Chapter 16

FPL

IFSAR Table of Contents

IFSAR Formatting Legend

Color	Description
	Original Westinghouse AP1000 DCD Revision 19 content (part of plant-specific DCD)
	Departures from AP1000 DCD Revision 19 content (part of plant-specific DCD)
	Standard FSAR content
	Site-specific FSAR content
	Linked cross-references (chapters, appendices, sections, subsections, tables, figures, and references)

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16.1 Technical Specifications

16.1.1 Introduction to Technical Specifications

LCO Selection Criteria

The screening criteria of 10CFR50.36, c(2)(ii) stated below has been used to identify the structures, systems, and parameters for which Limiting Conditions for Operation (LCOs) have been included in the AP1000 Technical Specifications.

1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

2. A process variable, design feature, or operating restriction that is an initial condition of a Design Basis Accident or Transient Analyses that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

3. A structure, system or component that is part of the primary success path and which functions or actuates to mitigate a Design Basis Accident or Transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

4. Structures, systems, and components which operating experience or probabilistic safety assessment has shown to be important to public health and safety.

Technical Specification Content

The content of the AP1000 Technical Specifications meets the 10CFR50.36 requirements and is consistent with the Technical Specification Improvement Program, NUREG 1431, Rev. 2, to the maximum extent possible. The content differs from NUREG 1431 only as necessary to reflect technical differences between the “typical” Westinghouse design and the AP1000 design.

<u>Completion Times and Surveillance Frequencies</u>

The Completion Times and Surveillance Frequencies specified in NUREG 1431 have been applied to similar Actions and Surveillances Requirements in AP1000. Refer to Westinghouse letter DCP/NRC0891 for a discussion regarding selection of Completion Times and Surveillance Frequencies for those AP1000 Tech Specs for which no comparable NUREG 1431 system/function exists and for those AP1000 system design differences which lead to deviations from NUREG 1431 Completion Times and Surveillance Frequencies.

<u>Shutdown Completion Times/Mode Definitions</u>

The AP1000 plant design is different from current Westinghouse designs in that the systems normally used for MODE reduction are non-safety systems; and therefore, are <u>not</u> covered by LCO requirements in Technical Specifications. The passive safety systems, which shut down the plant require a longer period of time to accomplish mode changes and can not reduce the RCS temperature to below 200°F.

<u>Combined License Information</u>

The set of generic technical specifications were used as a guide in the development of the plant-specific technical specifications. The preliminary information originally provided in brackets [ ] has been revised with the updated information, including information provided in APP-GW-GLR-064 (Reference 1) and APP-GW-GLN-075 (Reference 2). In accordance with 10 CFR Part 52, Appendix D, Section VIII.C.6, following the issuance of the license, the generic technical specifications have no further effect on the plant-specific technical specifications.

16.1.2 References

1. APP-GW-GLR-064, “AP1000 Generic Technical Specifications Completion,” Westinghouse Electric Company LLC.

2. APP-GW-GLN-075, “AP1000 Generic Technical Specifications for Design Changes,” Westinghouse Electric Company LLC.

3. APP-RXS-Z0R-001, Revision 2, “AP1000 Generic Pressure Temperature Limits Report,” F. C. Gift, September 2008.

16.2 Design Reliability Assurance Program

See Section 17.4 for information on the AP1000 Design Reliability Assurance Program (D-RAP).

16.3 Investment Protection

16.3.1 Investment Protection Short-Term Availability Controls

The importance of nonsafety-related systems, structures and components in the AP1000 has been evaluated. The evaluation uses PRA insights to identify systems, structures and components that are important in protecting the utilities investment and for preventing and mitigating severe accidents. To provide reasonable assurance that these systems, structures and components are operable during anticipated events short-term availability controls are provided. These investment protection systems, structures and components are also included in the D-RAP/OPRAAs (refer to Section 17.4), which provides confidence that availability and reliability are designed into the plant and that availability and reliability are maintained throughout plant life through the use of reliability assurance activities as listed in Subsection 17.4.4. Technical Specifications are not required for these systems, structures and components because they do not meet the selection criteria applied to the AP1000 (refer to Subsection 16.1.1).

Table 16.3-1 lists nonsafety-related systems, structures and components that have investment protection short-term availability controls. This table also lists the number of trains that should be operable and the plant operating MODES when they should be operable. Table 16.3-2 contains the investment protection short-term availability controls. These short-term availability controls define:

– Equipment that should be operable
– Operational MODES when the equipment should be operable
– Testing and inspections that should be used to demonstrate the equipment's operability
– Operational MODES that should be used for planned maintenance operations
– Remedial actions that should be taken if the equipment is not operable

Station procedures govern and control the operability of investment protection systems, structures, and components, in accordance with Table 16.3-2, and provide the operating staff with instruction for implementing required actions when operability requirements are not met. Procedure development is addressed in Section 13.5.

Tables 16.3-1 and 16.3-2 contain defined terms that appear in capitalized type. These terms are defined below.

ACTIONS—shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.

CHANNEL CALIBRATION—shall be the adjustment, as necessary, of the channel so that it responds within the required range and accuracy to known input. The CHANNEL CALIBRATION shall encompass the entire channel, including the required sensor, alarm, interlock, display, and trip functions. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in-place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION shall include an in-place cross calibration that compares the other sensing elements with the recently installed sensing element. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping calibrations or total channel steps so that the entire channel is calibrated.

CHANNEL CHECK—shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.

CHANNEL OPERATIONAL TEST (COT)—shall be the injection of a simulated or TEST (COT) actual signal into the channel as close to the sensor as practicable to verify the OPERABILITY of required alarm, interlock, display, and trip functions. The COT shall include adjustment as necessary, of the required alarm, interlock, and trip setpoints so that the setpoints are within the required range and accuracy.

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 below with fuel in the reactor vessel.

OPERABLE-OPERABILITY—system, subsystem, train, component, or device is OPERABLE or has 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).

16.3.2 Combined License Information

The procedure to control the operability of investment protection systems, structures and components in accordance with Table 16.3-2 is addressed in Subsection 16.3.1.

MODES

MODES	TITLE	REACTIVITY CONDITION (K_{eff})	% RATED THERMAL POWER[(a)]	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	$\geq$ 0.99	> 5	NA
2	Startup	$\geq$ 0.99	$\leq$ 5	NA
3	Hot Standby	< 0.99	NA	> 420
4	Safe Shutdown[(b)]	< 0.99	NA	$420 \geq T_{avg} > 200$
5	Cold Shutdown[(b)]	< 0.99	NA	$\leq$ 200
6	Refueling[(c)]	NA	NA	NA

(a) Excluding decay heat.
(b) All reactor vessel head closure bolts fully tensioned.
(c) One or more reactor vessel head closure bolts less than fully tensioned.

Table 16.3-1 List of Investment Protection Short-term Availability Controls

Systems, Structures, Components	Number Trains (a)	MODES Operation (b)
1.0 Instrumentation Systems		
1.1 DAS ATWS Mitigation	2	1
1.2 DAS ESF Actuation	2	1,2,3,4,5,6 (3)
2.0 Plant Systems		
2.1 RNS	1	1,2,3
2.2 RNS - RCS Open	2	5,6 (2,3)
2.3 CCS - RCS Open	2	5,6 (2,3)
2.4 SWS - RCS Open	2	5,6 (2,3)
2.5 PCS Water Makeup - Long Term Shutdown	1	1,2,3,4,5,6
2.6 MCR Cooling - Long Term Shutdown	1	1,2,3,4,5,6
2.7 I&C Room Cooling - Long Term Shutdown	1	1,2,3,4,5,6
2.8 Hydrogen Ignitors	1	1,2,5,6 (2,3)
3.0 Electrical Power Systems		
3.1 AC Power Supplies	1	1,2,3,4,5
3.2 AC Power Supplies - RCS Open	2 (1)	5,6 (2,3)
3.3 AC Power Supplies - Long Term Shutdown	1	1,2,3,4,5,6
3.4 Non Class 1E DC and UPS System (EDS)	2	1,2,3,4,5,6 (3)

Alpha Notes:

(a) Refers to the number of trains covered by the availability controls.

(b) Refers to the MODES of plant operation where the availability controls apply.

Notes:

(1) 2 of 3 AC power supplies (2 standby diesel generators and 1 offsite power supply).

(2) MODE 5 with RCS open.

(3) MODE 6 with upper internals in place or cavity level less than full.

Table 16.3-2
Investment Protection Short-Term Availability Controls

1.0 Instrumentation Systems

1.1 Diverse Actuation System (DAS) ATWS Mitigation

OPERABILITY: DAS ATWS mitigation function listed in Table 1.1-1 should be operable

APPLICABILITY: MODE 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DAS ATWS Function with one or more required channels inoperable.	A.1 Notify chief nuclear officer or on-call alternate.	72 hours
	AND	
	A.2 Restore required channels to operable status.	14 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE.	1 day
	AND	
	B.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 month

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

SURVEILLANCE REQUIREMENTS

		SURVEILLANCE	FREQUENCY
SR	1.1.1	Perform CHANNEL CHECK on each required channel.	30 hours
SR	1.1.2	Perform CHANNEL OPERATIONAL TEST on each required channel.	92 days
SR	1.1.3	Perform CHANNEL CALIBRATION on each required channel.	24 months
SR	1.1.4	Verify that the MG set field breakers open on demand.	24 months

Table 1.1-1, DAS ATWS Functions

DAS Function	Initiating Signal	Number Installed	Channels Required	Setpoint
Rod Drive MG Set Trip, Turbine Trip and PRHR HX Actuation	SG Wide Range Level - Low	2 per SG	1 per SG	> 27%
	HL Temperature - High	1 per HL	1 per HL	< 650°F

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

1.0 Instrumentation Systems

1.1 DAS ATWS Mitigation

BASES:

The DAS ATWS mitigation function of reactor trip, turbine trip and passive residual heat removal heat exchanger (PRHR HX) actuation should be available to provide ATWS mitigation capability. This function is important based on 10 CFR 50.62 (ATWS Rule) and because it provides margin in the PRA sensitivity performed assuming no credit for nonsafety-related SSCs to mitigate at-power and shutdown events. The margin provided in the PRA study assumes a minimum availability of 90% for this function during the MODES of applicability, considering both maintenance unavailability and failures to actuate.

The DAS uses a 2 out of 2 logic to actuate automatic functions. When a required channel is unavailable the automatic DAS function is unavailable. Subsection 7.7.1.11 provides additional information. The DAS channels listed in Table 1.1-1 should be available.

Automated operator aids may be used to facilitate performance of the CHANNEL CHECK. An automated tester may be used to facilitate performance of the CHANNEL OPERATIONAL TEST.

The DAS ATWS mitigation function should be available during MODE 1 when ATWS is a limiting event. Planned maintenance affecting this DAS function should be performed MODES 3, 4, 5, 6; these MODES are selected because the reactor is tripped in these MODES and ATWS can not occur.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

1.0 Instrumentation Systems

1.2 DAS Engineering Safeguards Features Actuation (ESFA)

OPERABILITY: DAS ESFA functions listed in Table 1.2-1 should be operable

APPLICABILITY: MODE 1, 2, 3, 4, 5,
MODE 6 with upper internals in place or cavity level less than full

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DAS ESFA Functions with one or more required channels inoperable.	A.1 Notify chief nuclear officer or on-call alternate.	72 hours
	AND	
	A.2 Restore required channels to operable status.	14 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE.	1 day
	AND	
	B.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 month

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR	1.2.1	Perform CHANNEL CHECK on each required CHANNEL	30 hours
SR	1.2.2	Perform CHANNEL OPERATIONAL TEST on each required CHANNEL.	92 days
SR	1.2.3	Perform CHANNEL CALIBRATION on each required CHANNEL.	24 months

Table 1.2-1, DAS ESFA Functions

DAS Function	Initiating Signal	Number Installed	Channels Required	Setpoint
PRHR HX Actuation	SG Wide Level	2 per SG	1 per SG	> 27%
	- Low or			
	HL Temp - High	1 per HL	1 per HL	< 650°F
CMT Actuation and RCP trip	Pzr Level	2	2	> 7%
	- Low or			
	SG Wide			
	Level	2 per SG	1 per SG	> 27%
	- Low			
Passive Cont. Cooling and Selected Cont. Isolation Actuation	Cont. Temp -High	2	2	< 200°F

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

1.0 Instrumentation Systems

1.2 DAS ESFA

BASES:

The DAS ESFA functions listed in Table 1.2-1 should be available to provide accident mitigation capability. This function is important because it provides margin in the PRA sensitivity performed assuming no credit for nonsafety-related SSCs to mitigate at-power and shutdown events. The margin provided in the PRA study assumes a minimum availability of 90% for this function during the MODES of applicability, considering both maintenance unavailability and failures to actuate.

The DAS uses a 2 out of 2 logic to actuate automatic functions. When a required channel is unavailable the automatic DAS function is unavailable. Subsection 7.7.1.11 provides additional information. The DAS channels listed in Table 1.2-1 should be available.

Automated operator aids may be used to facilitate performance of the CHANNEL CHECK. An automated tester may be used to facilitate performance of the CHANNEL OPERATIONAL TEST.

The DAS ESFA mitigation functions should be available during MODES 1, 2, 3, 4, 5, 6 when accident mitigation is beneficial to the PRA results. The DAS ESFA should be available in MODE 6 with upper internals in place or cavity level less than full. Planned maintenance affecting these DAS functions should be performed in MODE 6 when the refueling cavity is full; this MODE is selected because requiring DAS ESFA are not anticipated in this MODE.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.1 Normal Residual Heat Removal System (RNS)

OPERABILITY: One train of RNS injection should be operable

APPLICABILITY: MODE 1, 2, 3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required train not operable.	A.1 Notify chief nuclear officer or on-call alternate.	72 hours
	AND	
	A.2 Restore one train to operable status	14 days
B. Required Action and associated Completion Time not met.	B.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE.	1 day
	AND	
	B.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 month

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

SURVEILLANCE REQUIREMENTS

SURVEILLANCE				FREQUENCY
SR	2.1.1	Verify that one RNS pump develops a differential head of 330 feet on recirculation flow		92 days
SR	2.1.2	Verify that the following valves stroke open		92 days
		RNS V011	RNS Discharge Cont. Isolation	
		RNS V022	RNS Suction Header Cont. Isolation	
		RNS V023	RNS Suction from IRWST Isolation	
		RNS V055	RNS Suction from Cask Loading Pit	

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.1 RNS

BASES:

The RNS injection function provides a nonsafety-related means of injecting IRWST water into the RCS following ADS actuations. The RNS injection function is important because it provides margin in the PRA sensitivity performed assuming no credit for nonsafety-related SSCs to mitigate at-power and shutdown events. The margin provided in the PRA study assumes a minimum availability of 90% for this function during the MODES of applicability, considering both maintenance unavailability and failures to operate.

One train of RNS injection includes one RNS pump and the line from the cask loading pit (CLP) to the RCS. One valve in the line between the CLP and the RCS is normally closed and needs to be opened to allow injection. Later on, the RNS suction is switched from the CLP to the IRWST. Two valves in the IRWST line are normally closed and must be opened to allow recirculation. This equipment does not normally operate during MODES 1, 2, 3. Subsection 5.4.7 contains additional information on the RNS.

The RNS injection function should be available during MODES 1, 2, 3 because decay heat is higher and the need for ADS is greater.

Planned maintenance on redundant RNS SSCs should be performed during MODES 1, 2, 3. Such maintenance should be performed on an RNS SSC not required to be available. The bases for this recommendation is that the RNS is more risk important during shutdown MODES when it is normally operating than during other MODES when it only provides a backup to PXS injection.

Planned maintenance on non-redundant RNS valves (such as V011, V022, V023, V055) should be performed to minimize the impact on their RNS injection and their containment isolation capability. Non-pressure boundary maintenance should be performed during MODE 5 with a visible pressurizer level or MODE 6 with the refueling cavity full. In these MODES, these valves need to be open but they do not need to be able to close. Containment closure which is required in these MODES can be satisfied by one normally open operable valve. Pressure boundary maintenance can not be performed during MODES when the RNS is used to cool the core, therefore such maintenance should be performed during MODES 1, 2, 3. Since these valves are also containment isolation valves, maintenance that renders the valves inoperable requires that the containment isolation valve located in series with the inoperable valve has to closed and de-activated. The bases for this recommendation is that the RNS is more risk important during shutdown MODES when it is normally operating than during other MODES when it only provides a backup to PXS injection. In addition, it is not possible to perform pressure boundary maintenance of these valves during RNS operation.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.2 Normal Residual Heat Removal System (RNS) - RCS Open

OPERABILITY: Both RNS pumps should be operable for RCS cooling

APPLICABILITY: MODE 5 with RCS pressure boundary open,
MODE 6 with upper internals in place or cavity level less than full

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pump not operable.	A.1 Initiate actions to increase the water inventory above the core.	12 hours
	AND	
	A.2 Remove plant from applicable MODES	72 hours
B. Required Action and associated Completion Time not met.	B.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE.	1 day
	AND	
	B.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 month

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

SURVEILLANCE REQUIREMENTS

		SURVEILLANCE	FREQUENCY
SR	2.2.1	Verify that one RNS pump is in operation and that each RNS pump operating individually circulates reactor coolant at a flow > 1580 gpm OR Verify that both RNS pumps are in operation and circulating reactor coolant at a flow > 2000 gpm	Within 1 day prior to entering the MODES of applicability

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.2 RNS - RCS Open

BASES:

The RNS cooling function provides a nonsafety-related means to normally cool the RCS during shutdown operations (MODES 4, 5, 6). This RNS cooling function is important during conditions when the RCS pressure boundary is open and the refueling cavity is not flooded because it reduces the probability of an initiating event due to loss of RNS cooling and because it provides margin in the PRA sensitivity performed assuming no credit for nonsafety-related SSCs to mitigate at-power and shutdown events. The RCS is considered open when its pressure boundary is not intact. The RCS is also considered open if there is no visible level in the pressurizer. The margin provided in the PRA study assumes a minimum availability of 90% for this function during the MODES of applicability, considering both maintenance unavailability and failures to operate.

The RNS cooling of the RCS involves the RNS suction line from the RCS HL, the two RNS pumps and the RNS discharge line returning to the RCS through the DVI lines. The valves located in these lines should be open prior to the plant entering reduced inventory conditions. One of the RNS pumps has to be operating; the other pump may be operating or may be in standby. Standby includes the capability of being able to be placed into operation from the main control room. Subsection 5.4.7 contains additional information on the RNS.

Both RNS pumps should be available during the MODES of applicability when the loss of RNS cooling is risk important. If both RNS pumps are not available, the plant should not enter these conditions. If the plant has entered reduced inventory conditions, then the plant should take action to restore full system operation or leave the MODES of applicability. If the plant has not restored full system operation or left the MODES of applicability within 12 hours, then actions need to be initiated to increase the RCS water level to either 20% pressurizer level or to a full refueling cavity.

Planned maintenance affecting this RNS cooling function should be performed in MODES 1, 2, 3 when the RNS is not normally operating. The bases for this recommendation is that the RNS is more risk important during shutdown MODES, especially during the MODES of applicability conditions than during other MODES when it only provides a backup to PXS injection.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.3 Component Cooling Water System (CCS) - RCS Open

OPERABILITY: Both CCS pumps should be operable for RNS cooling

APPLICABILITY: MODE 5 with RCS pressure boundary open,
MODE 6 with upper internals in place or cavity level less than full

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pump not operable.	A.1 Initiate actions to increase the water inventory above the core. AND A.2 Remove plant from applicable MODES.	12 hours 72 hours
B. Required Action and associated Completion Time not met.	B.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE. AND B.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 day 1 month

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR	2.3.1	Verify that one CCS pump is in operation and each CCS pump operating individually provides a CCS flow through one RNS heat exchanger > 2685 gpm OR Verify that both CCS pumps are in operation and the CCS flow through each RNS heat exchanger is > 2685 gpm	Within 1 day prior to entering the MODES of applicability

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.3 CCS - RCS Open

BASES:

The CCS cooling of the RNS HXs provides a nonsafety-related means to normally cool the RCS during shutdown operations (MODES 4, 5, 6). This RNS cooling function is important because it reduces the probability of an initiating event due to loss of RNS cooling and because it provides margin in the PRA sensitivity performed assuming no credit for nonsafety-related SSCs to mitigate at-power and shutdown events. The RCS is considered open when its pressure boundary is not intact. The RCS is also considered open if there is no visible level in the pressurizer. The margin provided in the PRA study assumes a minimum availability of 90% for this function during the MODES of applicability, considering both maintenance unavailability and failures to operate.

The CCS cooling of the RNS involves two CCS pumps and HXs and the CCS line to the RNS HXs. The valves around the CCS pumps and HXs and in the lines to the RNS HXs should be open prior to the plant entering these conditions. One of the CCS pumps and its HX has to be operating. One of the lines to a RNS HX also has to be open. The other CCS pump and HX may be operating or may be in standby. Standby includes the capability of being able to be placed into operation from the main control room. Subsection 9.2.2 contains additional information on the CCS.

Both CCS pumps should be available during the MODES of applicability when the loss of RNS cooling is risk important. If both CCS pumps are not available, the plant should not enter these conditions. If the plant has entered these conditions, then the plant should take action to restore both CCS pumps or to leave these conditions. If the plant has not restored full system operation or left the MODES of applicability within 12 hours, then actions need to be initiated to increase the RCS water level to either 20% pressurizer level or to a full refueling cavity.

Planned maintenance affecting this CCS cooling function should be performed in MODES 1, 2, 3 when the CCS is not supporting RNS operation. The bases for this recommendation is that the CCS is more risk important during shutdown MODES, especially during the MODES of applicability conditions than during other MODES.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.4 Service Water System (SWS) - RCS Open

OPERABILITY: Both SWS pumps and cooling tower fans should be operable for CCS cooling

APPLICABILITY: MODE 5 with RCS pressure boundary open,
MODE 6 with upper internals in place or cavity level less than full

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pump or fan not operable.	A.1 Initiate actions to increase the water inventory above the core.	12 hours
	AND	
	A.2 Remove plant from applicable MODES.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE.	1 day
	AND	
	B.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 month

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR	2.4.1	Verify that one SWS pump is operating and that each SWS pump operating individually provides a SWS flow > 10,000 gpm	Within 1 day prior to entering the MODES of applicability
SR	2.4.2	Operate each cooling tower fan for > 15 min	Within 1 day prior to entering the MODES of applicability

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.4 SWS - RCS Open

BASES:

The SWS cooling of the CCS HXs provides a nonsafety-related means to normally cool the RNS HX which cool the RCS during shutdown operations (MODES 4, 5, 6). This RNS cooling function is important because it reduces the probability of an initiating event due to loss of RNS cooling and because it provides margin in the PRA sensitivity performed assuming no credit for nonsafety-related SSCs to mitigate at-power and shutdown events. The RCS is considered open when its pressure boundary is not intact. The RCS is also considered open if there is no visible level in the pressurizer. The margin provided in the PRA study assumes a minimum availability of 90% for this function during the MODES of applicability, considering both maintenance unavailability and failures to operate.

The SWS cooling of the CCS HXs involves two SWS pumps and cooling tower fans and the SWS line to the RNS HXs. The valves in the SWS lines should be open prior to the plant entering these conditions. One of the SWS pumps and its cooling tower fan has to be operating. The other SWS pump and cooling tower fan may be operating or may be in standby. Standby includes the capability of being able to be placed into operation from the main control room. Subsection 9.2.1 contains additional information on the CCS.

Both SWS pumps and cooling tower fans should be available during the MODES of applicability when the loss of RNS cooling is risk important. If both SWS pumps and cooling tower fans are not available, the plant should not enter these conditions. If the plant has entered these conditions, then the plant should take action to restore both SWS pumps / fans or to leave these conditions. If the plant has not restored full system operation or left the MODES of applicability within 12 hours, then actions need to be initiated to increase the RCS water level to either 20% pressurizer level or to a full refueling cavity.

Planned maintenance affecting this SWS cooling function should be performed in MODES when the SWS is not supporting RNS operation, ie during MODES 1, 2, 3. The bases for this recommendation is that the SWS is more risk important during shutdown MODES, especially during the MODES of applicability conditions than during other MODES.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.5 Passive Containment Cooling Water Storage Tank (PCCWST) and Spent Fuel Pool Makeup - Long Term Shutdown

OPERABILITY: Long term makeup to the PCCWST and the Spent Fuel Pool should be operable

APPLICABILITY: MODES 1, 2, 3, 4, 5, 6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Water volume in PCS ancillary tank less than limit.	A.1 Notify chief nuclear officer or on-call alternate. AND A.2 Restore volume to within limits	72 hours 14 days
B. One required PCS recirculation pump not operable.	B.1 Notify chief nuclear officer or on-call alternate. AND B.2 Restore pump to operable status	72 hours 14 days

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

C. Required Action and associated Completion Time of Condition A, B not met.	C.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE.	1 day
	AND	
	C.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 month

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR	2.5.1	Verify water volume in the PCS ancillary tank is > 780,000 gal.	31 days
SR	2.5.2	Record that the required PCS recirculation pump provides recirculation of the PCCWST at > 100 gpm.	92 days
SR	2.5.3	Verify that each PCS recirculation pump transfers > 100 gpm from the PCS ancillary tank to the PCCWST. During this test, each PCS recirculation pump will be powered from a ancillary diesel.	10 years

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.5 PCCWST and Spent Fuel Pool Makeup - Long Term Shutdown

BASES:

The PCS recirculation pumps provide long-term shutdown support by transferring water from the PCS ancillary tank to the PCCWST and the spent fuel pool. The specified PCS ancillary water tank volume is sufficient to maintain PCS and Spent Fuel Pool cooling during the 3 to 7 day time period following an accident. After 7 days, water brought in from offsite allows the PCCWST to continue to provide PCS cooling and makeup to the spent fuel pit. This PCCWST makeup function is important because it supports long-term shutdown operation. A minimum availability of 90% is assumed for this function during the MODES of applicability, considering both maintenance unavailability and failures to operate.

The PCCWST makeup function involves the use of one PCS recirculation pump, the PCS ancillary tank and the line connecting the PCS ancillary tank with the PCCWST and spent fuel pool. One PCS recirculation pump normally operates to recirculate the PCCWST. Subsections 6.2.2 and 9.1.3 contain additional information on the PCCWST and spent fuel pool makeup function.

The PCCWST makeup function should be available during MODES of operation when PCS and spent fuel pool cooling is required; one PCS recirculation pump and PCS ancillary tank should be available during all MODES.

Planned maintenance should be performed on the redundant pump (ie the pump not required to be available). Planned maintenance affecting the PCS ancillary tank that requires less than 72 hours to perform can be performed in any MODE of operation. Planned maintenance requiring more than 72 hours should be performed in MODES 5 or 6 when the calculated core decay heat is ≤ 6.0 MWt. The bases for this recommendation is that the long-term PCS makeup is not required in this condition, and in most cases, the PCCWST can provide the required makeup to the spent fuel pool.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.6 Main Control Room (MCR) Cooling - Long Term Shutdown

OPERABILITY: Long term cooling of the MCR should be operable

APPLICABILITY: MODES 1, 2, 3, 4, 5, 6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required MCR ancillary fans not operable.	A.1 Notify chief nuclear officer or on-call alternate. AND A.2 Restore one fan to operable status	72 hours 14 days
B. Required Action and associated Completion Time not met.	B.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE. AND B.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 day 1 month

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR	2.6.1	Operate required MCR ancillary fan for > 15 min	92 days
SR	2.6.2	Verify that each MCR ancillary fan can provide a flow of air into the MCR for >15 min. During this test, the MCR ancillary fans will be powered from the ancillary diesels.	10 years

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.6 MCR Cooling - Long Term Shutdown

BASES:

The MCR ancillary fans provide long term shutdown support by cooling the main control room. For the first three days after an accident the emergency HVAC system (VES) together with the passive heat sinks in the MCR provide cooling of the MCR. After 3 days, the MCR ancillary fans can be used to circulate ambient air through the MCR to provide cooling. The long term MCR cooling function should be available during all MODES of operation. This long term MCR cooling function is important because it supports long-term shutdown operation. A minimum availability of 90% is assumed for this function during the MODES of applicability, considering both maintenance unavailability and failures to operate.

The long term MCR cooling function involves the use of a MCR ancillary fan. During SR 2.6.1 the fan will be run to verify that it operates without providing flow to the MCR. During SR 2.6.2 each fan will be connected to the MCR and operated such that they provide flow to the MCR. Subsection 9.4.1 contains additional information on the long term MCR cooling function.

One MCR ancillary fan should be available during all MODES of plant operation. Planned maintenance should not be performed on the required MCR ancillary fan during a required MODE of operation; planned maintenance should be performed on the redundant MCR ancillary fan (ie the fan not required to be available) during MODES 3 or 4, MODE 5 with a visible pressurizer level or MODE 6 with the refueling cavity full; these MODES are selected because the reactor is tripped in these MODES and the risk of core damage is low.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.7 I&C Room Cooling - Long Term Shutdown

OPERABILITY: Long term cooling of I&C rooms B & C should be operable

APPLICABILITY: MODES 1, 2, 3, 4, 5, 6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required I&C room ancillary fan not operable.	A.1 Notify chief nuclear officer or on-call alternate.	72 hours
	AND	
	A.2 Restore one fan to operable status	14 days
B. Required Action and associated Completion Time not met.	B.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE.	1 day
	AND	
	B.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 month

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR	2.7.1	Operate required I&C room ancillary fan for > 15 min	92 days
SR	2.7.2	Verify that each I&C room ancillary fan can provide a flow of air into an I&C room for >15 min. During this test, the I&C room ancillary fans will be powered from an ancillary diesel.	10 years

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.7 I&C Room Cooling - Long Term Shutdown

BASES:

The I&C room ancillary fans provide long term shutdown support by cooling I&C rooms B & C which contain post accident instrument processing equipment. For the first three days after an accident the passive heat sinks in the I&C rooms provide cooling. After 3 days, the I&C room ancillary fans can be used to circulate ambient air through the I&C room to provide cooling. The long term I&C room cooling function should be available during all MODES of operation. This long term I&C room cooling function is important because it supports long-term shutdown operation. A minimum availability of 90% is assumed for this function during the MODES of applicability, considering both maintenance unavailability and failures to operate.

The long term I&C room cooling function involves the use of two I&C room ancillary fans; each fan is associated with one I&C room (B or C). During SR 2.6.1 the required fan will be run to verify that it operates without providing flow to the I&C room. During SR 2.6.2 each fan will be connected to its associated I&C room and operated such that flow is provided to the I&C room. Subsection 9.4.1 contains additional information on the long term I&C room cooling function.

One I&C room ancillary fan should be available during all MODES of plant operation. Planned maintenance should not be performed on the required I&C room ancillary fan during a required MODE of operation; planned maintenance should be performed on the redundant I&C room ancillary fan.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.8 Hydrogen Ignitors

OPERABILITY: Hydrogen ignitors should be operable in accordance with Table 2.8-1

APPLICABILITY: MODE 1, 2,
MODE 5 with RCS pressure boundary open,
MODE 6 with upper internals in place or cavity level less than full

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required hydrogen ignitor inoperable.	A.1 Notify chief nuclear officer or on-call alternate.	72 hours
	AND	
	A.2 Restore required ignitors to operable status.	14 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE.	1 day
	AND	
	B.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 month

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR	2.8.1	Energize each required hydrogen ignitor and verify the surface temperature is > 1700°F.	Each refueling outage

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

Table 2.8-1, Hydrogen Ignitors

Location	Hydrogen Ignitors Group 1	Group 2	Number Available (1)
- Reactor Cavity	(2)	(2)	na
- Loop Compartment 01	12,13	11,14	3 of 4
- Loop Compartment 02	5,8	6,7	3 of 4
- Pressurizer Compartment	49,60	50,59	3 of 4
- Tunnel connecting Loop Compartments	1,3,31	2,4,30	5 of 6
- Southeast Valve Room & Southeast Accumulator Room	21	20	2 of 2
- East Valve Room, Northeast Accumulator Room, & Northeast Valve Room	18	17,19	(3)
- North CVS Equipment Room	34	33	2 of 2
- Lower Compartment Area (CMT and Valve Area)	22,27,28,29,31, 32	23,24,25,26,30	10 of 11
- IRWST	9,35,37	10,36,38	5 of 6
- IRWST inlet	16	15	2 of 2
- Refueling Cavity	55,58	56,57	3 of 4
- Upper Compartment			
- Lower Region	39,42,43,44,47	40,41,45,46,47	9 of 10
- Mid Region	51,54	52,53	2 of 4
- Upper Region	61,63	62,64	2 of 4

Notes:
(1) In each location, the minimum number of ignitors that should be available are defined in this column.
(2) Ignitors in this location are shared with other locations.
(3) Ignitor 18 and either 17 or 19 should be available.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

2.0 Plant Systems

2.8 Hydrogen Ignitors

BASES:

The hydrogen ignitors should be available to provide the capability of burning hydrogen generated during severe accidents in order to prevent failure of the containment due to hydrogen detonation. These hydrogen ignitors are required by 10 CFR 50.34 to limit the buildup of hydrogen to less than 10% assuming that 100% of the active zircaloy fuel cladding is oxidized.

This function is also important because it provides margin in the PRA sensitivity performed assuming no credit for nonsafety-related SSCs to mitigate at-power and shutdown events. The margin provided in the PRA study assumes a minimum availability of 90% for this function during the MODES of applicability, considering both maintenance unavailability and failures to operate.

The ignitors are distributed in the containment to limit the buildup of hydrogen in local areas. Two groups of ignitors are provided in each area; one of which is sufficient to limit the buildup of hydrogen. When an ignitor is energized, the ignitor surface heats up to ≥1700°F. This temperature is sufficient to ignite hydrogen in the vicinity of the ignitor when the lower flammability limit is reached. Subsection 6.2.4 provides additional information.

The hydrogen ignitor function should be available during MODES 1 and 2 when core decay heat is high and during MODE 5 when the RCS pressure boundary is open and in MODE 6 when the refueling cavity is not full. Planned maintenance should be performed on hydrogen ignitors when they are not required to meet this availability control. Table 2.8-1 indicates the minimum number of hydrogen ignitors that should be available.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

3.0 Electrical Power Systems

3.1 AC Power Supplies

OPERABILITY: One standby diesel generator should be operable

APPLICABILITY: MODES 1, 2, 3, 4, 5

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel volume in one required standby diesel fuel tank less than limit.	A.1 Notify chief nuclear officer or on-call alternate.	72 hours
	AND	
	A.2 Restore volume to within limits	14 days
B. One required fuel transfer pump or standby diesel generator not operable.	B.1 Notify chief nuclear officer or on-call alternate.	72 hours
	AND	
	B.2 Restore pump and diesel generator to operable status	14 days

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

C. Required Action and associated Completion Time not met.	C.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability and schedule for restoration to OPERABLE. AND C.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 day 1 month

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR	3.1.1	Verify that the fuel oil volume in the required standby diesel generator fuel tank is > 50,000 gal.	31 days
SR	3.1.2	Record that the required fuel oil transfer pump provides a recirculation flow of > 8 gpm.	92 days
SR	3.1.3	Verify that the required standby diesel generator starts and operates at > 4000 kw for > 1 hour. This test may utilize diesel engine prelube prior to starting and a warmup period prior to loading.	92 days
SR	3.1.4	Verify that each standby diesel generator starts and operates at > 4000 kw for > 24 hours. This test may utilize diesel engine prelube prior to starting and a warmup period prior to loading. Both diesel generators will be operated at the same time during this test.	10 years

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

3.0 Electrical Power Systems

3.1 AC Power Supplies

BASES:

AC power is required to power the RNS and to provide a nonsafety-related means of supplying power to the safety-related PMS for actuation and post accident monitoring. The RNS provides a nonsafety-related means to inject water into the RCS following ADS actuations in MODES 1,2,3,4 (when steam generators cool the RCS). This AC power supply function is important because it adds margin to the PRA sensitivity performed assuming no credit for nonsafety-related SSCs to mitigate at-power and shutdown events. The margin provided in the PRA study assumes a minimum availability of 90% for this function during the MODES of applicability, considering both maintenance unavailability and failures to operate.

Two standby diesel generators are provided. Each standby diesel generator has its own fuel oil transfer pump and fuel oil tank. The volume of fuel oil required is that volume that is above the connection to the fuel oil transfer pump. Subsection 8.3.1 contains additional information.

This AC power supply function should be available during MODES 1,2,3,4,5 when RNS injection and PMS actuation are more risk important. Planned maintenance should not be performed on required AC power supply SSCs during a required MODE of operation; planned maintenance should be performed on redundant AC power supply SSCs during MODES 1, 2, 3 when the RNS is not normally in operation. The bases for this recommendation is that the AC power is more risk important during shutdown MODES, especially when the RCS is open as defined in availability control 2.2, than during other MODES.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

3.0 Electrical Power Systems

3.2 AC Power Supplies - RCS Open

OPERABILITY: Two AC power supplies should be operable to support RNS operation

APPLICABILITY: MODE 5 with RCS pressure boundary open,
MODE 6 with upper internals in place or cavity level less than full

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required AC power supply not operable.	A.1 Initiate actions to increase the water inventory above the core. AND A.2 Remove plant from applicable MODES	12 hours 72 hours
B. Required Action and associated Completion Time not met.	B.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE. AND B.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 day 1 month

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR	3.2.1	Verify that the required number of AC power supplies are operable	Within 1 day prior to entering the MODES of applicability

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

3.0 Electrical Power Systems

3.2 AC Power Supplies - RCS Open

BASES:

AC power is required to power the RNS and its required support systems (CCS & SWS); the RNS provides a nonsafety-related means to normally cool the RCS during shutdown operations. This RNS cooling function is important when the RCS pressure boundary is open and the refueling cavity is not flooded because it reduces the probability of an initiating event due to loss of RNS cooling during these conditions and because it provides margin in the PRA sensitivity performed assuming no credit for nonsafety-related SSCs to mitigate at-power and shutdown events. The RCS is considered open when its pressure boundary is not intact. The RCS is also considered open if there is no visible level in the pressurizer. The margin provided in the PRA study assumes a minimum availability of 90% for this function during the MODES of applicability, considering both maintenance unavailability and failures to operate.

Two AC power supplies, one offsite and one onsite supply, should be available as follows:

a) Offsite power through the transmission switchyard and either the main step-up transformer / unit auxiliary transformer or the reserve auxiliary transformer supply from the transmission switchyard, and

b) Onsite power from one of the two standby diesel generators.

Subsection 8.3.1 contains additional information on the standby diesel generators. Section 8.2 contains information on the offsite AC power supply.

One offsite and one onsite AC power supply should be available during the MODES of applicability when the loss of RNS cooling is important. If both of these AC power supplies are not available, the plant should not enter these conditions. If the plant has already entered these conditions, then the plant should take action to restore this AC power supply function or to leave these conditions. If the plant has not restored full system operation or left the MODES of applicability within 12 hours, then actions need to be initiated to increase the RCS water level to either 20% pressurizer level or to a full refueling cavity.

Planned maintenance should not be performed on required AC power supply SSCs. Planned maintenance affecting the standby diesel generators should be performed in MODES 1, 2, 3 when the RNS is not normally in operation. Planned maintenance of the other AC power supply should be performed in MODES 2, 3, or MODE 6 with the refueling cavity full. The bases for this recommendation is that the AC power is more risk important during shutdown MODES, especially during the MODES of applicability conditions than during other MODES.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

3.0 Electrical Power Systems

3.3 AC Power Supplies - Long Term Shutdown

OPERABILITY: One ancillary diesel generator should be operable

APPLICABILITY: MODES 1, 2, 3, 4, 5, 6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel volume in ancillary diesel fuel tank less than limit.	A.1 Notify chief nuclear officer or on-call alternate. AND A.2 Restore volume to within limits	72 hours 14 days
B. One required ancillary diesel generator not operable.	B.1 Notify chief nuclear officer or on-call alternate. AND B.2 Restore one diesel generator to operable status	72 hours 14 days

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

C. Required Action and associated Completion Time not met.	C.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE. AND C.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 day 1 month

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR	3.3.1	Verify fuel volume in the ancillary fuel tank is >600 gal	31 days
SR	3.3.2	Verify that the required diesel generator starts and operates for >1 hour connected to a test load > 35 kw. This test may utilize diesel engine warmup period prior to loading.	92 days

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

SR	3.3.3	Verify that each diesel generator starts and operates for 4 hours while providing power to the regulating transformer, an ancillary control room fan, an ancillary I&C room fan and a passive containment cooling water storage tank recirculation pump that it will power in a long term post accident condition. Test loads will be applied to the output of the regulating transformers that represent the loads required for post-accident monitoring and control room lighting. This test may utilize diesel engine warmup prior to loading. Both diesel generators will be operated at the same time during this test.	10 years

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

3.0 Electrical Power Systems

3.3 AC Power Supplies - Long Term Shutdown

BASES:

The ancillary diesel generators provide long term power supplies for post accident monitoring, MCR and I&C room cooling, PCS and spent fuel water makeup. For the first three days after an accident the 1E batteries provide power for post accident monitoring. Passive heat sinks provide cooling of the MCR and the I&C rooms. The initial water supply in the PCCWST provides for at least 3 days of PCS cooling. The initial water volume in the spent fuel pit normally provides for 7 days of spent fuel cooling; in some shutdown events the PCCWST is used to supplement the spent fuel pit. A minimum availability of 90% is assumed for this function during the MODES of applicability, considering both maintenance unavailability and failures to operate.

After 3 days, ancillary diesel generators can be used to power the MCR and I&C room ancillary fans, the PCS recirculation pumps and MCR lighting. In this time frame, the PCCWST provides water makeup to both the PCS and the spent fuel pit. An ancillary generator should be available during all MODES of operation. This long term AC power supply function is important because it supports long-term shutdown operation.

The long-term AC power supply function involves the use of two ancillary diesel generators and an ancillary diesel generator fuel oil storage tank. The specified ancillary fuel oil storage tank volume is based on operation of both ancillary diesel-generators for 4 days. Subsection 8.3.1 contains additional information on the long-term AC power supply function.

One ancillary diesel generator and the ancillary diesel generator fuel oil storage tank should be available during all MODES of plant operation. Planned maintenance should not be performed on the required ancillary diesel generator during a required MODE of operation; planned maintenance should be performed on the redundant ancillary diesel generator. Planned maintenance affecting the ancillary diesel fuel tank that requires less than 72 hours to perform can be performed in any MODE of operation. Planned maintenance requiring more than 72 hours should be performed in MODE 6 with the refueling cavity full. The basis for this recommendation is that core decay heat is low and the risk of core damage is low in these MODES, the inventory of the refueling cavity results in slow response of the plant to accidents.

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

3.0 Electrical Power Systems

3.4 Non Class 1E DC and UPS System (EDS)

OPERABILITY: Power for DAS automatic actuation functions listed in 1.1 and 1.2 should be operable

APPLICABILITY: MODES 1, 2, 3, 4, 5,
MODE 6 with upper internals in place or cavity level less than full

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Power to DAS Function inoperable.	A.1 Notify chief nuclear officer or on-call alternate. AND A.2 Restore power supply to DAS to operable status	72 hours 14 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Submit report to chief nuclear officer or on-call alternate detailing interim compensatory measures, cause for inoperability, and schedule for restoration to OPERABLE AND B.2 Document in plant records the justification for the actions taken to restore the function to OPERABLE.	1 day 1 month

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR	3.4.1	Verify power supply voltage at each DAS cabinet is 120 volts ± 5%	92 days

Table 16.3-2 (Cont.)
Investment Protection Short-Term Availability Controls

3.0 Electrical Power Systems

3.4 Non Class 1E DC and UPS System (EDS)

BASES:

The EDS function of providing power to DAS to support ATWS mitigation is important based on 10 CFR 50.62 (ATWS Rule) and to support ESFA is important based on providing margin in the PRA sensitivity performed assuming no credit for nonsafety-related SSCs to mitigate at-power and shutdown events. The margin provided in the PRA study assumes a minimum availability of 90% for this function during the MODES of applicability, considering both maintenance unavailability and failures to operate.

The DAS uses a 2 out of 2 logic to actuate automatic functions. EDS power must be available to the DAS sensors, DAS actuation, and the devices which control the actuated components. Power may be provided by EDS to DAS by non-1E batteries through non-1E inverters. Other means of providing power to DAS include the spare battery through a non-1E inverter or non-1E regulating transformers.

The EDS support of the DAS ATWS mitigation function is required during MODE 1 when ATWS is a limiting event and during MODES 1, 2, 3, 4, 5, 6 when ESFA is important. The DAS ESFA is required in MODE 6 with upper internals in place or cavity level less than full. Planned maintenance should not be performed on a required EDS SSC during a required MODE of operation; planned maintenance should be performed on redundant supplies of EDS power.