during the remainder of the inspection period may be prorated. The fraction of locations to be inspected for this potential type of degradation at this location at the end of the inspection period shall be no less than the ratio of the number of times the SG is scheduled to be inspected in the inspection period after the determination that a new form of degradation could potentially be occurring at this location divided by the total number of times the SG is scheduled to be inspected in the inspection period. Each inspection period defined below may be extended up to 3 effective full power months to include a SG inspection outage in an inspection period and the subsequent inspection period begins at the conclusion of the included SG inspection outage. a) After the first refueling outage following SG installation, inspect 100% of the tubes		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		during the next 144 effective full power months. This constitutes the first inspection period; b) During the next 120 effective full power months, inspect 100% of the tubes. This constitutes the second inspection period; c) During the next 96 effective full power months, inspect 100% of the tubes. This constitutes the third inspection period; and d) During the remaining life of the SGs, inspect 100% of the tubes every 72 effective full power months. This constitutes the fourth and subsequent inspection periods.		
	5.5.9.d.3 ~(whichever is less)	5.5.9.d.3 ~(whichever results in more frequent inspections)		
	5.5.9.f Provisions for SG tube repair methods. [etc.]	None		
	5.5.16 b. The calculated peak containment internal pressure for the design basis loss of coolant accident, Pa is [45 psig]. The containment design	5.5.16 b. The calculated peak containment internal pressure for the design basis loss of coolant accident, P_a is 3.60 kg/cm^{2}G (51.21 psig). The		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	pressure is [50 psig]. c. The maximum allowable containment leakage rate, L_a, at P_a, shall be [ ]% of containment air weight per day.	containment design pressure is 60 psig. c. The maximum allowable containment leakage rate, L_a at P_a, shall be 0.1% of containment air weight per day.		
	5.5.19 None None	5.5.19 f. The difference between the instrument channel trip setting as-found value and the previously recorded as-left value for each Technical Specification required automatic protection instrumentation function shall be trended and evaluated to verify that the instrument channel is functioning in accordance with its design basis. g. The program shall establish a document containing the current value of the specified NTSP, AV, AFT, and ALT for each Technical Specification required automatic protection instrumentation function and references to the calculation documentation. Changes to this document shall be governed by the regulatory requirement of 10 CFR 50.59. In addition, changes to the specified NTSP, AV, AFT, and ALT values shall be governed by the approved setpoint methodology. This document, including any		

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
		revisions or supplements, shall be provided upon issuance to the NRC.		
	5.5.20 [Surveillance Frequency Control Program	None	The Surveillance Frequency Control Program of the NUREG-1432 has not been applied to the APR1400 plants.	
5.6 Reporting Requirements	5.6.3 CORE OPERATING LIMITS REPORT -------REVIEWER'S NOTE---------- Licensees that have received prior NRC approval to relocate Topical Report revision numbers and dates to licensee control need only list the number and title of the Topical Report, and the COLR will contain the complete identification for each of the Technical Specification referenced Topical Reports used to prepare the COLR (i.e., report number, title, revision, date, and any supplements). See NRC ADAMS Accession No: ML110660285 for details. ----------	5.6.3 CORE OPERATING LIMITS REPORT None		
	5.6.4 RCS Pressure and Temperature Limits Report -------REVIEWER'S NOTE---------- Licensees that have received prior NRC approval to relocate Topical Report revision numbers and dates to licensee control need only list	5.6.4 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR) None		$2\sigma_{\Delta}$ changed to 2σ

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	the number and title of the Topical Report, and the PTLR will contain the complete identification for each of the Technical Specification referenced Topical Reports used to prepare the PTLR (i.e., report number, title, revision, date, and any supplements). See NRC ADAMS Accession No: ML110660285 for details. ---------- 3. Low Temperature Overpressure Protection (LTOP) System lift setting limits for the Power Operated Relief Valves (PORVs), developed using NRC approved methodologies may be included in the PTLR. 7. ~where the predicted increase in RT_{NDT} is based on the mean shift in RT_{NDT} plus the two standard deviation value ($2\sigma_{\Delta}$) specified in Regulatory Guide 1.99, Revision 2. If the measured value exceeds the predicted value (increase in RT_{NDT} + $2\sigma_{\Delta}$),	 3. Low Temperature Overpressure Protection (LTOP) System lift setting limits for the Pilot Operated Safety Relief Valves (POSRVs), developed using NRC approved methodologies may be included in the PTLR. 7. ~where the predicted increase in RT_{NDT} is based on the mean shift in RT_{NDT} plus the two standard deviation value (2σ) specified in Regulatory Guide 1.99, Revision 2. If the measured value exceeds the predicted value (increase in RT_{NDT} + 2σ),		
	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)	5.6.5 Accident Monitoring Report When a report is required by Condition B or F of LCO 3.3.11, "Accident Monitoring	The name for the instrumentation is changed according to RG 1.97 Rev. 4.	

Number (NUREG-1432 Contents)	Standard Technical Specifications (NUREG-1432, Rev. 4)	APR1400 Technical Specifications (Rev. 3)	Justification	Remark
	Instrumentation,	Instrumentation (AMI),		
	5.6.7 Steam Generator Tube Inspection Report b. Active degradation mechanisms found, d. Location, orientation (if linear), and measured sizes (if available) of service induced indications, f. Total number and percentage of tubes plugged [or repaired] to date, [h. The effective plugging percentage for all plugging [and tube repairs] in each SG, and] [i. Repair method utilized and the number of tubes repaired by each repair method.]	5.6.7 Steam Generator Tube Inspection Report b. Degradation mechanisms found, d. Location, orientation (if linear), and measured sizes (if available) of service induced indications, f. The number and percentage of tubes plugged to date, and the effective plugging percentage in each steam generator, and None None	TSTF-510 Rev. 2 (Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection) is applied to APR1400 NRC DCD Technical Specifications. NUREG-1432 5.6.7.f. and h. combined into f. for APR1400.	Indications changed to degradations
5.7 High Radiation Area	-	Same as NUREG-1432		

IV. CONCLUSIONS

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

V. REFERENCES

[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

[3] NUREG-0800, “Branch Technical Position 5-4, Design Requirements of the Residual Heat Removal System”, Rev. 4.0, March 2007

[4] NUMARC 93-01, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants”, Rev. 4.0, December 2010

[5] WCAP-16364-NP, “Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)”, Rev. 2.0, May 2010

[6] NRC RG 1.97, “Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants”, Rev. 4.0, June 2006

[7] NUREG-0800, “9.1.1 Criticality Safety of Fresh and Spent Fuel Storage and Handling”, Rev. 3.0, March 2007