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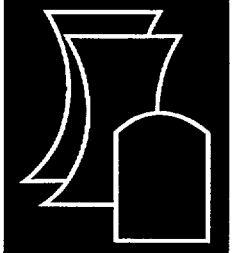

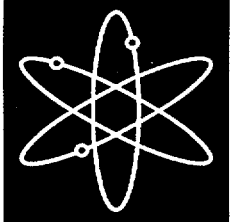

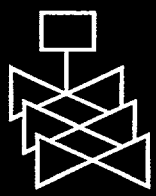

Standard Technical Specifications Combustion Engineering Plants

Specifications

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
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PREFACE

This NUREG contains the improved Standard Technical Specifications (STS) for Combustion Engineering plants. Revision 2 incorporates the cumulative changes to Revision 1, which was published in April 1995. The changes reflected in Revision 2 resulted from the experience gained from license amendment applications to convert to these improved STS or to adopt partial improvements to existing technical specifications. This publication is the result of extensive public technical meetings and discussions among the Nuclear Regulatory Commission (NRC) staff and various nuclear power plant licensees, Nuclear Steam Supply System (NSSS) Owners Groups, and the Nuclear Energy Institute (NEI). The improved STS were developed based on the criteria in the Final Commission Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors, dated July 22, 1993 (58 FR 39132), which was subsequently codified by changes to Section 36 of Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR 50.36) (60 FR 36953). Licensees are encouraged to upgrade their technical specifications consistent with those criteria and conforming, to the practical extent, to Revision 2 to the improved STS. The Commission continues to place the highest priority on requests for complete conversions to the improved STS. Licensees adopting portions of the improved STS to existing technical specifications should adopt all related requirements, as applicable, to achieve a high degree of standardization and consistency.

The Table of Contents is now a Table of Contents / Revision Summary where the revision number and date are listed for each specification and bases, in lieu of traditional page numbers. Each limiting condition for operation (LCO) starts with page 1, with a specification, e.g., "2.0" or bases "B 2.0" number prefix. Subsequent approved revisions to sections will be noted in the table of contents, as well as on each affected page, using a decimal number to indicate the number of revisions to that section, along with the date, e.g., (Rev 2.3, 04/01/01) indicates the third approved change and date since Revision 2.0 was published. Additionally, the final page of each LCO section will be a historical listing of the changes affecting that section. This publication will be maintained in electronic format. Subsequent revisions will not be printed in hard copy. Users may access the subsequent revisions to the STS in the PDF format at (http://www.nrc.gov/NRR/sts/sts.htm). This Web site will be updated as needed and the contents may differ from the last printed version. Users may print or download copies from the NRC Web site.

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The information collections contained in this NUREG are covered by the requirements of 10 CFR Parts 20 and 50, which were approved by the Office of Management and Budget, approval numbers 3150-0014 and 0011.

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3.2 POWER DISTRIBUTION LIMITS (continued)

3.4 REACTOR COOLANT SYSTEM (RCS) (continued)

3.7 PLANT SYSTEMS (continued)

1.0 USE AND APPLICATION

1.1 Definitions

- NOTE -

The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications and Bases.

Term	Definition
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
AXIAL SHAPE INDEX (ASI)	ASI shall be the power generated in the lower half of the core less the power generated in the upper half of the core, divided by the sum of the power generated in the lower and upper halves of the core. $ASI = (LOWER - UPPER) / (LOWER + UPPER)$
AZIMUTHAL POWER TILT (T_q) - Digital	AZIMUTHAL POWER TILT shall be the power asymmetry between azimuthally symmetric fuel assemblies.
AZIMUTHAL POWER TILT (T_q) - Analog	AZIMUTHAL POWER TILT shall be the maximum of the difference between the power generated in any core quadrant (upper or lower) (P_{quad}) and the average power of all quadrants (P_{avg}) in that half (upper or lower) of the core, divided by the average power of all quadrants in that half (upper or lower) of the core. $T_q = Max \ | (P_{quad} - P_{avg}) / P_{avg} |$
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

1.1 Definitions

CHANNEL CALIBRATION (continued)

CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps.

CHANNEL CHECK

A 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 FUNCTIONAL TEST

A CHANNEL FUNCTIONAL TEST shall be:

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 so that the entire channel is tested.

CORE ALTERATION

CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components [excluding control element assemblies (CEAs) withdrawn into the upper guide structure], 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.

CORE OPERATING LIMITS REPORT (COLR)

The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits shall be determined for each reload cycle in accordance with Specification 5.6.5. Plant operation within these limits is addressed in individual Specifications.

1.1 Definitions

DOSE EQUIVALENT I-131	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"].
$\bar{E}$ - AVERAGE DISINTEGRATION ENERGY	$\bar{E}$ 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.
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, 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.
LEAKAGE	LEAKAGE shall be: a. <u>Identified LEAKAGE</u> 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank,

1.1 Definitions

LEAKAGE (continued)

2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE, or

3. Reactor Coolant System (RCS) LEAKAGE through a steam generator (SG) to the Secondary System,

b. Unidentified LEAKAGE

All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE, and

c. Pressure Boundary LEAKAGE

LEAKAGE (except SG LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall.

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.

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).

PHYSICS TESTS

PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation.

These tests are:

1.1 Definitions

PHYSICS TESTS (continued)	a. Described in Chapter [14, Initial Test Program] of the FSAR, b. Authorized under the provisions of 10 CFR 50.59, or c. Otherwise approved by the Nuclear Regulatory Commission.
PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)	The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heatup and cooldown rates, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.6. Plant operation within these operating limits is addressed in LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," and LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System."
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of [3410] MWt.
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.
SHUTDOWN MARGIN (SDM)	SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming: a. All full length CEAs (shutdown and regulating) are fully inserted except for the single CEA of highest reactivity worth, which is assumed to be fully withdrawn. However, with all CEAs verified fully inserted by two independent means, it is not necessary to account for a stuck CEA in the SDM calculation. With any CEAs not capable of being fully inserted, the reactivity worth of

1.1 Definitions

SDM (continued)	
	these CEAs must be accounted for in the determination of SDM, and
	[b. There is no change in part length CEA position.]
STAGGERED TEST BASIS	A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

Table 1.1-1 (page 1 of 1)
MODES

MODE	TITLE	REACTIVITY CONDITION (k_{eff})	% RATED THERMAL POWER[(a)]	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	≥ 0.99	> 5	NA
2	Startup	≥ 0.99	≤ 5	NA
3	Hot Standby	< 0.99	NA	≥ [350]
4	Hot Shutdown[(b)]	< 0.99	NA	[350] > T_{avg} > [200]
5	Cold Shutdown[(b)]	< 0.99	NA	≤ [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.

1.0 USE AND APPLICATION

1.2 Logical Connectors

PURPOSE	The purpose of this section is to explain the meaning of logical connectors. Logical connectors are used in Technical Specifications (TS) to discriminate between, and yet connect, discrete Conditions, Required Actions, Completion Times, Surveillances, and Frequencies. The only logical connectors that appear in TS are AND and OR. The physical arrangement of these connectors constitutes logical conventions with specific meanings.
BACKGROUND	Several levels of logic may be used to state Required Actions. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each Required Action. The first level of logic is identified by the first digit of the number assigned to a Required Action and the placement of the logical connector in the first level of nesting (i.e., left justified with the number of the Required Action). The successive levels of logic are identified by additional digits of the Required Action number and by successive indentions of the logical connectors. When logical connectors are used to state a Condition, Completion Time, Surveillance, or Frequency, only the first level of logic is used, and the logical connector is left justified with the statement of the Condition, Completion Time, Surveillance, or Frequency.
EXAMPLES	The following examples illustrate the use of logical connectors.

1.2 Logical Connectors

EXAMPLES (continued)

EXAMPLE 1.2-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Verify . . . AND A.2 Restore . . .	

In this example the logical connector AND is used to indicate that when in Condition A, both Required Actions A.1 and A.2 must be completed.

1.2 Logical Connectors

EXAMPLES (continued)

EXAMPLE 1.2-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Trip . . . OR A.2.1 Verify . . . AND A.2.2.1 Reduce . . . OR A.2.2.2 Perform . . . OR A.3 Align . . .	

This example represents a more complicated use of logical connectors. Required Actions A.1, A.2, and A.3 are alternative choices, only one of which must be performed as indicated by the use of the logical connector OR and the left justified placement. Any one of these three Actions may be chosen. If A.2 is chosen, then both A.2.1 and A.2.2 must be performed as indicated by the logical connector AND. Required Action A.2.2 is met by performing A.2.2.1 or A.2.2.2. The indented position of the logical connector OR indicates that A.2.2.1 and A.2.2.2 are alternative choices, only one of which must be performed.

1.0 USE AND APPLICATION

1.3 Completion Times

PURPOSE	The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.
BACKGROUND	Limiting Conditions for Operation (LCOs) specify minimum requirements for ensuring safe operation of the unit. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO can fail to be met. Specified with each stated Condition are Required Action(s) and Completion Time(s).
DESCRIPTION	The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., inoperable equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the unit is in a MODE or specified condition stated in the Applicability of the LCO. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the unit is not within the LCO Applicability. If situations are discovered that require entry into more than one Condition at a time within a single LCO (multiple Conditions), the Required Actions for each Condition must be performed within the associated Completion Time. When in multiple Conditions, separate Completion Times are tracked for each Condition starting from the time of discovery of the situation that required entry into the Condition. Once a Condition has been entered, subsequent trains, subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will <u>not</u> result in separate entry into the Condition, unless specifically stated. The Required Actions of the Condition continue to apply to each additional failure, with Completion Times based on initial entry into the Condition. However, when a <u>subsequent</u> train, subsystem, component, or variable expressed in the Condition is discovered to be inoperable or not within limits, the Completion Time(s) may be extended. To apply this Completion Time extension, two criteria must first be met. The subsequent inoperability: a. Must exist concurrent with the <u>first</u> inoperability and

1.3 Completion Times

DESCRIPTION (continued)

b. Must remain inoperable or not within limits after the first inoperability is resolved.

The total Completion Time allowed for completing a Required Action to address the subsequent inoperability shall be limited to the more restrictive of either:

a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours or

b. The stated Completion Time as measured from discovery of the subsequent inoperability.

The above Completion Time extensions do not apply to those Specifications that have exceptions that allow completely separate re-entry into the Condition (for each train, subsystem, component, or variable expressed in the Condition) and separate tracking of Completion Times based on this re-entry. These exceptions are stated in individual Specifications.

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ." Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Conditions A and B in Example 1.3-3 may not be extended.

EXAMPLES

The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

The Required Actions of Condition B are to be in MODE 3 within 6 hours AND in MODE 5 within 36 hours. A total of 6 hours is allowed for reaching MODE 3 and a total of 36 hours (not 42 hours) is allowed for reaching MODE 5 from the time that Condition B was entered. If MODE 3 is reached within 3 hours, the time allowed for reaching MODE 5 is the next 33 hours because the total time allowed for reaching MODE 5 is 36 hours.

If Condition B is entered while in MODE 3, the time allowed for reaching MODE 5 is the next 36 hours.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pump inoperable.	A.1 Restore pump to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

When a pump is declared inoperable, Condition A is entered. If the pump is not restored to OPERABLE status within 7 days, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the inoperable pump is restored to OPERABLE status after Condition B is entered, Condition A and B are exited, and therefore, the Required Actions of Condition B may be terminated.

When a second pump is declared inoperable while the first pump is still inoperable, Condition A is not re-entered for the second pump. LCO 3.0.3 is entered, since the ACTIONS do not include a Condition for more than one inoperable pump. The Completion Time clock for Condition A does not stop after LCO 3.0.3 is entered, but continues to be tracked from the time Condition A was initially entered.

While in LCO 3.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has not expired, LCO 3.0.3 may be exited and operation continued in accordance with Condition A.

While in LCO 3.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has expired, LCO 3.0.3 may be exited and operation continued in accordance with Condition B. The Completion Time for Condition B is tracked from the time the Condition A Completion Time expired.

1.3 Completion Times

EXAMPLES (continued)

On restoring one of the pumps to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first pump was declared inoperable. This Completion Time may be extended if the pump restored to OPERABLE status was the first inoperable pump. A 24 hour extension to the stated 7 days is allowed, provided this does not result in the second pump being inoperable for > 7 days.

EXAMPLE 1.3-3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Function X train inoperable.	A.1 Restore Function X train to OPERABLE status.	7 days AND 10 days from discovery of failure to meet the LCO
B. One Function Y train inoperable.	B.1 Restore Function Y train to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO
C. One Function X train inoperable. AND One Function Y train inoperable.	C.1 Restore Function X train to OPERABLE status. OR C.2 Restore Function Y train to OPERABLE status.	72 hours 72 hours

When one Function X train and one Function Y train are inoperable,

EXAMPLES (continued)

Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each train starting from the time each train was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second train was declared inoperable (i.e., the time the situation described in Condition C was discovered).

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected train was declared inoperable (i.e., initial entry into Condition A).

The Completion Times of Conditions A and B are modified by a logical connector, with a separate 10 day Completion Time measured from the time it was discovered the LCO was not met. In this example, without the separate Completion Time, it would be possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. The separate Completion Time modified by the phrase "from discovery of failure to meet the LCO" is designed to prevent indefinite continued operation while not meeting the LCO. This Completion Time allows for an exception to the normal "time zero" for beginning the Completion Time "clock." In this instance, the Completion Time "time zero" is specified as commencing at the time the LCO was initially not met, instead of at the time the associated Condition was entered.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valve(s) to OPERABLE status.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times.

Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

If the Completion Time of 4 hours (including the extension) expires while one or more valves are still inoperable, Condition B is entered.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-5

ACTIONS

- NOTE -
Separate Condition entry is allowed for each inoperable valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valve to OPERABLE status.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each inoperable valve, and Completion Times tracked on a per valve basis. When a valve is declared inoperable, Condition A is entered and its Completion Time starts. If subsequent valves are declared inoperable, Condition A is entered for each valve and separate Completion Times start and are tracked for each valve.

If the Completion Time associated with a valve in Condition A expires, Condition B is entered for that valve. If the Completion Times associated with subsequent valves in Condition A expire, Condition B is entered separately for each valve and separate Completion Times start and are tracked for each valve. If a valve that caused entry into Condition B is restored to OPERABLE status, Condition B is exited for that valve.

1.3 Completion Times

EXAMPLES (continued)

Since the Note in this example allows multiple Condition entry and tracking of separate Completion Times, Completion Time extensions do not apply.

EXAMPLE 1.3-6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel inoperable.	A.1 Perform SR 3.x.x.x. OR A.2 Reduce THERMAL POWER to ≤ 50% RTP.	Once per 8 hours 8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours

Entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per SR 3.0.2, to each performance after the initial performance. The initial 8 hour interval of Required Action A.1 begins when Condition A is entered and the initial performance of Required Action A.1 must be complete within the first 8 hour interval. If Required Action A.1 is followed and the Required Action is not met within the Completion Time (plus the extension allowed by SR 3.0.2), Condition B is entered. If Required Action A.2 is followed and the Completion Time of 8 hours is not met, Condition B is entered.

If after entry into Condition B, Required Action A.1 or A.2 is met, Condition B is exited and operation may then continue in Condition A.

1.3 Completion Times

EXAMPLES (continued)

EXAMPLE 1.3-7

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Verify affected subsystem isolated.	1 hour AND Once per 8 hours thereafter
	AND A.2 Restore subsystem to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND	6 hours
	B.2 Be in MODE 5.	36 hours

Required Action A.1 has two Completion Times. The 1 hour Completion Time begins at the time the Condition is entered and each "Once per 8 hours thereafter" interval begins upon performance of Required Action A.1.

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time Condition A was initially entered. If Required Action A.1 is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.

1.3 Completion Times

IMMEDIATE COMPLETION TIME	When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

1.0 USE AND APPLICATION

1.4 Frequency

PURPOSE

The purpose of this section is to define the proper use and application of Frequency requirements.

DESCRIPTION

Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated LCO. An understanding of the correct application of the specified Frequency is necessary for compliance with the SR.

The "specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0.2, Surveillance Requirement (SR) Applicability. The "specified Frequency" consists of the requirements of the Frequency column of each SR, as well as certain Notes in the Surveillance column that modify performance requirements.

Sometimes special situations dictate when the requirements of a Surveillance are to be met. They are "otherwise stated" conditions allowed by SR 3.0.1. They may be stated as clarifying Notes in the Surveillance, as part of the Surveillances, or both.

Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential SR 3.0.4 conflicts. To avoid these conflicts, the SR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With an SR satisfied, SR 3.0.4 imposes no restriction.

The use of "met" or "performed" in these instances conveys specific meanings. A Surveillance is "met" only when the acceptance criteria are satisfied. Known failure of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met." "Performance" refers only to the requirement to specifically determine the ability to meet the acceptance criteria.

Some Surveillances contain notes that modify the Frequency of performance or the conditions during which the acceptance criteria must be satisfied. For these Surveillances, the MODE-entry restrictions of SR 3.0.4 may not apply. Such a Surveillance is not required to be performed prior to entering a MODE or other specified condition in the Applicability of the associated LCO if any of the following three conditions are satisfied:

1.4 Frequency

DESCRIPTION (continued)

a. The Surveillance is not required to be met in the MODE or other specified condition to be entered: or

b. The Surveillance is required to be met in the MODE or other specified condition to be entered, but has been performed within the specified Frequency (i.e., it is current) and is known not to be failed; or

c. The Surveillance is required to be met, but not performed, in the MODE or other specified condition to be entered, and is known no to be failed.

Examples 1.4-3, 1.4-4, 1.4-5, and 1.4-6 discusses these special situations.

EXAMPLES

The following examples illustrate the various ways that Frequencies are specified. In these examples, the Applicability of the LCO (LCO not shown) is MODES 1, 2, and 3.

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Perform CHANNEL CHECK.	12 hours

Example 1.4-1 contains the type of SR most often encountered in the Technical Specifications (TS). The Frequency specifies an interval (12 hours) during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 12 hours, an extension of the time interval to 1.25 times the stated Frequency is allowed by SR 3.0.2 for operational flexibility. The measurement of this interval continues at all times, even when the SR is not required to be met per SR 3.0.1 (such as when the equipment is inoperable, a variable is outside specified limits, or the unit is outside the Applicability of the LCO). If the interval specified by SR 3.0.2 is exceeded while the unit is in a MODE or other specified condition in the Applicability of the LCO, and the performance of the Surveillance is not otherwise modified (refer to Example 1.4-3), then SR 3.0.3 becomes applicable.

If the interval as specified by SR 3.0.2 is exceeded while the unit is not in a MODE or other specified condition in the Applicability of the LCO for which performance of the SR is required, the Surveillance must be performed within the Frequency requirements of SR 3.0.2 prior to entry into the MODE or other specified condition. Failure to do so would result in a violation of SR 3.0.4.

EXAMPLES (continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify flow is within limits.	Once within 12 hours after ≥ 25% RTP AND 24 hours thereafter

Example 1.4-2 has two Frequencies. The first is a one time performance Frequency, and the second is of the type shown in Example 1.4-1. The logical connector "AND" indicates that both Frequency requirements must be met. Each time reactor power is increased from a power level < 25% RTP to ≥ 25% RTP, the Surveillance must be performed within 12 hours.

The use of "once" indicates a single performance will satisfy the specified Frequency (assuming no other Frequencies are connected by "AND"). This type of Frequency does not qualify for the extension allowed by SR 3.0.2. "Thereafter" indicates future performances must be established per SR 3.0.2, but only after a specified condition is first met (i.e., the "once" performance in this example). If reactor power decreases to < 25% RTP, the measurement of both intervals stops. New intervals start upon reactor power reaching 25% RTP.

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
- NOTE - Not required to be performed until 12 hours after ≥ 25% RTP.	
Perform channel adjustment.	7 days

The interval continues, whether or not the unit operation is < 25% RTP between performances.

As the Note modifies the required performance of the Surveillance, it is construed to be part of the "specified Frequency." Should the 7 day interval be exceeded while operation is < 25% RTP, this Note allows 12 hours after power reaches ≥ 25% RTP to perform the Surveillance. The Surveillance is still considered to be performed within the "specified Frequency." Therefore, if the Surveillance were not performed within the 7 day (plus the extension allowed by SR 3.0.2) interval, but operation was < 25% RTP, it would not constitute a failure of the SR or failure to meet the LCO. Also, no violation of SR 3.0.4 occurs when changing MODES, even with the 7 day Frequency not met, provided operation does not exceed 12 hours with power ≥ 25% RTP.

Once the unit reaches 25% RTP, 12 hours would be allowed for completing the Surveillance. If the Surveillance were not performed within this 12 hour interval, there would then be a failure to perform a Surveillance within the specified Frequency, and the provisions of SR 3.0.3 would apply.

EXAMPLES (continued)

EXAMPLE 1.4-4

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
- NOTE - Only required to be met in MODE 1.	
Verify leakage rates are within limits.	24 hours

Example 1.4.-4 specifies that the requirements of this Surveillance do not have to be met until the unit is in MODE 1. The interval measurement for the Frequency of this Surveillance continues at all times, as described in Example 1.4-1. However, the Note constitutes an "otherwise stated" exception to the Applicability of this Surveillance. Therefore, if the Surveillance were not performed within the 24 hour interval (plus the extension allowed by SR 3.0.2), but the unit was not in MODE 1, there would be no failure of the SR nor failure to meet the LCO. Therefore, no violation of SR 3.0.4 occurs when changing MODES, even with the 24 hour Frequency exceeded, provided the MODE change was not made into MODE 1. Prior to entering MODE 1 (assuming again that the 24 hour Frequency were not met), SR 3.0.4 would require satisfying the SR.

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-5

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
- NOTE - Only required to be performed in MODE 1.	
Perform complete cycle of the valve.	7 days

The interval continues, whether or not the unit operation is in MODE 1,2 or 3 (the assumed Applicability of the associated LCO) between performances.

As the Note modifies the required performance of the Surveillance, the Note is construed to be part of the "specified Frequency." Should the 7 day interval be exceeded while operation is not in MODE 1, this Note allows entry into and operation in MODES 2 and 3 to perform the Surveillance. The Surveillance is still considered to be performed within the "specified Frequency" if completed prior to entering MODE 1. Therefore, if the Surveillance were not performed within the 7 day (plus the extension allowed by SR 3.0.2) interval, but operation was not in MODE 1, it would not constitute a failure of the SR or failure to meet the LCO. Also, no violation of SR 3.0.4 occurs when changing MODES, even with the 7 day Frequency not met, provided operation does not result in entry into MODE 1.

Once the unit reaches MODE 1, the requirement for the Surveillance to be performed within its specified Frequency applies and would require that the Surveillance had been performed. If the Surveillance were not performed prior to entering MODE 1, there would then be a failure to perform a Surveillance within the specified Frequency, and the provisions of SR 3.0.3 would apply.

1.4 Frequency

EXAMPLES (continued)

EXAMPLE 1.4-6

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
- NOTE - Not required to be met in MODE 3.	
Verify parameter is within limits.	24 hours

Example 1.4-[6] specifies that the requirements of this Surveillance do not have to be met while the unit is in MODE 3 (the assumed Applicability of the associated LCO is MODES 1,2, and 3). The interval measurement for the Frequency of this Surveillance continues at all times, as described in Exarnple 1.4-1. However, the Note constitutes an "otherwise stated" exception to the Applicability of this Surveillance. Therefore, if the Surveillance were not performed within the 24 hour interval (plus the extension allowed by SR 3.0.2), and the unit was in MODE 3, there would be no failure of the SR nor failure to meet the LCO. Therefore, no violation of SR 3.0.4 occurs when changing MODES to enter MODE 3, even with the 24 hour Frequency exceeded, provided the MODE change does not result in entry into MODE 2. Prior to entering MODE 2 (assuming again that the 24 hour Frequency were not met), SR 3.0.4 would require satisfying the SR.

2.0 SAFETY LIMITS (SLs) (Digital)

2.1 SLs

2.1.1 Reactor Core SLs

2.1.1.1 In MODES 1 and 2, departure from nucleate boiling ratio (DNBR) shall be maintained at ≥ [1.19].

2.1.1.2 In MODES 1 and 2, the peak linear heat rate (LHR) shall be maintained at ≤ [21.0] kW/ft.

2.1.2 Reactor Coolant System Pressure SL

In MODES 1, 2, 3, 4, and 5, the RCS pressure shall be maintained at ≤ [2750] psia.

2.2 SAFETY LIMIT VIOLATIONS

2.2.1 If SL 2.1.1.1 or SL 2.1.1.2 is violated, restore compliance and be in MODE 3 within 1 hour.

2.2.2 If SL 2.1.2 is violated:

2.2.2.1 In MODE 1 or 2, restore compliance and be in MODE 3 within 1 hour.

2.2.2.2 In MODE 3, 4, or 5, restore compliance within 5 minutes.

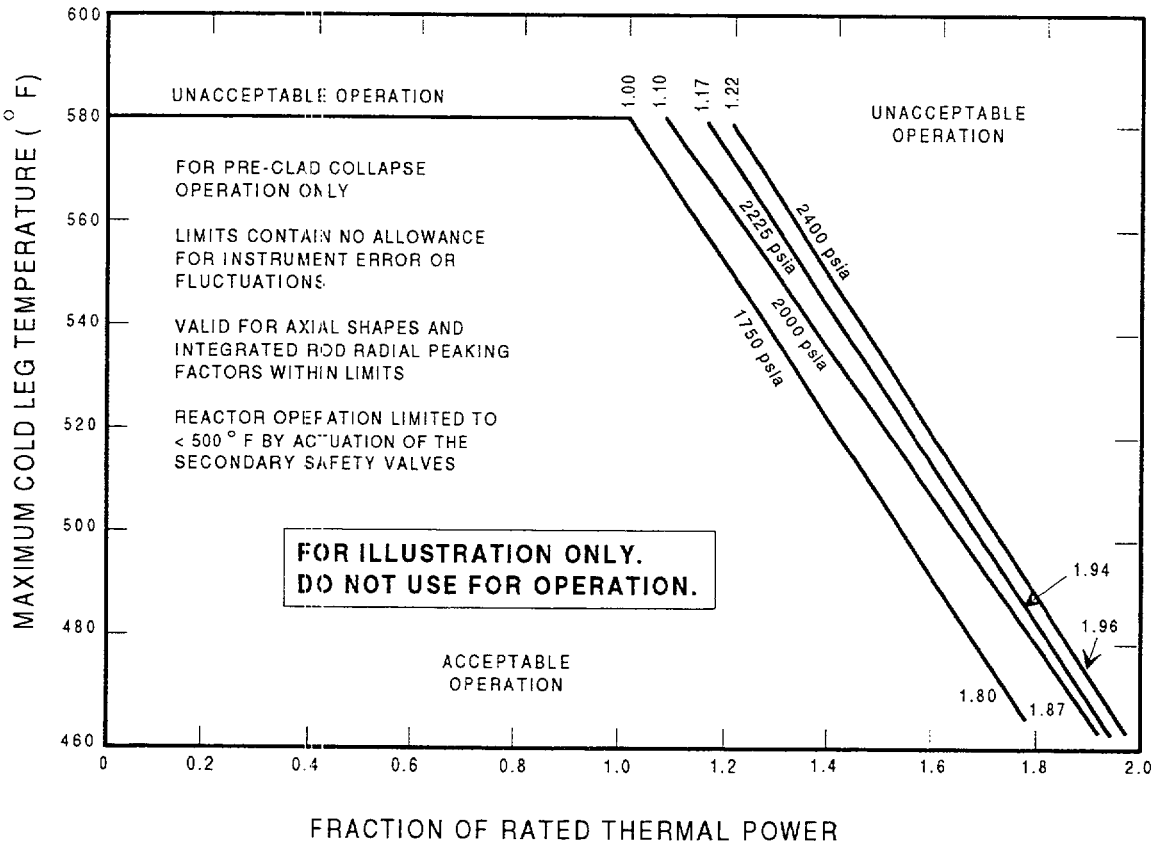

Figure 2.1.1-1 (page 1 of 1)
Reactor Core Thermal Margin Safety Limit

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1	LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2 and LCO 3.0.7.
LCO 3.0.2	Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.
LCO 3.0.3	When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in: a. MODE 3 within 7 hours, b. [MODE 4 within 13] hours, and c. MODE 5 within 37 hours. Exceptions to this Specification are stated in the individual Specifications. Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required. LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.
LCO 3.0.4	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 stated in the individual Specifications. 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.

3.0 LCO Applicability

LCO 3.0.4 (continued)

- REVIEWER'S NOTE -

LCO 3.0.4 has been revised so that changes in MODES or other specified conditions in the Applicability that are part of a shutdown of the unit shall not be prevented. In addition, LCO 3.0.4 has been revised so that it is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4. The MODE change restrictions in LCO 3.0.4 were previously applicable in all MODES. Before this version of LCO 3.0.4 can be implemented on a plant-specific basis, the licensee must review the existing technical specifications to determine where specific restrictions on MODE changes or Required Actions should be included in individual LCOs to justify this change; such an evaluation should be summarized in a matrix of all existing LCOs to facilitate NRC staff review of a conversion to the STS.

LCO 3.0.5

Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

LCO 3.0.6

When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, an evaluation shall be performed in accordance with Specification 5.5.15, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

LCO 3.0.7

Special test exception (STE) LCOs [in each applicable LCO section] allow specified Technical Specifications (TS) requirements to be changed to permit performance of special tests and operations. Unless otherwise specified, all other TS requirements remain unchanged. Compliance with

3.0 LCO Applicability

LCO 3.0.7 (continued)

STE LCOs is optional. When an STE LCO is desired to be met but is not met, the ACTIONS of the STE LCO shall be met. When an STE LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with the other applicable Specifications.

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 3.0.1	SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.
SR 3.0.2	The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met. For Frequencies specified as "once," the above interval extension does not apply. If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance. Exceptions to this Specification are stated in the individual Specifications.
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 less. This delay period is permitted to allow performance of the Surveillance. If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered. When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.
SR 3.0.4	Entry into a MODE or other specified condition in the Applicability of an LCO shall not be made unless the LCO's Surveillances have been met within their specified Frequency. 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.

3.0 SR Applicability

SR 3.0.4 (continued)

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.

- REVIEWER'S NOTE -

SR 3.0.4 has been revised so that changes in MODES or other specified conditions in the Applicability that are part of a shutdown of the unit shall not be prevented. In addition, SR 3.0.4 has been revised so that it is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4. The MODE change restrictions in SR 3.0.4 were previously applicable in all MODES. Before this version of SR 3.0.4 can be implemented on a plant-specific basis, the licensee must review the existing technical specifications to determine where specific restrictions on MODE changes or Required Actions should be included in individual LCOs to justify this change; such an evaluation should be summarized in a matrix of all existing LCOs to facilitate NRC staff review of a conversion to the STS.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM) (Analog)

LCO 3.1.1 SHUTDOWN MARGIN (SDM) shall be within the limits specified in the COLR.

APPLICABILITY: MODES 3, 4, and 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limits.	A.1 Initiate boration to restore SDM to within limits.	15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	Verify SDM to be within limits.	24 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.2 Reactivity Balance (Analog)

LCO 3.1.2 The core reactivity balance shall be within ± 1% Δk/k of predicted values.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Core reactivity balance not within limit.	A.1	Re-evaluate core design and safety analysis and determine that the reactor core is acceptable for continued operation.	7 days
	AND		
	A.2	Establish appropriate operating restrictions and SRs.	7 days
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.2.1	**- NOTES -** 1. The predicted reactivity values may be adjusted (normalized) to correspond to the measured core reactivity prior to exceeding a fuel burnup of 60 effective full power days (EFPD) after each fuel loading. 2. This Surveillance is not required to be performed prior to entry into MODE 2.	
	Verify overall core reactivity balance is within ± 1.0% Δk/k of predicted values.	Prior to entering MODE 1 after fuel loading AND **- NOTE -** Only required after 60 EFPD 31 EFPD

3.1 REACTIVITY CONTROL SYSTEMS

3.1.3 Moderator Temperature Coefficient (MTC) (Analog)

LCO 3.1.3 The Moderator Temperature Coefficient (MTC) shall be maintained within the limits specified in the COLR. The maximum positive limit shall be that specified in Figure 3.1.3-1.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. MTC not within limits.	A.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.3.1	Verify MTC is within the upper limit.	Prior to entering MODE 1 after each fuel loading

SURVEILLANVE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.1.3.2	**- NOTES -** 1. This Surveillance is not required to be performed prior to entry into MODE 1 or 2. 2. 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.	Each fuel cycle within 7 effective full power days (EFPD) of reaching 40 EFPD core burnup AND Each fuel cycle within 7 EFPD of reaching 2/3 of expected core burnup

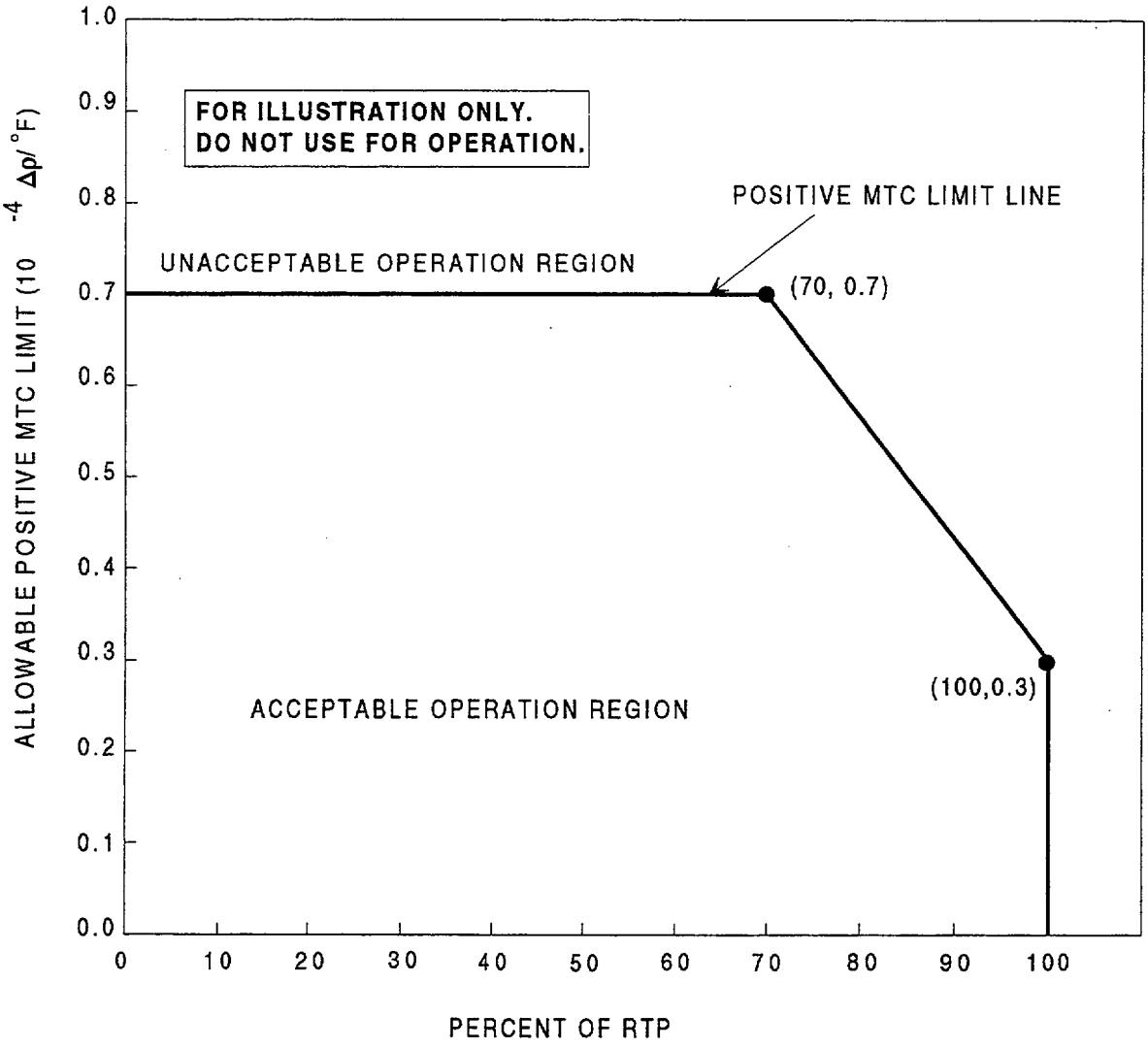

Figure 3.1.3-1 (page 1 of 1)
Allowable Positive MTC Limit

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Control Element Assembly (CEA) Alignment (Analog)

LCO 3.1.4 All Control Element Assemblies (CEAs) shall be OPERABLE and aligned to within [7] inches (indicated position) of their respective group, and [the CEA motion inhibit and the CEA deviation circuit shall be OPERABLE].

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more CEAs trippable and misaligned from its group by > [7 inches] and ≤ [15 inches]. OR One CEA trippable and misaligned from its group by > [15 inches].	A.1 Reduce THERMAL POWER to ≤ 70% RTP. AND A.2 Restore CEA Alignment.	1 hour 2 hours
B. CEA motion inhibit inoperable.	B.1 Perform SR 3.1.4.1. AND B.2.1 Restore CEA motion inhibit to OPERABLE status. OR	1 hour AND Every 4 hours thereafter 6 hours

ACTIONS (continued)

CONDITION		REQUIRED ACTION	COMPLETION TIME
	B.2.2	---------- **- NOTE -** Required Action B.2.2 shall not be performed when in conflict with either Required Action A.1, A.2, or C.1. ---------- Place and maintain the CEA drive switch in either the "off" or "manual" position, [and fully withdraw all CEAs in groups 3 and 4 and withdraw all CEAs in group 5 to < 5% insertion].	6 hours
C. CEA deviation circuit inoperable.	C.1	Perform SR 3.1.4.1.	1 hour AND Every 4 hours thereafter
D. Required Action and associated Completion Time not met. OR One or more CEAs untrippable. OR Two or more CEAs misaligned by > [15 inches].	D.1	Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify the indicated position of each CEA to be within [7 inches] of all other CEAs in its group.	Within 1 hour Following any movement of > [7 inches] AND 12 hours
SR 3.1.4.2	Verify the CEA motion inhibit is OPERABLE.	92 days
SR 3.1.4.3	Verify the CEA deviation circuit is OPERABLE.	31 days
SR 3.1.4.4	Verify CEA freedom of movement (trippability) by moving each individual CEA that is not fully inserted into the reactor core [5 inches] in either direction.	92 days
SR 3.1.4.5	Perform a CHANNEL FUNCTIONAL TEST of the reed switch position transmitter channel.	18 months
SR 3.1.4.6	Verify each CEA drop time is ≤ [3.1] seconds.	Prior to reactor criticality, after each removal of the reactor head

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Shutdown Control Element Assembly (CEA) Insertion Limits (Analog)

LCO 3.1.5 All shutdown Control Element Assemblies (CEAs) shall be withdrawn to ≥ [129] inches.

APPLICABILITY: MODE 1,
MODE 2 with any regulating CEA not fully inserted.

ACTIONS

- NOTE -
This LCO is not applicable while performing SR 3.1.4.5.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more shutdown CEAs not within limit.	A.1	Restore shutdown CEA(s) to within limit.	2 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify each shutdown CEA is withdrawn ≥ [129] inches.	12 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Regulating Control Element Assembly (CEA) Insertion Limits (Analog)

LCO 3.1.6 The power dependent insertion limit (PDIL) alarm circuit shall be OPERABLE, and the regulating Control Element Assembly (CEA) groups shall be limited to the withdrawal sequence and to the insertion limits specified in the COLR.

APPLICABILITY: MODES 1 and 2.

ACTIONS

- NOTE -

This LCO is not applicable while performing SR 3.1.4.5 [or during reactor power cutback operation].

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Regulating CEA groups inserted beyond the transient insertion limit.	A.1	Restore regulating CEA groups to within limits.	2 hours
	OR		
	A.2	Reduce THERMAL POWER to less than or equal to the fraction of RTP allowed by the CEA group position and insertion limits specified in the COLR.	2 hours
B. Regulating CEA groups inserted between the long term steady state insertion limit and the transient insertion limit for > 4 hours per 24 hour interval.	B.1	Verify short term steady state insertion limits are not exceeded.	15 minutes
	OR		

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	B.2	Restrict increases in THERMAL POWER to ≤ 5% RTP per hour.	15 minutes
C. Regulating CEA groups inserted between the long term steady state insertion limit and the transient insertion limit for intervals > 5 effective full power days (EFPD) per 30 EFPD interval or > 14 EFPD per 365 EFPD.	C.1	Restore regulating CEA groups to within limits.	2 hours
D. PDIL alarm circuit inoperable.	D.1	Perform SR 3.1.6.1.	1 hour AND Once per 4 hours thereafter
E. Required Action and associated Completion Time not met.	E.1	Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.6.1	--- **- NOTE -** Not required to be performed until 12 hours after entry into MODE 2. --- Verify each regulating CEA group position is within its insertion limits.	12 hours

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.6.2	Verify the accumulated times during which the regulating CEA groups are inserted beyond the steady state insertion limits but within the transient insertion limits.	24 hours
SR 3.1.6.3	Verify PDIL alarm circuit is OPERABLE.	31 days

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Special Test Exceptions (STE) - SHUTDOWN MARGIN (SDM) (Analog)

LCO 3.1.7 During performance of PHYSICS TESTS, the requirements of:

LCO 3.1.1, "SHUTDOWN MARGIN,"
LCO 3.1.5, "Shutdown Control Element Assembly Insertion Limits," and
LCO 3.1.6, "Regulating Control Element Assembly Insertion Limits,"

may be suspended for measurement of Control Element Assembly (CEA) worth and SHUTDOWN MARGIN (SDM), provided shutdown reactivity equivalent to at least the highest estimated CEA worth (of those CEAs actually withdrawn) is available for trip insertion.

APPLICABILITY: MODES 2 and 3 during PHYSICS TESTS.

- NOTE -

Operation in MODE 3 shall be limited to 6 consecutive hours.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any CEA not fully inserted and less than the above shutdown reactivity equivalent available for trip insertion. OR All CEAs inserted and the reactor subcritical by less than the above shutdown reactivity equivalent.	A.1 Initiate boration to restore required shutdown reactivity.	15 minutes

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.7.1	Verify that the position of each CEA not fully inserted is within the acceptance criteria for available negative reactivity addition.	2 hours
SR 3.1.7.2	---------- **- NOTE -** Not required to be performed during initial power escalation following a refueling outage if SR 3.1.5.7 has been met. ---------- Verify that each CEA not fully inserted is capable of full insertion when tripped from at least the 50% withdrawn position.	Once within [7 days] prior to reducing SDM to less than the limits of LCO 3.1.1

3.1 REACTIVITY CONTROL SYSTEMS

3.1.8 Special Test Exceptions (STE) - MODES 1 and 2 (Analog)

LCO 3.1.8 During the performance of PHYSICS TESTS, the requirements of:

LCO 3.1.3, "Moderator Temperature Coefficient,"
LCO 3.1.4, "Control Element Assembly Alignmen,"
LCO 3.1.5, "Shutdown Control Element Assembly Insertion Limits,"
LCO 3.1.6, "Regulating Control Element Assembly Insertion Limits,"
LCO 3.2.2, "Total Planar Radial Peaking Factor,"
LCO 3.2.3, "Total Integrated Radial Peaking Factor," and
LCO 3.2.4, "AZIMUTHAL POWER TILT,"

may be suspended, provided THERMAL POWER is restricted to the test power plateau, which shall not exceed 85% RTP.

APPLICABILITY: MODES 1 and 2 during PHYSICS TESTS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Test power plateau exceeded.	A.1 Reduce THERMAL POWER to less than or equal to test power plateau.	15 minutes
B. Required Action and associated Completion Time not met.	B.1 Suspend PHYSICS TESTS.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.8.1	Verify THERMAL POWER is equal to or less than the test power plateau.	1 hour

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.8.1	Verify that the position of each CEA not fully inserted is within the acceptance criteria for available negative reactivity addition.	2 hours
SR 3.1.8.2	---------- **- NOTE -** Not required to be performed during initial power escalation following a refueling outage if SR 3.1.4.5 has been met. ---------- Verify each full length CEA not fully inserted is capable of full insertion when tripped from at least the 50% withdrawn position.	Once within [7 days] prior to reducing SDM to less than the limits of LCO 3.1.1

3.2 POWER DISTRIBUTION LIMITS

3.2.1 Linear Heat Rate (LHR) (Analog)

LCO 3.2.1 LHR shall not exceed the limits specified in the COLR.

APPLICABILITY: MODE 1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LHR, as determined by the Incore Detector Monitoring System, exceeds the limits specified in the COLR, as indicated by four or more coincident incore channels. OR LHR, as determined by the Excore Detector Monitoring System, exceeds the limits as indicated by the ASI outside the power dependent control limits specified in the COLR.	A.1 Restore LHR to within limits.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

- NOTE -

Either the Excore Detector Monitoring System or the Incore Detector Monitoring System shall be used to determine LHR.

	SURVEILLANCE	FREQUENCY
SR 3.2.1.1	**- NOTE -** Only required to be met when the Excore Detector Monitoring System is being used to determine LHR. Verify ASI alarm setpoints are within the limits specified in the COLR.	31 days
SR 3.2.1.2	**- NOTES -** 1. Only required to be met when the Incore Detector Monitoring System is being used to determine LHR. 2. Not required to be performed below 20% RTP. Verify incore detector local power density alarms satisfy the requirements of the core power distribution map, which shall be updated at least once per 31 days of accumulated operation in MODE 1.	31 days
SR 3.2.1.3	**- NOTES -** 1. Only required to be met when the Incore Detector Monitoring System is being used to determine LHR. 2. Not required to be performed below 20% RTP. Verify incore detector local power density alarm setpoints are less than or equal to the limits specified in the COLR.	31 days

3.2 POWER DISTRIBUTION LIMITS

3.2.2 Total Planar Radial Peaking Factor (F^T_{xy}) (Analog)

LCO 3.2.2 The calculated value of F^T_{xy} shall not exceed the limits specified in the COLR.

APPLICABILITY: MODE 1.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. ---------- **- NOTE -** Required Actions shall be completed if this Condition is entered. ---------- F^T_{xy} not within limits.	A.1	Reduce THERMAL POWER to bring the combination of THERMAL POWER and F^T_{xy} to within the limits specified in the COLR.	6 hours
	AND		
	A.2	Withdraw the control element assemblies (CEAs) to or beyond the long term steady state insertion limits of LCO 3.1.6, "Regulating CEAs," as specified in the COLR.	6 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.2.2.1	**- NOTE -** SR 3.2.2.2 and SR 3.2.2.3 shall be completed each time SR 3.2.2.1 is required. F^T_{xy} shall be determined by using the incore detectors to obtain a power distribution map with all full length CEAs at or above the long term steady state insertion limit, as specified in the COLR. Verify the value of F^T_{xy}.	Once prior to operation above 70% RTP after each fuel loading AND Each 31 days of accumulated operation in MODE 1
SR 3.2.2.2	Verify the value of F_{xy}.	In accordance with the Frequency requirements of SR 3.2.2.1
SR 3.2.2.3	Verify the value of T_q.	In accordance with the Frequency requirements of SR 3.2.2.1

3.2 POWER DISTRIBUTION LIMITS

3.2.3 Total Integrated Radial Peaking Factor (F_r^T) (Analog)

LCO 3.2.3 The calculated value of F_r^T shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. ---------- **- NOTE -** Required Actions shall be completed if this Condition is entered. ---------- F_r^T not within limit.	A.1	Reduce THERMAL POWER to bring the combination of THERMAL POWER and F_r^T to within limits specified in the COLR.	6 hours
	AND		
	A.2	Withdraw the control element assemblies (CEAs) to or beyond the long term steady state insertion limits of LCO 3.1.6, "Regulating Control Element Assembly (CEA) Insertion Limits," as specified in the COLR.	6 hours
	AND		
	A.3	Establish a revised upper THERMAL POWER limit as specified in the COLR.	6 hours
B. Required Actions and associated Completion Times not met.	B.1	Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.2.3.1	---------- **- NOTE -** SR 3.2.3.2 and SR 3.2.3.3 shall be completed each time SR 3.2.3.1 is required. F_r^T shall be determined by using the incore detectors to obtain a power distribution map with all full length CEAs at or above the long term steady state insertion limit as specified in the COLR. ---------- Verify the value of F_r^T.	Prior to operation > 70% RTP after each fuel loading AND Each 31 days of accumulated operation in MODE 1
SR 3.2.3.2	Verify the value of F_r.	In accordance with the Frequency requirements of SR 3.2.3.1
SR 3.2.3.3	Verify the value of T_q.	In accordance with the Frequency requirements of SR 3.2.3.1

3.2 POWER DISTRIBUTION LIMITS

3.2.4 AZIMUTHAL POWER TILT (T_q) (Analog)

LCO 3.2.4 T_q shall be ≤ [0.03].

APPLICABILITY: MODE 1 with THERMAL POWER > 50% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Indicated T_q > [0.03] and ≤ 0.10.	A.1	Restore T_q to ≤ [0.03].	2 hours
	OR		
	A.2	Verify F^T_{xy} and F^T_r are within the limits of LCO 3.2.2, "Total Planar Radial Peaking Factor (F^T_{xy})," and LCO 3.2.3, "Total Integrated Radial Peaking Factor (F^T_r)," respectively.	2 hours AND Once per 8 hours thereafter
B. Required Action and associated Completion Time of Condition A not met.	B.1	Reduce THERMAL POWER to ≤ 50% RTP.	4 hours
C. Indicated T_q > 0.10.		--- **- NOTE -** All subsequent Required Actions must be completed if power reduction commences prior to restoring T_q ≤ 0.10. ---	
	C.1	Verify F^T_{xy} and F^T_r are within the limits of LCO 3.2.2 and LCO 3.2.3, respectively.	1 hour
	AND		

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	C.2 Reduce THERMAL POWER to < 50% RTP. AND	2 hours
	C.3 Restore T_q to ≤ [0.03].	Correct the cause of the out of limit condition prior to increasing THERMAL POWER. Subsequent power operation above 50% RTP may proceed provided that the measured T_q is verified ≤ [0.03] at least once per hours for 12 hours, or until verified at 95% RTP.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.4.1	Verify T_q is within limits.	12 hours

3.2 POWER DISTRIBUTION LIMITS

3.2.5 AXIAL SHAPE INDEX (ASI) (Analog)

LCO 3.2.5 The ASI shall be maintained within the limits specified in the COLR.

APPLICABILITY: MODE 1 with THERMAL POWER > 20% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. ASI not within limits.	A.1	Restore ASI to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to ≤ 20% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.5.1	Verify ASI is within limits specified in the COLR.	12 hours

3.3 INSTRUMENTATION

3.3.1 Reactor Protective System (RPS) Instrumentation - Operating (Analog)

LCO 3.3.1 Four RPS trip units and associated instrument and bypass removal channels for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each RPS Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one RPS trip unit or associated instrument channel inoperable except for Condition C (excore channel not calibrated with incore detectors).	A.1 Place affected trip unit in bypass or trip. AND A.2.1 Restore channel to OPERABLE status. OR A.2.2 [Place affected tripunit in trip.	1 hour [48] hours 48 hours]
B. One or more Functions with two RPS trip units or associated instrument channels inoperable except for Condition C (excore channel not calibrated with incore detectors).	**- NOTE -** LCO 3.0.4 is not applicable. B.1 Place one trip unit in bypass and place the other trip unit in trip. AND B.2 Restore one trip unit to OPERABLE status.	 1 hour [48] hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more Functions with one or more power range excore channels not calibrated with the incore detectors.	C.1 Perform SR 3.3.1.3. OR C.2 Restrict THERMAL POWER to ≤ 90% RTP.	24 hours 24 hours
D. One or more Functions with one automatic bypass removal channel inoperable.	D.1 Disable bypass channel. OR D.2.1 Place affected trip units in bypass or trip. AND D.2.2.1 Restore bypass removal channel and affected trip units to OPERABLE status. OR D.2.2.2 [Place affected trip units in trip.	1 hour 1 hour [48] hours 48 hours]
E. One or more Functions with two automatic bypass removal channels inoperable.	--- **- NOTE -** LCO 3.0.4 is not applicable. --- E.1 Disable bypass channels. OR	 1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	E.2.1 [Place one affected trip unit in bypass and place the other in trip for each affected trip Function. AND	1 hour
	E.2.2 Restore one automatic bypass removal channel and the associated trip unit to OPERABLE status for each affected trip Function.	[48] hours]
F. Required Action and associated Completion Time not met for Axial Power Distribution and Loss of Load Trip Functions.	F.1 Reduce THERMAL POWER to < 15% RTP.	6 hours
G. Required Action and associated Completion Time not met except for Axial Power Distribution or Loss of Load Trip Functions.	G.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.1-1 to determine which SR shall be performed for each RPS Function.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1	Perform a CHANNEL CHECK of each RPS instrument channel except Loss of Load.	12 hours

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.2	---------- **- NOTES -** 1. Not required to be performed until 12 hours after THERMAL POWER is ≥ [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 excore power range and ΔT power channels to agree with calorimetric calculation if the absolute difference is ≥ [1.5]%.	24 hours
SR 3.3.1.3	---------- **- NOTE -** Not required to be performed until 12 hours after THERMAL POWER is ≥ [20]% RTP. ---------- Calibrate the power range excore channels using the incore detectors.	31 days
SR 3.3.1.4	Perform a CHANNEL FUNCTIONAL TEST of each RPS channel except Loss of Load and Power Rate of Change.	[92] days
SR 3.3.1.5	---------- **- NOTE -** Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform a CHANNEL CALIBRATION on excore power range channels.	92 days
SR 3.3.1.6	Perform a CHANNEL FUNCTIONAL TEST of each Power Rate of Change channel and each Loss of Load functional unit.	Once within 7 days prior to each reactor startup

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.7	Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal function.	Once within 92 days prior to each reactor startup
SR 3.3.1.8	--- **- NOTE -** Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform a CHANNEL CALIBRATION of each RPS instrument channel, including bypass removal functions.	[18] months
SR 3.3.1.9	--- **- NOTE -** Neutron detectors are excluded from RPS RESPONSE TIME testing. --- Verify RPS RESPONSE TIME is within limits.	[18] months on a STAGGERED TEST BASIS

Table 3.3.1-1 (page 1 of 2)
Reactor Protective System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Variable High Power Trip	1, 2	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.8 SR 3.3.1.9	≤ [10]% RTP above current THERMAL POWER but not < [30]% RTP nor > [107]% RTP
2. Power Rate of Change - High[(a)]	1, 2	SR 3.3.1.1 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.8	≤ [2.6] dpm
3. Reactor Coolant Flow - Low[(b)]	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9	≥ [95]%
4. Pressurizer Pressure - High	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.8 SR 3.3.1.9	≤ [2400] psia
5. Containment Pressure - High	1, 2	[SR 3.3.1.1] SR 3.3.1.4 SR 3.3.1.8 SR 3.3.1.9	≤ [4.0] psig
6. Steam Generator Pressure - Low[(c)]	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9	≥ [685] psia

(a) Trip may be bypassed when THERMAL POWER is < [1E-4]% RTP or > [13]% RTP. Bypass shall be automatically removed when THERMAL POWER is ≥ [1E-4]% RTP and ≤ [13]% RTP.

(b) Trips may be bypassed when THERMAL POWER is < [1E-4]%. Bypass shall be automatically removed when THERMAL POWER is ≥ [1E-4]% RTP. During testing pursuant to LCO 3.4.17, RCS Loops - Test Exceptions, trips may be bypassed below 5% RTP. Bypass shall be automatically removed when THERMAL POWER is ≥ 5% RTP.

(c) Trip may be bypassed when steam generator pressure is < [785] psig. Bypass shall be automatically removed when steam generator pressure is ≥ [785] psig.

Table 3.3.1-1 (page 1 of 2)
Reactor Protective System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7a. Steam Generator A Level - Low	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.8 SR 3.3.1.9	≥ [24.7]%
7b. Steam Generator B Level - Low	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.8 SR 3.3.1.9	≥ [24.7]%
[8. Axial Power Distribution -	1(d) (e)	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.9	Figure 3.3.1-3]
9a. Thermal Margin/Low Pressure (TM/LP)(b)	1, 2	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.7 [SR 3.3.1.8] SR 3.3.1.9	Figures 3.3.1-1 and 3.3.1-2
[9b. Steam Generator Pressure Difference(b)	1, 2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.8 SR 3.3.1.9	≤ [135] psid]
10. Loss of Load (turbine stop valve control oil pressure)	1(d) (e)	SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.8	≥ [800] psig

(b) Trips may be bypassed when THERMAL POWER is < [1E-4]%. Bypass shall be automatically removed when THERMAL POWER is ≥ [1E-4]% RTP. During testing pursuant to LCO 3.4.17, trips may be bypassed below 5% RTP. Bypass shall be automatically removed when THERMAL POWER is ≥ 5% RTP.

(d) Trip is not applicable and may be bypassed when THERMAL POWER is < [15]% RTP. Bypass shall be automatically removed when THERMAL POWER is ≥ [15]% RTP.

(e) Trip is only applicable in mode 1 ≥15% RTP.

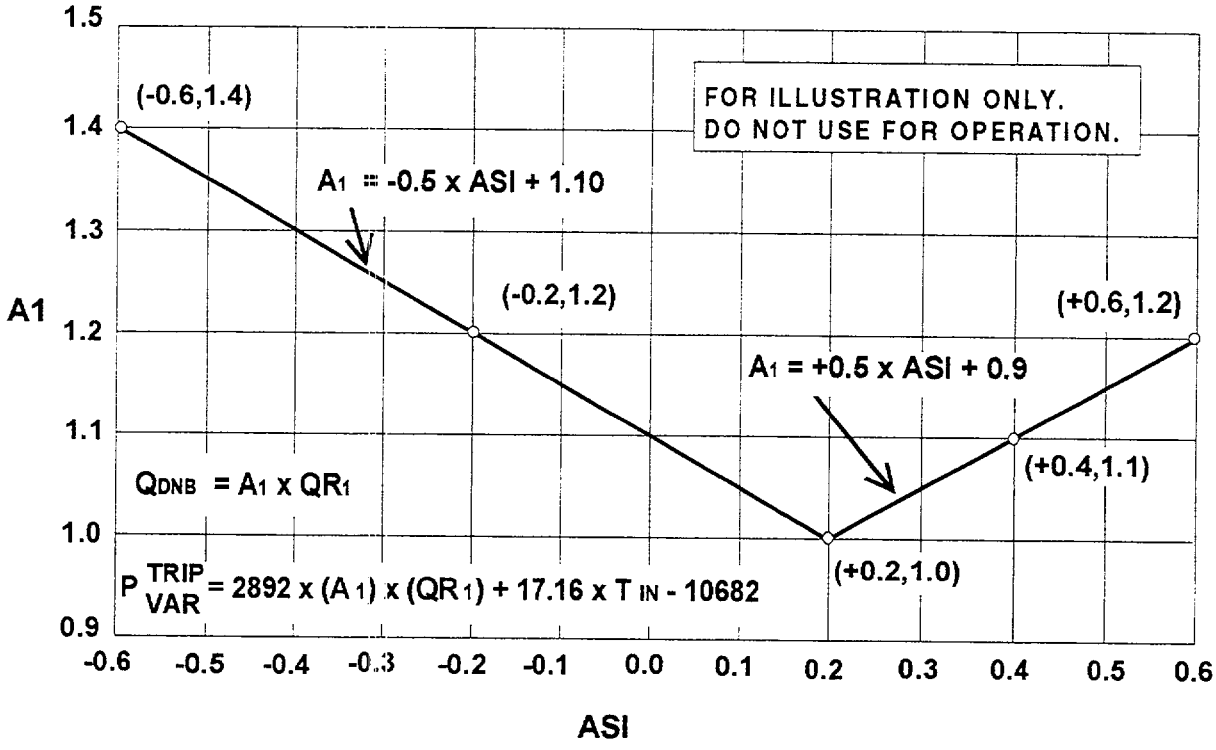

Figure 3.3.1-1 (page 1 of 1)
Thermal Margin/Low Pressure Trip Setpoint: ASI vs A_1

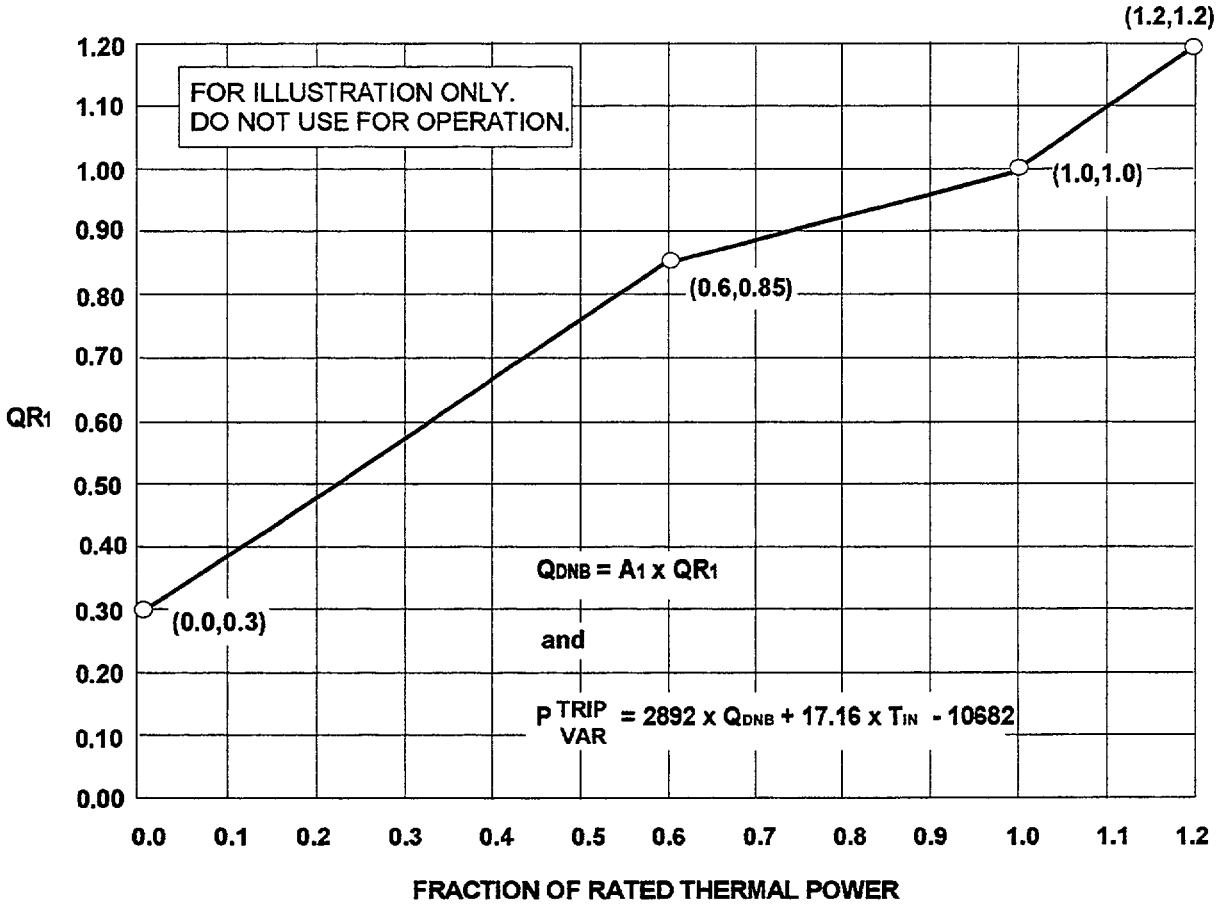

Figure 3.3.1-2 (page 1 of 1)
Thermal Margin/Low Pressure Trip Setpoint: Fraction of RTP vs QR 1

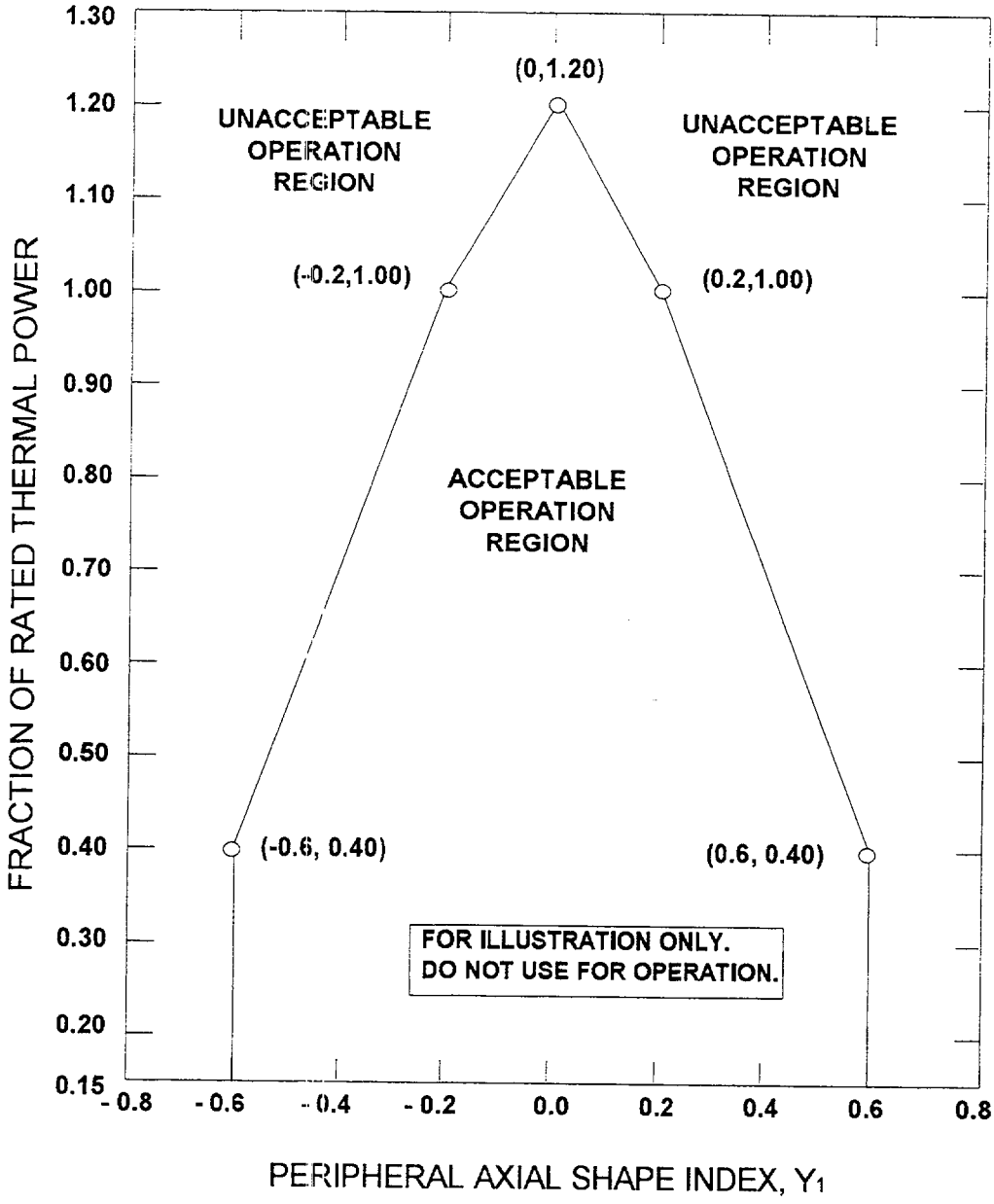

Figure 3.3.1-3 (page 1 of 1)
Peripheral Axial Shape Index, Y_1 vs Fraction of RTP

3.3 INSTRUMENTATION

3.3.2 Reactor Protective System (RPS) Instrumentation - Shutdown (Analog)

LCO 3.3.2 Four Power Rate of Change - High RPS trip units and associated instrument and bypass removal channels shall be OPERABLE.

APPLICABILITY: MODES 3, 4, and 5, with any reactor trip circuit breakers (RTCBs) closed and any control element assembly capable of being withdrawn.

- NOTE -

Trip may be bypassed when THERMAL POWER is < [1E-4]% RTP. Bypass shall be automatically removed when THERMAL POWER is ≥ [1E-4]% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Power Rate of Change - High trip unit or associated instrument channel inoperable.	A.1 Place affected trip unit in bypass or trip. AND	1 hour
	A.2.1 Restore channel to OPERABLE status. OR	[48] hours
	A.2.2 [Place affected tripunit in trip.	48 hours]

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Two Power Rate of Change - High trip units or associated instrument channel inoperable.	---------- **- NOTE -** LCO 3.0.4 is not applicable. ----------		
	B.1	Place one trip unit in bypass and place the other trip unit in trip.	1 hour
	AND		
	B.2	[Restore one trip unitto OPERABLE status.	48 hours]
C. One automatic bypass removal channel inoperable.	C.1	Disable bypass channel.	1 hour
	OR		
	C.2.1	Place affected trip unit in bypass or trip.	1 hour
	AND		
	C.2.2.1	Restore bypass removal channel and affected trip unit to OPERABLE status.	[48] hours
	OR		
	C.2.2.2	[Place affected tripunits in trip.	48 hours]
D. Two automatic bypass removal channels inoperable.	---------- **- NOTE -** LCO 3.0.4 is not applicable. ----------		
	D.1	Disable bypass channels.	1 hour
	OR		

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	D.2.1 Place one affected trip unit in bypass and place the other in trip. AND	1 hour
	D.2.2 Restore one bypass channel and the associated trip unit to OPERABLE status.	[48] hours
E. Required Action and associated Completion Time not met.	E.1 Open all RTCBs.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform a CHANNEL CHECK of each wide range power channel.	12 hours
SR 3.3.2.2	Perform a CHANNEL FUNCTIONAL TEST on the Power Rate of Change trip function.	92 days
SR 3.3.2.3	Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal function.	92 days
SR 3.3.2.4	--- **- NOTE -** Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform a CHANNEL CALIBRATION, including bypass removal functions with Allowable Value ≤ [2.6] dpm.	[18] months

3.3 INSTRUMENTATION

3.3.3 Reactor Protective System (RPS) Logic and Trip Initiation (Analog)

LCO 3.3.3 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.

APPLICABILITY: MODES 1 and 2,
MODES 3, 4, and 5, with any RTCBs closed and any control element assemblies capable of being withdrawn.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
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.	A.1 Restore channel(s) to OPERABLE status.	48 hours
B. One channel of Manual Trip, RTCBs, or Initiation Logic inoperable in MODE 1 or 2.	B.1 Open the affected RTCBs.	1 hour
C. One channel of Manual Trip, RTCBs, or Initiation Logic inoperable in MODE 3, 4, or 5.	C.1 Open the affected RTCBs.	48 hours
D. Two channels of Manual Trip, RTCBs, or Initiation Logic affecting the same trip leg inoperable.	D.1 Open the affected RTCBs.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, or D not met. OR One or more Functions with two or more Manual Trip, Matrix Logic, Initiation Logic, or RTCB channels inoperable for reasons other than Condition A or D.	E.1 Be in MODE 3. AND E.2 Open all RTCBs.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1	Perform a CHANNEL FUNCTIONAL TEST on each RTCB channel.	[31] days
SR 3.3.3.2	Perform a CHANNEL FUNCTIONAL TEST on each RPS Logic channel.	[92] days
SR 3.3.3.3	Perform a CHANNEL FUNCTIONAL TEST on each RPS Manual Trip channel.	Once within 7 days prior to each reactor startup
SR 3.3.3.4	[Perform a CHANNEL FUNCTIONAL TEST, including separate verification of the undervoltage and shunt trips, on each RTCB channel.	[18] months]

3.3 INSTRUMENTATION

3.3.4 Engineered Safety Features Actuation System (ESFAS) Instrumentation (Analog)

LCO 3.3.4 Four ESFAS trip units and associated instrument and bypass removal channels for each Function in Table 3.3.4-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each ESFAS Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. [One Containment Spray Actuation Signal (CSAS) trip unit or associated instrument inoperable.	A.1 Place affected trip unit in bypass.	1 hour]
B. One or more Functions with one ESFAS trip unit or associated instrument channel (except CSAS) inoperable.	B.1 Place affected trip unit in bypass or trip. AND B.2.1 Restore channel to OPERABLE status. OR B.2.2 [Place affected trip unit in trip.	1 hour [48] hours 48 hours]

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more Functions with two ESFAS trip units or associated instrument channels (except CSAS) inoperable.		---------- **- NOTE -** LCO 3.0.4 is not applicable. ----------	
	C.1	Place one trip unit in bypass and place the other trip unit in trip.	1 hour
	AND		
	C.2	Restore one trip unit to OPERABLE status.	[48] hours
D. One or more Functions with one automatic bypass removal channel inoperable.	D.1	Disable bypass channel.	1 hour
	OR		
	D.2.1	Place affected trip units in bypass or trip.	1 hour
	AND		
	D.2.2.1	Restore bypass removal channel and affected trip units to OPERABLE status.	[48] hours
	OR		
	D.2.2.2 [	Place affected trip units in trip.	48 hours]
E. One or more Functions with two automatic bypass removal channels inoperable.		---------- **- NOTE -** LCO 3.0.4 is not applicable. ----------	
	E.1	Disable bypass channels.	1 hour
	OR		

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	E.2.1 Place one affected trip unit in bypass and place the other in trip for each affected ESFAS Function. AND E.2.2 [Restore one bypass channel and the associated trip unit to OPERABLE status for each affected trip Function.	1 hour 48 hours]
F. Required Action and associated Completion Time not met.	F.1 Be in MODE 3. AND F.2 Be in MODE 4.	6 hours [12] hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.4.1	Perform a CHANNEL CHECK of each ESFAS instrument channel.	12 hours
SR 3.3.4.2	Perform a CHANNEL FUNCTIONAL TEST of each ESFAS instrument channel.	[92] days
SR 3.3.4.3	Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal function.	Once within 92 days prior to each reactor startup
SR 3.3.4.4	Perform a CHANNEL CALIBRATION of each ESFAS instrument channel, including bypass removal functions.	[18] months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.4.5	Verify ESF RESPONSE TIME is within limits.	[18] months on a STAGGERED TEST BASIS

Table 3.3.4-1 (page 1 of 2)
Engineered Safety Features Actuation System Instrumentation

FUNCTION	MODES	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Safety Injection Actuation Signal (SIAS)			
a. Containment Pressure - High	1,2,3	SR 3.3.4.1 SR 3.3.4.2 SR 3.3.4.4 SR 3.3.4.5	≤ [19.0] psia
b. Pressurizer Pressure - Low[(a)]	1,2,3	SR 3.3.4.1 SR 3.3.4.2 SR 3.3.4.3 SR 3.3.4.4 SR 3.3.4.5	≥ [1687] psia
2. Containment Spray Actuation Signal[(b)]			
a. Containment Pressure - High	1,2,3	SR 3.3.4.1 SR 3.3.4.2 SR 3.3.4.4 SR 3.3.4.5	≤ [19.0] psia
3. Containment Isolation Actuation Signal			
a. Containment Pressure - High	1,2,3	SR 3.3.4.1 SR 3.3.4.2 SR 3.3.4.4 SR 3.3.4.5	≤ [19.0] psia
[b. Containment Radiation - High	1,2,3	SR 3.3.4.1 SR 3.3.4.2 SR 3.3.4.4 SR 3.3.4.5	≤ [2x Background]]

(a) Pressurizer Pressure - Low may be manually bypassed when pressurizer pressure is < [1800] psia. The bypass shall be automatically removed whenever pressurizer pressure is ≥ [1800] psia.

[(b) SIAS is also required as a permissive to initiate containment spray.]

Table 3.3.4-1 (page 2 of 2)
Engineered Safety Features Actuation System Instrumentation

FUNCTION	MODES	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Main Steam Isolation Signal			
a. Steam Generator Pressure - Low[c]	1,2[d],3[d]	SR 3.3.4.1 SR 3.3.4.2 SR 3.3.4.3 SR 3.3.4.4 SR 3.3.4.5	≥ [495] psig
5. Recirculation Actuation Signal			
a.. Refueling Water Tank Level - Low	1,2,3	[SR 3.3.4.1] SR 3.3.4.2 SR 3.3.4.4 SR 3.3.4.5	[≥ 24 inches and ≤ 30] inches above tank bottom
6. Auxiliary Feedwater Actuation Signal (AFAS)			
a. Steam Generator A Level - Low	1,2,3	SR 3.3.4.1 SR 3.3.4.2 SR 3.3.4.4 SR 3.3.4.5	≥ [45.7] %
b. Steam Generator B Level - Low	1,2,3	SR 3.3.4.1 SR 3.3.4.2 SR 3.3.4.4 SR 3.3.4.5	≥ [45.7] %
c. Steam Generator Pressure Difference - High (A > B) or (B > A)	1,2,3	SR 3.3.4.1 SR 3.3.4.2 SR 3.3.4.4 SR 3.3.4.5	≤ [48.3] psid

(c) Steam Generator Pressure - Low may be manually bypassed when steam generator pressure is < [785] psia. The bypass shall be automatically removed whenever steam generator pressure is ≥ [785] psia.

(d) Only the Main Steam Isolation Signal (MSIS) Function and the Steam Generator Pressure - Low and Containment Pressure - High signals are not required to be OPERABLE when all associated valves isolated by the MSIS Function are closed and [de-activated].

3.3 INSTRUMENTATION

3.3.5 Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip (Analog)

LCO 3.3.5 Two ESFAS Manual Trip and two ESFAS Actuation Logic channels shall be OPERABLE for each ESFAS Function specified in Table 3.3.5-1.

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one Auxiliary Feedwater Actuation Signal (AFAS) Manual Trip or Actuation Logic channel inoperable.	A.1 Restore channel to OPERABLE status.	48 hours
B. Two AFAS Manual Trip or Actuation Logic channels inoperable. OR Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours [12] hours
C. One or more Functions with one Manual Trip or Actuation Logic channel inoperable except AFAS.	C.1 Restore channel to OPERABLE status.	48 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or more Functions with two Manual Trip or Actuation Logic channel inoperable except AFAS. OR Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.5.1	---------- **- NOTES -** ---------- 1. Testing of Actuation Logic shall include verification of the proper operation of each initiation relay. 2. Relays associated with plant equipment that cannot be operated during plant operation are only required to be tested during each MODE 5 entry exceeding 24 hours unless tested during the previous 6 months. ---------- Perform a CHANNEL FUNCTIONAL TEST on each ESFAS logic channel.	[92] days
SR 3.3.5.2	Perform a CHANNEL FUNCTIONAL TEST on each ESFAS Manual Trip channel.	[18] months

Table 3.3.5-1 (page 1 of 1)
Engineered Safety Features Actuation System Actuation Logic and
Manual Channel Applicability

FUNCTION	APPLICABLE MODES
1. Safety Injection Actuation Signal	1,2,3,[4]
2. Containment Spray Actuation Signal	1,2,3,[4]
3. Containment Isolation Actuation Signal	1,2,3,4
4. Main Steam Isolation Signal	1,2,3,4
5. Recirculation Actuation Signal	1,2,3,4
6. Auxiliary Feedwater Actuation Signal	1,2,3

3.3 INSTRUMENTATION

3.3.6 Diesel Generator (DG) - Loss of Voltage Start (LOVS) (Analog)

LCO 3.3.6 [Four] channels of Loss of Voltage Function and [four] channels of Degraded Voltage Function auto-initiation instrumentation per DG shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,
When associated DG is required to be OPERABLE by LCO 3.8.2, "AC Sources - Shutdown."

ACTIONS

- NOTE -
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel per DG inoperable.	A.1 Place channel in bypass or trip. AND A.2.1 Restore channel to OPERABLE status. OR A.2.2 [Place the channel intrip.	1 hour [48] hours 48 hours]
B. One or more Functions with two channels per DG inoperable.	B.1 Enter applicable Conditions and Required Actions for the associated DG made inoperable by DG - LOVS instrumentation. OR	1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	B.2.1 ---------- **- NOTE -** LCO 3.0.4 is not applicable. ---------- Place one channel in bypass and the other channel in trip.	1 hour
	AND	
	B.2.2 Restore one channel to OPERABLE status.	[48] hours
C. One or more Functions with more than two channels inoperable.	C.1 Restore all but two channels to OPERABLE status.	1 hour
D. Required Action and associated Completion Time not met.	D.1 Enter applicable Conditions and Required Actions for the associated DG made inoperable by DG - LOVS instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.6.1	[Perform CHANNEL CHECK.	12 hours]
SR 3.3.6.2	Perform CHANNEL FUNCTIONAL TEST.	[92] days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.6.3	Perform CHANNEL CALIBRATION with setpoint Allowable Values as follows: a. Degraded Voltage Function ≥ [3180] V and ≤ [3220] V Time delay: ≥ [ ] seconds and ≤ [ ] seconds at [ ] V and b. Loss of Voltage Function ≥ [3180] V and ≤ [3220] V Time delay: ≥ [ ] seconds and ≤ [ ] seconds at [ ] V.	[18] months

3.3 INSTRUMENTATION

3.3.7 Containment Purge Isolation Signal (CPIS) (Analog)

LCO 3.3.7 [Four] CPIS containment radiation monitor channels and one CPIS automatic Actuation Logic and one Manual Trip train shall be OPERABLE.

APPLICABILITY: During movement of [recently] irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One radiation monitor channel inoperable.	A.1	Place the affected channel in trip.	4 hours
	OR		
	A.2	Suspend movement of [recently] irradiated fuel assemblies within containment.	Immediately
B. One required Manual Trip or automatic Actuation Logic train inoperable. OR More than one radiation monitor channel inoperable. OR Required Action and associated Completion Time of Condition A not met.	B.1	Place and maintain containment purge and exhaust valves in closed position.	Immediately
	OR		
	B.2	Enter applicable Conditions and Required Actions for affected valves of LCO 3.9.3, "Containment Penetrations," made inoperable by isolation instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.7.1	Perform a CHANNEL CHECK on each containment radiation monitor channel.	12 hours
SR 3.3.7.2	Perform a CHANNEL FUNCTIONAL TEST on each containment radiation monitor channel. Verify CPIS high radiation setpoint is less than or equal to the Allowable Value of [220 mR/hr].	[92] days
SR 3.3.7.3	--- **- NOTE -** Testing of Actuation Logic shall include verification of the proper operation of each initiation relay. --- Perform a CHANNEL FUNCTIONAL TEST on each CPIS Actuation Logic channel.	[31] days
SR 3.3.7.4	Perform a CHANNEL CALIBRATION on each containment radiation monitor channel.	[18] months
SR 3.3.7.5	Perform a CHANNEL FUNCTIONAL TEST on each CPIS Manual Trip channel.	[18] months
SR 3.3.7.6	Verify CPIS response time of each containment radiation channel is within limits.	[18] months on a STAGGERED TEST BASIS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.7.3	Perform CHANNEL CALIBRATION with setpoint Allowable Values as follows: a. Degraded Voltage Function ≥ [3180] V and ≤ [3220] V Time delay: ≥ [ ] seconds and ≤ [ ] seconds at [ ] V and b. Loss of Voltage Function ≥ [3180] V and ≤ [3220] V Time delay: ≥ [ ] seconds and ≤ [ ] seconds at [ ] V.	[18] months

3.3 INSTRUMENTATION

3.3.8 Control Room Isolation Signal (CRIS) (Analog)

LCO 3.3.8 One CRIS channel shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4, [5, and 6],
During movement of [recently] irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CRIS Manual Trip, Actuation Logic, or [one or more required channels of particulate/ iodine or gaseous] radiation monitors inoperable in MODE 1, 2, 3, or 4.	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.	1 hour
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. CRIS Manual Trip, Actuation Logic, or [one or more required channels of particulate/ iodine or gaseous] radiation monitors inoperable [in MODE 5 or 6], during movement of [recently] irradiated fuel assemblies.	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.	Immediately
	OR		
	C.2.1	Suspend movement of [recently] irradiated fuel assemblies.	Immediately
	AND		
		- NOTE - Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.	
	C.2.2	Suspend positive reactivity additions.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.8.1	Perform a CHANNEL CHECK on the required control room radiation monitor channel.	12 hours

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.8.2	Perform a CHANNEL FUNCTIONAL TEST on the required CRIS radiation monitor channel. Verify CRIS high radiation setpoint is less than or equal to the Allowable Value of [6E4] cpm above normal background.	[92] days
SR 3.3.8.3	--- **- NOTES -** 1. Surveillance of Actuation Logic shall include verification of the proper operation of each initiation relay. 2. Relays associated with plant equipment that cannot be operated during plant operation are only 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 the required CRIS Actuation Logic channel.	[31] days
SR 3.3.8.4	Perform a CHANNEL CALIBRATION on the required CRIS radiation monitor channel.	[18] months
SR 3.3.8.5	Perform a CHANNEL FUNCTIONAL TEST on the required CRIS Manual Trip channel.	[18] months
SR 3.3.8.6	[Verify response time of required CRIS channel is within limits.	[18] months]

3.3 INSTRUMENTATION

3.3.9 Chemical and Volume Control System (CVCS) Isolation Signal (Analog)

LCO 3.3.9 Four channels of West Penetration Room/Letdown Heat Exchanger Room pressure sensing and two Actuation Logic channels shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Actuation Logic channel inoperable.	A.1 Restore the channel to OPERABLE status.	48 hours
B. One CVCS isolation instrument channel inoperable.	B.1 Place the channel in bypass or trip. AND	1 hour
	B.2.1 Restore the channel to OPERABLE status. OR	48 hours
	B.2.2 Place the channel in trip.	48 hours
C. Two CVCS isolation instrument channels inoperable.	**- NOTE -** LCO 3.0.4 is not applicable.	
	C.1 Place one channel in bypass and place the other channel in trip. AND	1 hour
	C.2 Restore one channel to OPERABLE status.	48 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Two Actuation Logic channels inoperable. OR Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.9.1	Perform a CHANNEL CHECK.	12 hours
SR 3.3.9.2	--- **- NOTES -** 1. Testing 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 only 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 each CVCS isolation channel with setpoints in accordance with the following Allowable Values: West Penetration Room Pressure - High ≤ .5 psig Letdown Heat Exchanger Room Pressure - High ≤ .5 psig	31 days
SR 3.3.9.3	Perform a CHANNEL CALIBRATION on each CVCS isolation pressure indicating channel.	18 months

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.9.2	Perform a CHANNEL FUNCTIONAL TEST on required CRIS radiation monitor channel. Verify CRIS high radiation setpoint [Allowable Value] is ≤ [6E4] cpm above normal background.	[92] days
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.	[18] months
SR 3.3.9.4	Perform a CHANNEL CALIBRATION on required CRIS radiation monitor channel.	[18] months
SR 3.3.9.5	Perform a CHANNEL FUNCTIONAL TEST on required CRIS Manual Trip channel.	[18] months
SR 3.3.9.6	[Verify that response time of required CRIS channel is within limits.	[18] months]

3.3 INSTRUMENTATION

3.3.10 Shield Building Filtration Actuation Signal (SBFAS) (Analog)

LCO 3.3.10 Two channels of SBFAS automatic and two channels of Manual Trip shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One Manual Trip or Actuation Logic channel inoperable.	A.1	Restore the channel to OPERABLE status.	48 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.10.1	Perform a CHANNEL FUNCTIONAL TEST on each SBFAS automatic actuation channel.	[92] days
SR 3.3.10.2	Perform a CHANNEL FUNCTIONAL TEST on each SBFAS Manual Trip channel.	[18] months

3.3 INSTRUMENTATION

3.3.11 Post Accident Monitoring (PAM) Instrumentation (Analog)

LCO 3.3.11 The PAM instrumentation for each Function in Table 3.3.11-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

- NOTES -

1. LCO 3.0.4 is not applicable.
2. Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action in accordance with Specification 5.6.7.	Immediately
C. ---------- **- NOTE -** Not applicable to hydrogen monitor channels. ---------- One or more Functions with two required channels inoperable.	C.1 Restore one channel to OPERABLE status.	7 days
D. Two hydrogen monitor channels inoperable.	D.1 Restore one hydrogen monitor channel to OPERABLE status.	72 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Enter the Condition referenced in Table 3.3.11-1 for the channel.	Immediately
F. As required by Required Action E.1 and referenced in Table 3.3.11-1.	F.1 Be in MODE 3. AND F.2 Be in MODE 4.	6 hours 12 hours
G. [As required by Required Action E.1 and referenced in Table 3.3.11-1.	G.1 Initiate action in accordance with Specification 5.6.7.	Immediately]

SURVEILLANCE REQUIREMENTS

- NOTE -

These SRs apply to each PAM instrumentation Function in Table 3.3.11-1.

SURVEILLANCE		FREQUENCY
SR 3.3.11.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 3.3.11.2	--- **- NOTE -** Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	[18] months

Table 3.3.11-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION E.1
1. [Logarithmic] Neutron Flux	2	F
2. Reactor Coolant System Hot Leg Temperature	2 per loop	F
3. Reactor Coolant System Cold Leg Temperature	2 per loop	F
4. Reactor Coolant System Pressure (wide range)	2	F
5. Reactor Vessel Water Level	2	[G]
6. Containment Sump Water Level (wide range)	2	F
7. Containment Pressure (wide range)	2	F
8. Penetration Flow Path Containment Isolation Valve Position	2 per penetration flow path[(a)(b)]	F
9. Containment Area Radiation (high range)	2	[G]
10. Containment Hydrogen Monitors	2	F
11. Pressurizer Level	2	F
12. Steam Generator Water Level (wide range)	2 per steam generator	F
13. Condensate Storage Tank Level	2	F
14. Core Exit Temperature - Quadrant [1]	2[(c)]	F
15. Core Exit Temperature - Quadrant [2]	2[(c)]	F
16. Core Exit Temperature - Quadrant [3]	2[(c)]	F
17. Core Exit Temperature - Quadrant [4]	2[(c)]	F
18. Auxiliary Feedwater Flow	2	F

(a) Not required for isolation valves whose associated penetration is isolated by at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) A channel consists of two or more core exit thermocouples.

- REVIEWER'S NOTE -

Table 3.3.11-1 shall be amended for each unit as necessary to list:
1. All Regulatory Guide 1.97, Type A instruments and
2. All Regulatory Guide 1.97, Category I, non-Type A instruments specified in the unit's Regulatory Guide 1.97, Safety Evaluation Report.

3.3 INSTRUMENTATION

3.3.12 Remote Shutdown System (Analog)

LCO 3.3.12 The Remote Shutdown System Functions shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

- NOTES -

1. LCO 3.0.4 is not applicable.
2. Separate Condition entry is allowed for each Function.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required Functions inoperable.	A.1	Restore required Functions to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 4.	[12] hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.12.1	[Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days]
SR 3.3.12.2	Verify each required control circuit and transfer switch is capable of performing the intended function.	[18] months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.12.3	---------- **- NOTE -** Neutron detectors are excluded from the CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION for each required instrumentation channel.	[18] months
SR 3.3.12.4	[Perform CHANNEL FUNCTIONAL TEST of the reactor trip circuit breaker open/closed indication.	18 months]

3.3 INSTRUMENTATION

3.3.13 [Logarithmic] Power Monitoring Channels (Analog)

LCO 3.3.13 Two channels of [logarithmic] power level monitoring instrumentation shall be OPERABLE.

APPLICABILITY: MODES 3, 4, and 5, with the reactor trip circuit breakers open or Control Element Assembly (CEA) Drive System not capable of CEA withdrawal.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required channel(s) inoperable.		**- NOTE -** Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.	
	A.1	Suspend all operations involving positive reactivity additions.	Immediately
	AND		
	A.2	Perform SDM verification in accordance with SR 3.1.1.1, if T_{avg} > 200 °F.	4 hours AND Once per 12 hours thereafter

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.13.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.13.2	Perform CHANNEL FUNCTIONAL TEST.	[92] days
SR 3.3.13.3	---------- **- NOTE -** Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	[18] months

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM) (Digital)

LCO 3.1.1 SHUTDOWN MARGIN (SDM) shall be within the limits provided in the COLR.

APPLICABILITY: MODES 3, 4, and 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limit.	A.1 Initiate boration to restore SDM to within limit.	15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	Verify SDM to be within limits.	24 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.2 Reactivity Balance (Digital)

LCO 3.1.2 The core reactivity balance shall be within ± 1% Δk/k of predicted values.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Core reactivity balance not within limit.	A.1	Re-evaluate core design and safety analysis and determine that the reactor core is acceptable for continued operation.	7 days
	AND		
	A.2	Establish appropriate operating restrictions and SRs.	7 days
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.2.1	**- NOTES -** 1. The predicted reactivity values may be adjusted (normalized) to correspond to the measured core reactivity prior to exceeding a fuel burnup of 60 effective full power days (EFPD) after each fuel loading. 2. This Surveillance is not required to be performed prior to entry into MODE 2. Verify overall core reactivity balance is within ± 1.0% Δk/k of predicted values.	Prior to entering MODE 1 after fuel loading AND **- NOTE -** Only required after 60 EFPD 31 EFPD

3.1 REACTIVITY CONTROL SYSTEMS

3.1.3 Moderator Temperature Coefficient (MTC) (Digital)

LCO 3.1.3 The Moderator Temperature Coefficient (MTC) shall be maintained within the limits specified in the COLR, and a maximum positive limit as specified below:

a. [0.5 E-4 $\Delta k/k/°F$] when THERMAL POWER is $\leq$ 70% RTP and

b. [0.0 $\Delta k/k/°F$] when THERMAL POWER is > 70% RTP.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. MTC not within limits.	A.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.3.1	Verify MTC is within the upper limit.	Prior to entering MODE 1 after each fuel loading

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.3.2	**- NOTES -** 1. This Surveillance is not required to be performed prior to entry into MODE 1 or 2. 2. 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.	Each fuel cycle within 7 effective full power days (EFPD) of reaching 40 EFPD core burnup AND Each fuel cycle within 7 EFPD of reaching 2/3 of expected core burnup

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Control Element Assembly (CEA) Alignment (Digital)

LCO 3.1.4 All full length CEAs shall be OPERABLE.

AND

All full and part length CEAs shall be aligned to within [7 inches] (indicated position) of their respective groups.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more CEAs misaligned from its group by > [7 inches] and ≤ [19 inches]. OR One CEA misaligned from its group by > [19 inches].	A.1 Reduce THERMAL POWER in accordance with Figure 3.1.4-1. AND A.2 Restore CEA Alignment	1 hour 2 hours
B. Required Action and associated Completion Time not met. OR One or more full length CEAs untrippable. OR Two or more CEAs misaligned by > [19 inches].	B.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.4.1	Verify the indicated position of each full and part length CEA is within [7 inches] of all other CEAs in its group.	12 hours
SR 3.1.4.2	Verify that, for each CEA, its OPERABLE CEA position indicator channels indicate within [5 inches] of each other.	12 hours
SR 3.1.4.3	Verify full length CEA freedom of movement (trippability) by moving each individual full length CEA that is not fully inserted in the core at least [5 inches].	92 days
SR 3.1.4.4	Perform a CHANNEL FUNCTIONAL TEST of each reed switch position transmitter channel.	[18] months
SR 3.1.4.5	Verify each full length CEA drop time $\leq$ [3.5] seconds and the arithmetic average of all full length CEA drop times $\leq$ [3.2] seconds.	Prior to reactor criticality, after each removal of the reactor head

---

- NOTE -

When core power is reduced to 60% RTP per this limit curve, further reduction is not required by this Specification.

[NOT TO BE USED FOR OPERATION.
FOR ILLUSTRATION PURPOSES ONLY.]

Figure 3.1.4-1 (page 1 of 1)
Required Power Reduction After CEA Deviation

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Shutdown Control Element Assembly (CEA) Insertion Limits (Digital)

LCO 3.1.5 All shutdown Control Element Assemblies (CEAs) shall be withdrawn to ≥ [145] inches.

APPLICABILITY: MODE 1,
MODE 2 with any regulating CEA not fully inserted.

ACTIONS

- NOTE -
This LCO is not applicable while performing SR 3.1.4.3.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more shutdown CEAs not within limit.	A.1 Restore shutdown CEA(s) to within limit.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify each shutdown CEA is withdrawn ≥ [145] inches.	12 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Regulating Control Element Assembly (CEA) Insertion Limits (Digital)

LCO 3.1.6 The power dependent insertion limit (PDIL) alarm circuit shall be OPERABLE and

a. With the Core Operating Limit Supervisory System (COLSS) in service, the regulating Control Element Assembly (CEA) groups shall be limited to the withdrawal sequence, insertion limits, and associated time restraints specified in the COLR.

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.

APPLICABILITY: MODES 1 and 2.

ACTIONS

- NOTE -

This LCO is not applicable while conducting SR 3.1.4.3 [or during reactor power cutback operation].

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Regulating CEA groups inserted beyond the transient insertion limit with COLSS in service.	A.1	Restore regulating CEA groups to within limits.	2 hours
	OR		
	A.2	Reduce THERMAL POWER to less than or equal to the fraction of RTP allowed by the CEA group position and insertion limits specified in the COLR.	2 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Regulating CEA groups inserted between the long term steady state insertion limit and the transient insertion limit for > 4 hours per 24 hour interval with COLSS in service.	B.1	Verify short term steady state insertion limits are not exceeded.	15 minutes
	OR		
	B.2	Restrict increases in THERMAL POWER to ≤ 5% RTP per hour.	15 minutes
C. Regulating CEA groups inserted between the long term steady state insertion limit and the transient insertion limit for intervals > 5 effective full power days (EFPD) per 30 EFPD interval or > 14 EFPD per 365 EFPD interval with COLSS in service.	C.1	Restore regulating CEA groups to within limits.	2 hours
D. Regulating CEA groups inserted beyond the short term steady state insertion limit with COLSS out of service.	D.1	Restore regulating CEA groups to within limits.	2 hours
	OR		
	D.2	Reduce THERMAL POWER to less than or equal to the fraction of RTP allowed by CEA group position and short term steady state insertion limit specified in the COLR.	2 hours
E. PDIL alarm circuit inoperable.	E.1	Perform SR 3.1.6.1.	1 hour AND Once per 4 hours thereafter

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Actions and associated Completion Times not met.	F.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.6.1	--- **- NOTE -** Not required to be performed until 12 hours after entry into MODE 2. --- Verify each regulating CEA group position is within its insertion limits.	12 hours
SR 3.1.6.2	Verify the accumulated times during which the regulating CEA groups are inserted beyond the steady state insertion limits but within the transient insertion limits.	24 hours
SR 3.1.6.3	Verify PDIL alarm circuit is OPERABLE.	31 days

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Part Length Control Element Assembly (CEA) Insertion Limits (Digital)

LCO 3.1.7 The part length Control Element Assembly (CEA) groups shall be limited to the insertion limits specified in the COLR.

APPLICABILITY: MODE 1 > 20% RTP.

ACTIONS

- NOTE -

This LCO not applicable while exercising part length CEAs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Part length CEA groups inserted beyond the transient insertion limit.	A.1 Restore part length CEA groups to within the limit. OR	2 hours
	A.2 Reduce THERMAL POWER to less than or equal to that fraction of RTP specified in the COLR.	2 hours
B. Part length CEA groups inserted between the long term steady state insertion limit and the transient insertion limit for intervals ≥ 7 effective full power days (EFPD) per 30 EFPD or ≥ 14 EFPD per 365 EFPD interval.	B.1 Restore part length CEA groups to within the long term steady state insertion limit.	2 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1 Reduce THERMAL POWER to ≤ 20% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.1	Verify part length CEA group position.	12 hours

3.1 REACTIVITY CONTROL SYSTEMS

3.1.8 Special Test Exceptions (STE) - SHUTDOWN MARGIN (SDM) (Digital)

LCO 3.1.8 During performance of PHYSICS TESTS, the requirements of:

LCO 3.1.1, "SHUTDOWN MARGIN (SDM)-T_{avg} > 200°F," and
LCO 3.1.6, "Regulating Control Element Assembly (CEA) Insertion Limits,"

may be suspended for measurement of CEA worth and SDM, provided shutdown reactivity equivalent to at least the highest estimated CEA worth (of those CEAs actually withdrawn) is available for trip insertion.

APPLICABILITY: MODES 2 and 3 during PHYSICS TESTS.

- NOTE -

Operation in MODE 3 shall be limited to 6 consecutive hours.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any full length CEA not fully inserted and less than the required shutdown reactivity available for trip insertion. OR All full length CEAs inserted and the reactor subcritical by less than the above required shutdown reactivity equivalent.	A.1 Initiate boration to restore required shutdown reactivity.	15 minutes

3.1 REACTIVITY CONTROL SYSTEMS

3.1.9 Special Test Exceptions (STE) - MODES 1 and 2 (Digital)

LCO 3.1.9 During performance of PHYSICS TESTS, the requirements of:

LCO 3.1.3, "Moderator Temperature Coefficient,"
LCO 3.1.4, "Control Element Assembly Alignment,"
LCO 3.1.5, "Shutdown Control Element Assembly Insertion Limits,"
LCO 3.1.6, "Regulating Control Element Assembly Insertion Limits,"
LCO 3.1.7, "Part Length Control Element Assembly Insertion Limits,"
LCO 3.2.2, "Planar Radial Peaking Factors," and
LCO 3.2.3, "AZIMUTHAL POWER TILT,"

may be suspended, provided THERMAL POWER is restricted to the test power plateau, which shall not exceed 85% RTP.

APPLICABILITY: MODES 1 and 2 during PHYSICS TESTS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Test power plateau exceeded.	A.1 Reduce THERMAL POWER to less than or equal to the test power plateau.	15 minutes
B. Required Action and associated Completion Time not met.	B.1 Suspend PHYSICS TESTS.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.9.1	Verify THERMAL POWER equal to or less than the test power plateau.	1 hour

3.2 POWER DISTRIBUTION LIMITS

3.2.1 Linear Heat Rate (LHR) (Digital)

LCO 3.2.1 LHR shall not exceed the limits specified in the COLR.

APPLICABILITY: MODE 1 with THERMAL POWER > 20% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Core Operating Limit Supervisory System (COLSS) calculated core power exceeds the COLSS calculated core power operating limit based on LHR.	A.1	Restore LHR to within limits.	1 hour
B. LHR not within region of acceptable operation when the COLSS is out of service.	B.1	Determine trend in LHR.	Once per 15 minutes
	AND		
	B.2.1	With an adverse trend, restore LHR to within limit.	1 hour
	OR		
	B.2.2	With no adverse trend, restore LHR to within limits.	4 hours
C. Required Action and associated Completion Time not met.	C.1	Reduce THERMAL POWER to ≤ 20% RTP.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.2.1.1	---------- **- NOTE -** Only required to be met when COLSS is out of service. With COLSS in service, LHR is continuously monitored. ---------- Verify LHR, as indicated on each OPERABLE local power density channel, is within its limit.	2 hours
SR 3.2.1.2	Verify the COLSS margin alarm actuates at a THERMAL POWER equal to or less than the core power operating limit based on LHR.	31 days

3.2 POWER DISTRIBUTION LIMITS

3.2.2 Planar Radial Peaking Factors (F_{xy}) (Digital)

LCO 3.2.2 The measured Planar Radial Peaking Factors (F^M_{xy}) shall be equal to or less than the Planar Radial Peaking Factors (F^C_{xy}). (These factors are used in the Core Operating Limit Supervisory System (COLSS) and in the Core Protection Calculators (CPCs)).

APPLICABILITY: MODE 1 with THERMAL POWER > 20% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. $F^M_{xy} > F^C_{xy}$.	A.1.1	Adjust addressable CPC constants to increase the multiplier applied to planar radial peaking by a factor $\geq F^M_{xy} / F^C_{xy}$.	6 hours
		AND	
	A.1.2	Maintain a margin to the COLSS operating limits of $[(F^M_{xy} / F^C_{xy})-1.0]$ x 100%.	6 hours
		OR	
	A.2	Adjust the affected F^C_{xy} used in the COLSS and CPCs to a value greater than or equal to the measured F^M_{xy}.	6 hours
		OR	
	A.3	Reduce THERMAL POWER to $\leq$ 20% RTP.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.2.2.1	Verify measured F^M_{xy} obtained using the Incore Detector System is equal to or less than the value of F^C_{xy} used in the COLSS and CPCs.	Once after each fuel loading with THERMAL POWER > 40% RTP but prior to operations above 70% RTP AND 31 EFPD thereafter

3.2 POWER DISTRIBUTION LIMITS

3.2.3 AZIMUTHAL POWER TILT (T_q) (Digital)

LCO 3.2.3 The measured T_q shall be less than or equal to the T_q allowance used in the core protection calculators (CPCs).

APPLICABILITY: MODE 1 with THERMAL POWER > 20% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Measured T_q greater than the allowance used in the CPCs and ≤ [0.10].	A.1	Restore measured T_q.	2 hours
	OR		
	A.2	Adjust the T_q allowance in the CPCs to greater than or equal to the measured value.	2 hours
B. Measured T_q > [0.10].		**- NOTE -** All subsequent Required Actions must be completed if power reduction commences prior to restoring T_q to ≤ [0.10].	
	B.1	Reduce THERMAL POWER to ≤ 50% RTP.	4 hours
	AND		
	B.2	Reduce Linear Power Level - High trip setpoints to ≤ 55% RTP.	16 hours
	AND		

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	B.3 Restore the measured T_q to less than the T_q allowance used in the CPCs.	Prior to increasing THERMAL POWER --- **- NOTE -** Correct the cause of the out of limit condition prior to increasing THERMAL POWER. Subsequent power operation > 50% RTP may proceed provided that the measured T_q is verified ≤ [0.10] at least once per hours for 12 hours, or until verified at ≥ 95% RTP ---
C. Required Actions and associated Completion Times not met.	C.1 Reduce THERMAL POWER to ≤ 20%.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.3.1	--- **- NOTES -** Only required to be met when COLSS is out of service. With COLSS in service, this parameter is continuously monitored. --- Calculate T_q and verify it is within the limit.	12 hours
SR 3.2.3.2	Verify COLSS azimuthal tilt alarm is actuated at a T_q value less than the T_q value used in the CPCs.	31 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.2.3.3	Independently confirm the validity of the COLSS calculated T_q by use of the incore detectors.	31 EFPD

3.2 POWER DISTRIBUTION LIMITS

3.2.4 Departure From Nucleate Boiling Ratio (DNBR) (Digital)

LCO 3.2.4 The DNBR shall be maintained by one of the following methods:

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),

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

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).

APPLICABILITY: MODE 1 with THERMAL POWER > 20% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. COLSS calculated core power not within limit.	A.1 Restore the DNBR to within limit.	1 hour
B. DNBR outside the region of acceptable operation when COLSS is out of service.	B.1 [Determine trend in DNBR. AND	Once per 15 minutes]

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	B.2.1 With an adverse trend, restore DNBR to within limit. OR B.2.2 With no adverse trend, restore DNBR to within limit.	1 hour 4 hours
C. Required Action and associated Completion Time not met.	C.1 Reduce THERMAL POWER to ≤ 20% RTP.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.2.4.1	--- **- NOTE -** Only required to be met when COLSS is out of service. With COLSS in service, this parameter is continuously monitored. --- 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.	2 hours
SR 3.2.4.2	Verify COLSS margin alarm actuates at a THERMAL POWER level equal to or less than the core power operating limit based on DNBR.	31 days

3.3 INSTRUMENTATION

3.3.1 Reactor Protective System (RPS) Instrumentation - Operating (Digital)

LCO 3.3.1 Four RPS trip and bypass removal channels for each Function in Table 3.3.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1-1.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each RPS Function.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more Functions with one automatic RPS trip channel inoperable.	A.1	Place channel in bypass or trip.	1 hour
	AND		
	A.2	Restore channel to OPERABLE status.	Prior to entering MODE 2 following next MODE 5 entry
B. One or more Functions with two automatic RPS trip channels inoperable.	B.1	**- NOTE -** LCO 3.0.4 is not applicable.	
		Place one channel in bypass and the other in trip.	1 hour
C. One or more Functions with one automatic bypass removal channel inoperable.	C.1	Disable bypass channel.	1 hour
	OR		

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	C.2.1 Place affected automatic trip channel in bypass or trip. AND C.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	1 hour Prior to entering MODE 2 following next MODE 5 entry
D. One or more Functions with two automatic bypass removal channels inoperable.	--- **- NOTE -** LCO 3.0.4 is not applicable. --- D.1 Disable bypass channels. OR D.2 Place one affected automatic trip channel in bypass and place the other in trip.	 1 hour 1 hour
E. One or more core protection calculator (CPC) channels with a cabinet high temperature alarm.	E.1 Perform CHANNEL FUNCTIONAL TEST on affected CPC.	12 hours
F. One or more CPC channels with three or more autorestarts during a 12 hour period.	F.1 Perform CHANNEL FUNCTIONAL TEST on affected CPC.	24 hours
G. Required Action and associated Completion Time not met.	G.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.1-1 to determine which SR shall be performed for each RPS Function.

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1	Perform a CHANNEL CHECK of each RPS instrument channel except Loss of Load.	12 hours
SR 3.3.1.2	**- NOTE -** Not required to be performed until 12 hours after THERMAL POWER ≥ 70% RTP. Verify total Reactor Coolant System (RCS) flow rate as indicated by each CPC is less than or equal to the RCS total flow rate. If necessary, adjust the CPC addressable constant flow coefficients such that each CPC indicated flow is less than or equal to the RCS flow rate.	12 hours
SR 3.3.1.3	Check the CPC autorestart count.	12 hours
SR 3.3.1.4	**- NOTES -** 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]%.	24 hours

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.5	---------- **- NOTE -** Not required to be performed until 12 hours after THERMAL POWER ≥ 70% RTP. ---------- Verify total RCS flow rate indicated by each CPC is less than or equal to the RCS flow determined by calorimetric calculations.	31 days
SR 3.3.1.6	---------- **- NOTE -** Not required to be performed until 12 hours after THERMAL POWER ≥ 15% RTP. ---------- Verify linear power subchannel gains of the excore detectors are consistent with the values used to establish the shape annealing matrix elements in the CPCs.	31 days
SR 3.3.1.7	---------- **- NOTES -** 1. The CPC CHANNEL FUNCTIONAL TEST shall include verification that the correct values of addressable constants are installed in each OPERABLE CPC. 2. Not required to be performed for logarithmic power level channels until 2 hours after reducing logarithmic power below 1E-4% and only if reactor trip circuit breakers (RTCBs) are closed. ---------- Perform CHANNEL FUNCTIONAL TEST on each channel except Loss of Load and power range neutron flux.	92 days
SR 3.3.1.8	---------- **- NOTE -** Neutron detectors are excluded from the CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION of the power range neutron flux channels.	92 days

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
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.	92 days]
SR 3.3.1.10	---------- **- NOTE -** Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION on each channel, including bypass removal functions.	[18] months
SR 3.3.1.11	Perform a CHANNEL FUNCTIONAL TEST on each CPC channel.	[18] months
SR 3.3.1.12	Using the incore detectors, verify the shape annealing matrix elements to be used by the CPCs.	Once after each refueling prior to exceeding 70% RTP
SR 3.3.1.13	Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal function.	Once within 92 days prior to each reactor startup
SR 3.3.1.14	---------- **- NOTE -** Neutron detectors are excluded. ---------- Verify RPS RESPONSE TIME is within limits.	[18] months on a STAGGERED TEST BASIS

Table 3.3.1-1 (page 1 of 3)
Reactor Protective System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Linear Power Level - High	1,2	SR 3.3.1.1 SR 3.3.1.4 SR 3.3.1.6 SR 3.3.1.7 SR 3.3.1.8 SR 3.3.1.10 SR 3.3.1.14	≤ [111.3]% RTP
2. Logarithmic Power Level - High[(a)]	2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.13 SR 3.3.1.14	≤ [.96]%
3. Pressurizer Pressure - High	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≤ [2389] psia
4. Pressurizer Pressure - Low[(c)]	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.13 SR 3.3.1.14	≥ [1763] psig
5. Containment Pressure - High	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≤ [3.14] psig
6. Steam Generator #1 Pressure - Low	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≥ [711] psia

(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."

(b) Not used.

(c) The setpoint may be decreased to a minimum value of [300] psia, as pressurizer pressure is reduced, provided the margin between pressurizer pressure and the setpoint is maintained ≤ [400] psi. Bypass may be enabled when pressurizer pressure is < [500] psia and shall be capable of automatic removal whenever pressurizer 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.

Table 3.3.1-1 (page 2 of 3)
Reactor Protective System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
7. Steam Generator #2 Pressure - Low	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≥ [711] psia
8. Steam Generator #1 Level - Low	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≥ [24.23]%
9. Steam Generator #2 Level - Low	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≥ [24.23]%
10. Steam Generator #1 Level - High	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≤ [90.74]%
11. Steam Generator #2 Level - High	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.14	≤ [90.74]%
[12. Reactor Coolant Flow, Steam Generator #1 - Low(d)	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 [SR 3.3.1.13] SR 3.3.1.14	Ramp: ≤ [0.231] psid/sec. Floor: ≥ [12.1] psid Step: ≤ [7.231] psid]
[13. Reactor Coolant Flow, Steam Generator #2 - Low(d)	1,2	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 [SR 3.3.1.13] SR 3.3.1.14	Ramp: ≤ [0.231] psid/sec. Floor: ≥ [12.1] psid Step: ≤ [7.231] psid]

(d) 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 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.

Table 3.3.1-1 (page 3 of 3)
Reactor Protective System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
[14. Loss of Load (turbine stop valve control oil pressure)(e)	1	SR 3.3.1.9 SR 3.3.1.10 [SR 3.3.1.13]	≥ [100] psig]
15. Local Power Density - High(d)	1,2	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.11 SR 3.3.1.12 SR 3.3.1.13 SR 3.3.1.14	≤ [21.0] kW/ft
16. Departure From Nucleate Boiling Ratio (DNBR) - Low(d)	1,2	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.3 SR 3.3.1.4 SR 3.3.1.5 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.11 SR 3.3.1.12 SR 3.3.1.13 SR 3.3.1.14	≥ [1.31]

(d) 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 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.

(e) 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.

3.3 INSTRUMENTATION

3.3.2 Reactor Protective System (RPS) Instrumentation - Shutdown (Digital)

LCO 3.3.2 Four RPS Logarithmic Power Level - High trip channels and associated instrument and bypass removal channels shall be OPERABLE.

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]%. Trip may be manually bypassed during physics testing pursuant to LCO 3.4.17, "RCS Loops - Test Exceptions."

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RPS logarithmic power level trip channel inoperable.	A.1 Place channel in bypass or trip. AND	1 hour
	A.2 Restore channel to OPERABLE status.	Prior to entering MODE 2 following next MODE 5 entry
B. Two RPS logarithmic power level trip channels inoperable.	B.1 **- NOTE -** LCO 3.0.4 is not applicable. Place one channel in bypass and place the other in trip.	1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One automatic bypass removal channel inoperable.	C.1 Disable bypass channel. OR	1 hour
	C.2.1 Place affected automatic trip channel in bypass or trip. AND	1 hour
	C.2.2 Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	Prior to entering MODE 2 following next MODE 5 entry
D. Two automatic bypass removal channels inoperable.	--- - NOTE - LCO 3.0.4 is not applicable. ---	
	D.1 Disable bypass channels. OR	1 hour
	D.2 Place one affected automatic trip channel in bypass and place the other in trip.	1 hour
E. Required Action and associated Completion Time not met.	E.1 Open all RTCBs.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.2.1	Perform a CHANNEL CHECK of each logarithmic power channel.	12 hours

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.2.2	Perform a CHANNEL FUNCTIONAL TEST on each logarithmic power channel.	92 days
SR 3.3.2.3	Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal function.	Once within 92 days prior to each reactor startup
SR 3.3.2.4	---------- **- NOTE -** Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform a CHANNEL CALIBRATION on each logarithmic power channel, including bypass removal function with Allowable Value for trip channels ≤ [.93]%.	[18] months
SR 3.3.2.5	Verify RPS RESPONSE TIME is within limits.	[18] months on a STAGGERED TEST BASIS

3.3 INSTRUMENTATION

3.3.3 Control Element Assembly Calculators (CEACs) (Digital)

LCO 3.3.3 Two CEACs shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CEAC inoperable.	A.1	Perform SR 3.1.4.1.	Once per 4 hours
	AND		
	A.2	Restore CEAC to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met. OR Both CEACs inoperable.	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].	4 hours
	AND		

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	B.2	Verify all full length and part length control element assembly (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].	4 hours
	AND		
	B.3	Verify the "RSPT/CEAC Inoperable" addressable constant in each core protection calculator (CPC) is set to indicate that both CEACs are inoperable.	4 hours
	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.	4 hours
	AND		
	B.5	Perform SR 3.1.4.1.	Once per 4 hours
C. Receipt of a CPC channel B or C cabinet high temperature alarm.	C.1	Perform CHANNEL FUNCTIONAL TEST on affected CEAC(s).	12 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or two CEACs with three or more autorestarts during a 12 hours period.	D.1 Perform CHANNEL FUNCTIONAL TEST on affected CEAC.	24 hours
E. Required Action and associated Completion Time of Condition B, C, or D not met.	E.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1	Perform a CHANNEL CHECK.	12 hours
SR 3.3.3.2	Check the CEAC autorestart count.	12 hours
SR 3.3.3.3	Perform a CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.3.4	Perform a CHANNEL CALIBRATION.	[18] months
SR 3.3.3.5	Perform a CHANNEL FUNCTIONAL TEST.	[18] months
SR 3.3.3.6	Verify the isolation characteristics of each CEAC isolation amplifier and each optical isolator for CEAC to CPC data transfer.	[18] months

3.3 INSTRUMENTATION

3.3.4 Reactor Protective System (RPS) Logic and Trip Initiation (Digital)

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.

APPLICABILITY: MODES 1 and 2,
MODES 3, 4, and 5, with any RTCBs closed and any control element assemblies capable of being withdrawn.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
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.	A.1 Restore channel(s) to OPERABLE status.	48 hours
B. One channel of Manual Trip, RTCBs, or Initiation Logic inoperable in MODE 1 or 2.	B.1 Open the affected RTCBs.	1 hour
C. One channel of Manual Trip, RTCBs, or Initiation Logic inoperable in MODE 3, 4, or 5.	C.1 Open the affected RTCBs.	48 hours
D. Two channels of Manual Trip, RTCBs, or Initiation Logic affecting the same trip leg inoperable.	D.1 Open the affected RTCBs.	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
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.	E.1 Be in MODE 3. AND E.2 Open all RTCBs.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.4.1	Perform a CHANNEL FUNCTIONAL TEST on each RTCB channel.	[31] days
SR 3.3.4.2	Perform a CHANNEL FUNCTIONAL TEST on each RPS Logic channel.	[92] days
SR 3.3.4.3	Perform a CHANNEL FUNCTIONAL TEST, including separate verification of the undervoltage and shunt trips, on each RTCB.	[18] months
SR 3.3.4.4	Perform a CHANNEL FUNCTIONAL TEST on each RPS Manual Trip channel.	Once within 7 days prior to each reactor startup

3.3 INSTRUMENTATION

3.3.5 Engineered Safety Features Actuation System (ESFAS) Instrumentation (Digital)

LCO 3.3.5 Four ESFAS trip and bypass removal channels for each Function in Table 3.3.5-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

- NOTE -
Separate Condition entry is allowed for each ESFAS Function.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more Functions with one automatic ESFAS trip channel inoperable.	A.1	Place channel in bypass or trip.	1 hour
	AND		
	A.2	Restore channel to OPERABLE status.	Prior to entering MODE 2 following next MODE 5 entry
B. One or more Functions with two automatic ESFAS trip channels inoperable.	B.1	**- NOTE -** LCO 3.0.4 is not applicable.	
		Place one channel in bypass and the other in trip.	1 hour
C. One or more Functions with one automatic bypass removal channel inoperable.	C.1	Disable bypass channel.	1 hour
	OR		

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	C.2.1	Place affected automatic trip channel in bypass or trip. AND	1 hour
	C.2.2	Restore bypass removal channel and associated automatic trip channel to OPERABLE status.	Prior to entering MODE 2 following next MODE 5 entry
D. One or more Functions with two automatic bypass removal channels inoperable.		---------- **- NOTE -** LCO 3.0.4 is not applicable. ----------	
	D.1	Disable bypass channels. OR	1 hour
	D.2	Place one affected automatic trip channel in bypass and place the other in trip.	1 hour
E. Required Action and associated Completion Time not met.	E.1	Be in MODE 3. AND	6 hours
	E.2	Be in MODE 4.	[12] hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.5.1	Perform a CHANNEL CHECK of each ESFAS channel.	12 hours
SR 3.3.5.2	Perform a CHANNEL FUNCTIONAL TEST of each ESFAS channel.	92 days
SR 3.3.5.3	Perform a CHANNEL CALIBRATION of each ESFAS channel, including bypass removal functions.	[18] months
SR 3.3.5.4	Verify ESF RESPONSE TIME is within limits.	[18] months on a STAGGERED TEST BASIS
SR 3.3.5.5	Perform a CHANNEL FUNCTIONAL TEST on each automatic bypass removal channel.	Once within 92 days prior to each reactor startup

Table 3.3.5-1 (page 1 of 2)
Engineered Safety Features Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	ALLOWABLE VALUE
1. Safety Injection Actuation Signal[a]		
a. Containment Pressure - High	1,2,3	≤ [3.14] psig
b. Pressurizer Pressure - Low[b]	1,2,3	≥ [1763] psia
2. Containment Spray Actuation Signal		
a. Containment Pressure - High High	1,2,3	≤ [16.83] psia
b. Automatic SIAS	1,2,3	NA
3. Containment Isolation Actuation Signal		
a. Containment Pressure - High	1,2,3	≤ [3.14] psig
b. Pressurizer Pressure - Low[b]	1,2,3	≥ [1763] psia
4. Main Steam Isolation Signal		
a. Steam Generator Pressure - Low[c]	1,2[d],3[d]	≥ [711] psig
b. Containment Pressure - High	1,2[d],3[d]	≤ [3.14] psig
5. Recirculation Actuation Signal		
a. Refueling Water Storage Tank Level - Low	1,2,3	[≥ 17.73 and ≤ 19.27]%

(a) Automatic SIAS also initiates a Containment Cooling Actuation Signal (CCAS).

(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.

(c) The setpoint may be decreased as steam pressure is reduced, provided the margin between steam pressure and the setpoint is maintained ≤ [200] psig. The setpoint shall be automatically increased to the normal setpoint as steam pressure is increased.

(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 associated valves isolated by the MSIS Function are closed and [de-activated].

Table 3.3.5-1 (page 2 of 2)
Engineered Safety Features Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	ALLOWABLE VALUE
6. Emergency Feedwater Actuation Signal SG #1 (EFAS-1)		
a. Steam Generator Level - Low	1,2,3	≥ [24.23]%
b. SG Pressure Difference - High	1,2,3	≤ [66.25] psid
[c. Steam Generator Pressure - Low	1,2,3	≥ [711] psig]
7. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)		
a. Steam Generator Level - Low	1,2,3	≥ [24.23]%
b. SG Pressure Difference - High	1,2,3	≤ [66.25] psid
[c. Steam Generator Pressure - Low	1,2,3	≥ [711] psig]

3.3 INSTRUMENTATION

3.3.6 Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip (Digital)

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.

APPLICABILITY: According to Table 3.3.6-1.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
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.	A.1 Restore channel to OPERABLE status.	48 hours
B. One or more Functions with one Manual Trip or Initiation Logic channel inoperable.	B.1 Restore channel to OPERABLE status.	48 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more Functions with two Initiation Logic channels affecting the same trip leg inoperable.	C.1	Open at least one contact in the affected trip leg of both ESFAS Actuation Logics.	Immediately
	AND		
	C.2	Restore channels to OPERABLE status.	48 hours
D. One or more Functions with one Actuation Logic channel inoperable.	D.1	---------- **- NOTE -** One channel of Actuation Logic may be bypassed for up to 1 hour for Surveillances, provided the other channel is OPERABLE. ----------	
		Restore inoperable channel to OPERABLE status.	48 hours
E. Two Actuation Logic channels inoperable OR Required Action and associated Completion Time of Conditions, for Containment Spray Actuation Signal, Main Steam Isolation Signal, or Emergency Feedwater Actuation Signal not met.	E.1	Be in MODE 3.	6 hours
	AND		
	E.2	Be in MODE 4.	[12] hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two Actuation Logic channels, inoperable. OR Required Action and associated Completion Time of Conditions for, Safety Injection Actuation Signal, Containment Isolation Actuation Signal, Recirculation Actuation Signal, or Containment Cooling Actuation Signal not met.	F.1 Be in MODE 3. AND F.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.6.1	--- **- NOTE -** Testing of Actuation Logic shall include the verification of the proper operation of each initiation relay. --- Perform a CHANNEL FUNCTIONAL TEST on each ESFAS logic channel.	[92] days
SR 3.3.6.2	--- **- NOTE -** Relays exempt from testing during operation shall be tested during each MODE 5 entry exceeding 24 hours unless tested during the previous 6 months. --- Perform a subgroup relay test of each Actuation Logic channel, which includes the de-energization of each subgroup relay and verification of the OPERABILITY of each subgroup relay.	[184] days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.6.3	Perform a CHANNEL FUNCTIONAL TEST on each ESFAS Manual Trip channel.	[18] months

Table 3.3.6-1 (page 1 of 2)
Engineered Safety Features Actuation System Logic and Manual Trip Applicability

FUNCTION	APPLICABLE MODES
1. Safety Injection Actuation Signal	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3,4
c. Actuation Logic	1,2,3,4
d. Manual Trip	1,2,3,4
2. Containment Isolation Actuation Signal	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3,4
c. Actuation Logic	1,2,3,4
d. Manual Trip	1,2,3,4
3. Containment Cooling Actuation Signal[(a)]	
a. Initiation Logic	1,2,3,4
b. Actuation Logic	1,2,3,4
c. Manual Trip	1,2,3,4
4. Recirculation Actuation Signal	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3,4
c. Actuation Logic	1,2,3,4
d. Manual Trip	1,2,3,4
5. Containment Spray Actuation Signal[(b)]	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3
c. Actuation Logic	1,2,3

(a) Automatic SIAS also initiates CCAS.

(b) Automatic SIAS also required for automatic CSAS initiation.

Table 3.3.6-1 (page 2 of 2)
Engineered Safety Features Actuation System Logic and Manual Trip Applicability

FUNCTION	APPLICABLE MODES
5. Containment Spray Actuation Signal[(b)]	
d. Manual Trip	1,2,3
6. Main Steam Isolation Signal	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3
c. Actuation Logic	1,2,3
d. Manual Trip	1,2,3
7. Emergency Feedwater Actuation Signal SG #1 (EFAS-1)	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3
c. Actuation Logic	1,2,3
d. Manual Trip	1,2,3
8. Emergency Feedwater Actuation Signal SG #2 (EFAS-2)	
a. Matrix Logic	1,2,3
b. Initiation Logic	1,2,3
c. Actuation Logic	1,2,3
d. Manual Trip	1,2,3

(b) Automatic SIAS also required for automatic CSAS initiation.

3.3 INSTRUMENTATION

3.3.7 Diesel Generator (DG) - Loss of Voltage Start (LOVS) (Digital)

LCO 3.3.7 [Four] channels of Loss of Voltage Function and [four] channels of Degraded Voltage Function auto-initiation instrumentation per DG shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,
When associated DG is required to be OPERABLE by LCO 3.8.2, "AC Sources - Shutdown."

ACTIONS

- NOTE -
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more Functions with one channel per DG inoperable.	A.1	Place channel in bypass or trip.	1 hour
	AND		
	A.2	Restore channel to OPERABLE status.	Prior to entering MODE 2 following next MODE 5 entry
B. One or more Functions with two channels per DG inoperable.	B.1	Enter applicable Conditions and Required Actions for the associated DG made inoperable by DG - LOVS instrumentation.	1 hour
	OR		

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	B.2 ---------- **- NOTE -** LCO 3.0.4 is not applicable. ---------- Place one channel in bypass and the other channel in trip.	1 hour
C. One or more Functions with more than two channels inoperable.	C.1 Restore all but two channels to OPERABLE status.	1 hour
D. Required Action and associated Completion Time not met.	D.1 Enter applicable Conditions and Required Actions for the associated DG made inoperable by DG - LOVS instrumentation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.7.1	[Perform CHANNEL CHECK.	12 hours]
SR 3.3.7.2	Perform CHANNEL FUNCTIONAL TEST.	[92] days

3.3 INSTRUMENTATION

3.3.8 Containment Purge Isolation Signal (CPIS) (Digital)

LCO 3.3.8 One CPIS channel 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.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CPIS Manual Trip, Actuation Logic, or one or more required channels of radiation monitors inoperable in MODES 1, 2, 3, and 4.	A.1	Enter applicable Conditions and Required Actions for affected valves of LCO 3.6.3, "Containment Isolation Valves," made inoperable by CPIS instrumentation.	Immediately
B. Required Action and associated Completion Time not met in MODE 1, 2, 3, or 4.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
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.	C.1 Place and maintain containment purge and exhaust valves in closed position. OR C.2 Suspend movement of [recently] irradiated fuel assemblies in containment.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.8.1	Perform a CHANNEL CHECK on required containment area and gaseous radiation monitor channel.	12 hours
SR 3.3.8.2	Perform a CHANNEL CHECK on required containment particulate and iodine radiation monitor channel.	7 days
SR 3.3.8.3	--- **- NOTE -** Only required to be met in MODES 1, 2, 3, and 4 only. --- Perform a CHANNEL FUNCTIONAL TEST on each required containment radiation monitor channel. Verify setpoint [Allowable Value] is in accordance with the following: Containment Gaseous Monitor: ≤ [2X background] Containment Particulate Monitor: ≤ [2X background] Containment Area Gamma Monitor: ≤ [325 mR/hr]	92 days

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.8.4	--- **- NOTE -** Only required to be met during CORE ALTERATIONS or during movement of irradiated fuel assemblies within containment. --- Perform a CHANNEL FUNCTIONAL TEST on required containment radiation monitor channel. Verify setpoint [Allowable Value] is in accordance with the following: Containment Gaseous Monitor: ≤ [2X background] Containment Particulate Monitor: ≤ [2X background] Containment Iodine Monitor: ≤ [2X background] Containment Area Gamma Monitor: ≤ [2X background]	92 days
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.	[18] months
SR 3.3.8.6	Perform a CHANNEL CALIBRATION on required containment radiation monitor channel.	[18] months
SR 3.3.8.7	Verify that response time of required CPIS channel is within limits.	[18] months
SR 3.3.8.8	Perform CHANNEL FUNCTIONAL TEST on required CPIS Manual Trip channel.	[18] months

3.3 INSTRUMENTATION

3.3.9 Control Room Isolation Signal (CRIS) (Digital)

LCO 3.3.9 One CRIS channel shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4, [5, and 6],
During movement of [recently] irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CRIS Manual Trip, Actuation Logic, or [one or more required channels of particulate/ iodine or gaseous] radiation monitors inoperable in MODE 1, 2, 3, or 4.	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.	1 hour
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	36 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
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.	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.	Immediately
	OR	
	C.2.1 Suspend movement of [recently] irradiated fuel assemblies.	Immediately
	AND	
	---------- **- NOTE -** Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. ----------	
	C.2.2 Suspend positive reactivity additions.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.9.1	Perform a CHANNEL CHECK on the required control room radiation monitor channel.	12 hours

3.3 INSTRUMENTATION

3.3.10 Fuel Handling Isolation Signal (FHIS) (Digital)

LCO 3.3.10 One FHIS channel shall be OPERABLE.

APPLICABILITY: [MODES 1, 2, 3, and 4,]
During movement of [recently] irradiated fuel in the fuel building.

ACTIONS

- NOTE -

LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION		COMPLETION TIME
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.	A.1	Place one OPERABLE Fuel Building Air Cleanup System (FBACS) train in operation.	1 hour]
B. [Required Action and associated Completion Time of Condition A not met.	B.1 AND B.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours]
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.	C.1 OR C.2	Place one OPERABLE FBACS train in operation. Suspend movement of [recently] irradiated fuel assemblies in the fuel building.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.10.1	Perform a CHANNEL CHECK on required FHIS radiation monitor channel.	12 hours
SR 3.3.10.2	Perform a CHANNEL FUNCTIONAL TEST on required FHIS radiation monitor channel. Verify radiation monitor setpoint [Allowable Values]: [Airborne Particulate/ Iodine: ≤ [6E4] cpm above background] Airborne Gaseous: ≤ [6E4] cpm above background	92 days
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.	[18] months
SR 3.3.10.4	Perform a CHANNEL FUNCTIONAL TEST on required FHIS Manual Trip logic.	[18] months
SR 3.3.10.5	Perform a CHANNEL CALIBRATION on required FHIS radiation monitor channel.	[18] months
SR 3.3.10.6	[Verify response time of required FHIS channel is within limits.	[18] months]

3.3 INSTRUMENTATION

3.3.11 Post Accident Monitoring (PAM) Instrumentation (Digital)

LCO 3.3.11 The PAM instrumentation for each Function in Table 3.3.11-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.
During movement of [recently] irradiated fuel assemblies.

ACTIONS

- NOTES -

1. LCO 3.0.4 not applicable.

2. Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action in accordance with Specification 5.6.7.	Immediately
C. ---------- **- NOTE -** Not applicable to hydrogen monitor channels. ---------- One or more Functions with two required channels inoperable.	C.1 Restore one channel to OPERABLE status.	7 days
D. Two hydrogen monitor channels inoperable.	D.1 Restore one hydrogen monitor channel to OPERABLE status.	72 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. Required Action and associated Completion Time of Condition C or D not met.	E.1	Enter the Condition referenced in Table 3.3.11-1 for the channel.	Immediately
F. As required by Required Action E.1 and referenced in Table 3.3.11-1.	F.1 AND F.2	Be in MODE 3. Be in MODE 4.	6 hours 12 hours
G. [As required by Required Action E.1 and referenced in Table 3.3.11-1.	G.1	Initiate action in accordance with Specification 5.6.7.	Immediately]

SURVEILLANCE REQUIREMENTS

- NOTE -

These SRs apply to each PAM instrumentation Function in Table 3.3.11-1.

SURVEILLANCE		FREQUENCY
SR 3.3.11.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 3.3.11.2	**- NOTE -** Neutron detectors are excluded from the CHANNEL CALIBRATION. Perform CHANNEL CALIBRATION.	[18] months

Table 3.3.11-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION E.1
1. [Wide Range] Neutron Flux	2	F
2. Reactor Coolant System Hot Leg Temperature	2 per loop	F
3. Reactor Coolant System Cold Leg Temperature	2 per loop	F
4. Reactor Coolant System Pressure (wide range)	2	F
5. Reactor Vessel Water Level	2	[G]
6. Containment Sump Water Level (wide range)	2	F
7. Containment Pressure (wide range)	2	F
8. Penetration Flow Path Containment Isolation Valve Position	2 per penetration flow path[(a)(b)]	F
9. Containment Area Radiation (high range)	2	[G]
10. Containment Hydrogen Monitors	2	F
11. Pressurizer Level	2	F
12. Steam Generator Water Level (wide range)	2 per steam generator	F
13. Condensate Storage Tank Level	2	F
14. Core Exit Temperature - Quadrant [1]	2[(c)]	F
15. Core Exit Temperature - Quadrant [2]	2[(c)]	F
16. Core Exit Temperature - Quadrant [3]	2[(c)]	F
17. Core Exit Temperature - Quadrant [4]	2[(c)]	F
18. Emergency Feedwater Flow	2	F

(a) Not required for isolation valves whose associated penetration is isolated by at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) A channel consists of two or more core exit thermocouples.

- REVIEWER'S NOTE -

Table 3.3.11-1 shall be amended for each unit as necessary to list:
1. All Regulatory Guide 1.97, Type A instruments and
2. All Regulatory Guide 1.97, Category I, non-Type A instruments specified in the unit's Regulatory Guide 1.97, Safety Evaluation Report.

3.3 INSTRUMENTATION

3.3.12 Remote Shutdown System (Digital)

LCO 3.3.12 The Remote Shutdown System Functions shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

- NOTES -

1. LCO 3.0.4 is not applicable.
2. Separate Condition entry is allowed for each Function.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Functions inoperable.	A.1 Restore required Functions to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours [12] hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.12.1	[Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days]
SR 3.3.12.2	Verify each required control circuit and transfer switch is capable of performing the intended function.	[18] months

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.12.3	---------- **- NOTE -** Neutron detectors are excluded from the CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION for each required instrumentation channel.	[18] months
SR 3.3.12.4	[Perform CHANNEL FUNCTIONAL TEST of the reactor trip circuit breaker open/closed indication.	18 months]

3.3 INSTRUMENTATION

3.3.13 [Logarithmic] Power Monitoring Channels (Digital)

LCO 3.3.13 Two channels of [logarithmic] power level monitoring instrumentation shall be OPERABLE.

APPLICABILITY: MODES 3, 4, and 5, with the reactor trip circuit breakers open or Control Element Assembly (CEA) Drive System not capable of CEA withdrawal.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required channels inoperable.		**- NOTE -** Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.	
	A.1	Suspend all operations involving positive reactivity additions.	Immediately
	AND		
	A.2	Perform SDM verification in accordance with SR 3.1.1.1, if T_{avg} > 200 °F.	4 hours AND Once per 12 hours thereafter

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.13.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.13.2	Perform CHANNEL FUNCTIONAL TEST.	[92] days
SR 3.3.13.3	---------- **- NOTE -** Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	[18] months

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 below:

a. Pressurizer pressure ≥ [2025] psia and ≤ [2275] psia,

b. RCS cold leg temperature (T_c):

1. ≥ [535]°F and ≤ [558]°F for < [70]% RTP or

2. ≥ [544]°F and ≤ [588]°F for ≥ [70]% RTP, and

c. RCS total flow rate ≥ [148 E6] lb/hour.

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.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Pressurizer pressure or RCS flow rate not within limits.	A.1	Restore parameter(s) to within limit.	2 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 2.	6 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. RCS cold leg temperature not within limits.	C.1 Restore cold leg temperature to within limits.	2 hours
D. Required Action and associated Completion Time of Condition C not met.	D.1 Reduce THERMAL POWER to ≤ [30]% RTP.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.1.1	Verify pressurizer pressure ≥ [2025] psia and ≤ [2275] psia.	12 hours
SR 3.4.1.2	Verify RCS cold leg temperature: 1. ≥ [535]°F and ≤ [558]°F for < [70]% RTP or 2. ≥ [544]°F and ≤ [558]°F for ≥ [70]% RTP.	12 hours
SR 3.4.1.3	--- **- NOTE -** Only required to be met in MODE 1. --- Verify RCS total flow rate ≥ [148 E6] 1b/hour.	12 hours
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 within limits specified in the COLR.	[18] months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 RCS Minimum Temperature for Criticality

LCO 3.4.2 Each RCS loop average temperature (T_{avg}) shall be ≥ [520°]F.

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.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. T_{avg} in one or more RCS loops not within limit.	A.1 Be in MODE 2 with K_{eff} < 1.0.	30 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.2.1	Verify RCS T_{avg} in each loop ≥ [520]°F.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 RCS Pressure and Temperature (P/T) Limits

LCO 3.4.3 RCS pressure, RCS temperature, and RCS heatup and cooldown rates shall be maintained within the limits specified in the PTLR.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. ---------- **- NOTE -** Required Action A.2 shall be completed whenever this Condition is entered. ---------- Requirements of LCO not met in MODE 1, 2, 3, or 4.	A.1	Restore parameter(s) to within limits.	30 minutes
	AND		
	A.2	Determine RCS is acceptable for continued operation.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5 with RCS pressure < [500] psig.	36 hours
C. ---------- **- NOTE -** Required Action C.2 shall be completed whenever this Condition is entered. ---------- Requirements of LCO not met any time in other than MODE 1, 2, 3, or 4.	C.1	Initiate action to restore parameter(s) to within limits.	Immediately
	AND		

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	C.2 Determine RCS is acceptable for continued operation.	Prior to entering MODE 4

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.3.1	---------- **- NOTE -** Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. ---------- Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates within limits specified in the PTLR.	30 minutes

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops - MODES 1 and 2

LCO 3.4.4 Two RCS loops shall be OPERABLE and in operation.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of LCO not met.	A.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.4.1	Verify each RCS loop is in operation.	12 hours