ENCLOSURE 1

Response to Request for Additional Information

9708010130

PVNGS SECTION 1.0 USE AND APPLICATIONS

1.0	DOC # or JFD#	CTS/STS REF	CHANGE/DIFFERENCE	COMMENT	STATUS
1.0-1	LA.3	CTS Table 1.2	CTS Table 1.2, OPERATIONAL MODES requires $k_{eff} \leq 0.95$ for Mode 6. ITS deletes this Mode 6 requirement. The new location for this requirement is not provided in the DOC. Further, the DOC does not adequately justify this move.	Provide additional discussion and justification for moving the requirement outside of TS. Provide description of where the requirement is maintained and how it is controlled.	
PVNGS Response:	This requirement is being relocated to the Bases. Changes to the Bases will be controlled in accordance with Bases Control Program. ITS 3.9.1 requires that boron concentration be maintained within the limit specified in the COLR. The Bases for CTS 3/4.9.1 and ITS 3.9.1 both require that the refueling boron concentration specified in the COLR maintain an overall core reactivity of $k_{eff} \leq 0.95$. Therefore, even though this requirement is being removed from Table 1.2, the Bases provides an adequate level of control to maintain this requirement.				

PVNGS SECTION 1.0 USE AND APPLICATIONS

<table>
<tr><th>1.0</th><th>DOC # or JFD#</th><th>CTS/STS REF</th><th>CHANGE/DIFFERENCE</th><th>COMMENT</th><th>STATUS</th></tr>
<tr><td>1.0-2</td><td>M.1</td><td>CTS Table 1.2</td><td>CTS Table 1.2, OPERATIONAL MODES limits Cold Leg Temperature to $\leq$135° F when in Mode 6. ITS changes this requirement to NA.

This is identified as a more restrictive change. However, removing a CTS temperature limitation on when a reactor vessel head closure bolt can be untensioned - results in a less restrictive change.</td><td>Provide additional discussion and justification for the less restrictive change.</td><td></td></tr>
<tr><td colspan="6">PVNGS Response: The temperature requirement is being relocated to the TRM. See the new DOC LA.4 for this item.</td></tr>
<tr><td>1.0-3</td><td></td><td>CTS 1.18</td><td>CTS 1.18 OFFSITE DOSE CALCULATION MANUAL (ODCM) was indicated to be moved to the ITS 5.0, Administrative Controls. No justification was provided for movement.</td><td>Provide justification for movement of OFFSITE DOSE CALCULATION MANUAL (ODCM) to 5.0.</td><td></td></tr>
<tr><td colspan="6">PVNGS Response: The definition is maintained in ITS. The definition is moved to ITS 5.5, Programs and Manuals. Moving the definition of the ODCM does not alter or change any requirements related to the ODCM. Moving the definition ensures that the format of the PVNGS ITS related to the ODCM definition is consistent with NUREG-1432, Rev.1. See the CTS markup for Chapter 5.0. Since the requirements are still maintained in ITS, this is considered a DOC A.1 change.</td></tr>
</table>

PVNGS SECTION 1.0 USE AND APPLICATIONS

1.0	DOC # or JFD#	CTS/STS REF	CHANGE/DIFFERENCE	COMMENT	STATUS
1.0-6	A.12	CTS Table 1.2	CTS Table 1.2, OPERATIONAL MODES requires Cold Leg Temperature to be $\geq$350° F for Modes 1 & 2. ITS changes these requirements to NA based on the use of other technical specification requirements that ensure adequate plant conditions for these Modes. However, removal of these temperature requirements could potentially allow plant operation to move from Mode 4 to Mode 2 and bypass Mode 3. This is a less restrictive change and is not justified.	Provide additional discussion and justification for the less restrictive change.	
PVNGS Response:	The temperature requirement is being relocated to the TRM. See the new DOC LA.5 for this item.				

PVNGS ITS 2.0 SAFETY LIMITS

ITEM #	DOC # or JFD#	CTS/STS LCO	CHANGE/DIFFERENCE	COMMENT	STATUS
2.0-1		B 2.0	NUREG-1432 is marked up to capitalize items such as "Reactor Coolant Pressure Boundary (RCPB)" prior to the initialism or acronym when not used as a title. Also "Anticipated Operational Occurrences (ADO)" and Main Steam Safety Valves (MSSVs)." Is this PVNGS practice? According to the STS such capitalization is incorrect.	Correct capitalization of items prior to the initialism or acronym when not used in a title.	
PVNGS Response:	In Chapter 2.0, it was PVNGS practice to capitalize items (system names, etc.) prior to initialism or acronym. This is a grammatical and/or editorial change that does not change the technical intent of the technical specifications.				
2.0-2		B 2.0	NUREG-1432 Bases 2.0, is marked up for the PVNGS ITS. ITS 2.0 SAFETY LIMITS, was modified to "...the maximum transient pressure allowable in the RCS piping, valves, and fittings under the ASME Code, Section III is 125." The CEOG includes "under [USAS, Section B 31] [Ref. 6], is 120..."	Provide a discussion on why Palo Verde changed the reference. Is the value 125 acceptable under ASME Code, Section III?	
PVNGS Response:	The PVNGS RCS meets the requirements of ASME Code, Section III. Therefore, the maximum transient pressure allowable in the RCS is 110% of design pressure. This is consistent with the description in the Bases for CTS 2.1.2. The Bases has been reworded to reflect this plant specific description/requirement.				

PVNGS ITS 4.0 DESIGN FEATURES

ITEM #	DOC or JFD	CTS/STS LCO	CHANGE/DIFFERENCE	COMMENTS	STATUS
No issues for this section.					

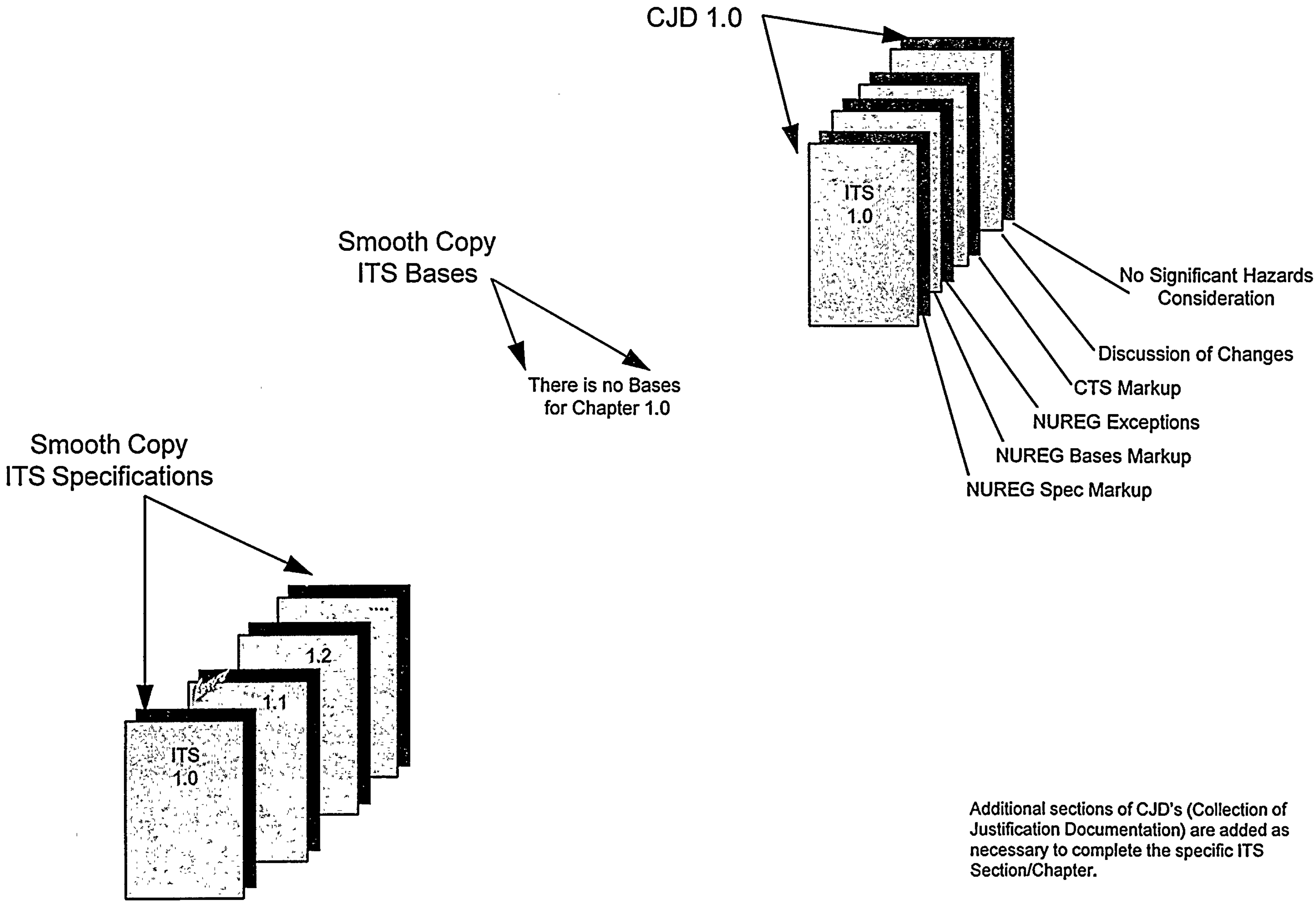
ENCLOSURE 2

ITS Chapters 1.0, "Use and Application" and 2.0, "Safety Limits"

PVNGS ITS

CHAPTER 1.0 - USE AND APPLICATION

ITS REVIEW PACKAGE CONTENTS (Volume 2)



Additional sections of CJD's (Collection of Justification Documentation) are added as necessary to complete the specific ITS Section/Chapter.

SMOOTH COPY
ITS CHAPTER 1.0

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. $$ASI = \frac{\text{lower} - \text{upper}}{\text{lower} + \text{upper}}$$
AZIMUTHAL POWER TILT (T_q)	AZIMUTHAL POWER TILT shall be the power asymmetry between azimuthally symmetric fuel assemblies.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel, including the required sensor, alarm, display, and trip functions, and shall include the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION shall include an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

(continued)

1.1 Definitions

CHANNEL CALIBRATION (continued)	The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is calibrated.
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, including required alarms, interlocks, display and trip functions; b. Digital computer channels – the use of diagnostic programs to test digital computer hardware and the injection of simulated process data into the channel to verify OPERABILITY, including alarm and trip functions. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is tested.

(continued)

1.1 Definitions (continued)

CORE ALTERATION	CORE ALTERATION shall be the movement or manipulation 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.
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 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.

(continued)

1.1 Definitions (continued)

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.

K_{n-1}

K_{n-1} is the K effective calculated by considering the actual CEA configuration and assuming that the fully or partially inserted full-length CEA of highest worth is fully withdrawn.

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;

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. <u>Unidentified LEAKAGE</u>

All LEAKAGE that is not identified LEAKAGE;

(continued)

1.1 Definitions

LEAKAGE (continued)	c. <u>Pressure Boundary LEAKAGE</u> 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, cold leg 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: a. Described in Chapter 14, Initial Test Program of the UFSAR; b. Authorized under the provisions of 10 CFR 50.59; or c. Otherwise approved by the Nuclear Regulatory Commission.

(continued)

1.1 Definitions (continued)

RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3876 MWt.
REACTOR PROTECTIVE 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.
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 these CEAs must be accounted for in the determination of SDM; b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design level; and c. There is no change in part length CEA position.

(continued)

1.1 Definitions (continued)

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]	COLD LEG 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	$350 > T_{cold} > 210$
5	Cold Shutdown[b]	< 0.99	NA	≤ 210
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 <u>AND</u> and <u>OR</u>. 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.

(continued)

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.

(continued)

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.

(continued)

1.3 Completion Times

DESCRIPTION (continued)

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

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.

(continued)

1.3 Completion Times (continued)

EXAMPLES

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

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.

(continued)

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.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-2 (continued)

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.

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.

(continued)

1.3 Completion Times

EXAMPLES (continued)

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

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-3 (continued)

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

(continued)

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.

(continued)

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.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-5 (continued)

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.

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.	Once per 8 hours
	OR	
	A.2 Reduce THERMAL POWER to ≤ 50% RTP.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-6 (continued)

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.

(continued)

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. AND A.2 Restore subsystem to OPERABLE status.	1 hour AND Once per 8 hours thereafter 72 hours
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

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.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-7 (continued)

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.

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, 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.

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.

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.

(continued)

1.4 Frequency

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.

(continued)

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.

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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 <1.1>	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) <1.2>	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. $$ASI = \frac{\text{lower} - \text{upper}}{\text{lower} + \text{upper}}$$
<1.3> 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. $$T_q = \text{Max} \left| \frac{P_{quad} - P_{avg}}{P_{avg}} \right|$$
CHANNEL CALIBRATION <1.4>	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

2

(continued)

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1.1 Definitions

CHANNEL CALIBRATION (continued)

the entire channel, including the required sensor, alarm, display, and trip functions, and shall include the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION shall include an inplace cross calibration that compares the other sensing elements with the recently installed sensing element. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is calibrated.

CHANNEL CHECK
<1.5>

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
<1.6>

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, including required alarms, interlocks, display and trip functions;

b. Digital computer channels—the use of diagnostic programs to test digital computer hardware and the injection of simulated process data into the channel to verify OPERABILITY, including alarm and trip functions.

The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is tested.

(continued)

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1.1 Definitions (continued)

CORE ALTERATION <1.9>

CORE ALTERATION shall be the movement ~~or~~ manipulation 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) <1.9>

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.

DOSE EQUIVALENT I-131 <1.10>

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". 2

Ē—AVERAGE DISINTEGRATION ENERGY <1.11>

Ē 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 <1.12>

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

(continued)

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1.1 Definitions

ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME (continued)	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.
~~L_a~~	~~The maximum allowable containment leakage rate, L_a, shall be [0.25]% of containment air weight per day at the calculated peak containment pressure (P_a).~~ 3
LEAKAGE <1.15>	LEAKAGE shall be:

a. Identified LEAKAGE

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;

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 that is not identified LEAKAGE;

c. Pressure Boundary LEAKAGE

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

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K_{n-1} <1.16> K_{n-1} is the K effective calculated by considering the actual CEA configuration and assuming that the fully or partially inserted full-length CEA of highest worth is fully withdrawn 2

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1.1 Definitions (continued)

MODE <1.20>

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. Cold leg (1)

OPERABLE—OPERABILITY <1.19>

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 <1.21>

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

a. Described in Chapter 14, Initial Test Program of the FSAR; U (2)

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) (4)

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."

(continued)

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1.1 Definitions (continued)

<1.26>
RATED THERMAL POWER (RTP) — RTP shall be a total reactor core heat transfer rate to the reactor coolant of ~~[3410]~~ {3876} MWt. (2)

REACTOR PROTECTIVE SYSTEM (RPS) RESPONSE TIME <1.27> — 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.

SHUTDOWN MARGIN (SDM) <1.29> — 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 these CEAs must be accounted for in the determination of SDM;

b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design level; and

~~c. There is no change in part length CEA position.~~

STAGGERED TEST BASIS <1.33> — 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.

(continued)

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1.1 Definitions (continued)

THERMAL POWER <1.34>	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

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Table 1.1-1 (page 1 of 1)
MODES

MODE	TITLE	REACTIVITY CONDITION (k_{eff})	% RATED THERMAL POWER[a]	~~AVERAGE REACTOR COOLANT~~ COLD LEG TEMPERATURE (°F) 1
1	Power Operation	≥ 0.99	> 5	NA
2	Startup	≥ 0.99	≤ 5	NA
3	Hot Standby	< 0.99	NA	≥ ~~350~~ 350
4	Hot Shutdown[b]	< 0.99	NA	350 ~~350~~ > T_{cold} > ~~200~~ 210 2
5	Cold Shutdown[b]	< 0.99	NA	≤ ~~200~~ 1
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.

(continued)

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.

(continued)

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.

(continued)

1.3 Completion Times

DESCRIPTION (continued)

However, when a subsequent 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 first inoperability; and

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.

(continued)

1.3 Completion Times (continued)

EXAMPLES

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

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.	6 hours
	AND	
	B.2 Be in MODE 5.	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.

(continued)

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.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-2 (continued)

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.

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.

(continued)

1.3 Completion Times

EXAMPLES (continued)

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

(continued)

1.3 Completion Times

EXAMPLES

<u>EXAMPLE 1.3-3</u> (continued)

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

(continued)

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.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-5 (continued)

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.

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

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-6 (continued)

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.

(continued)

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.	6 hours
	AND	
	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.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-7 (continued)

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.

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, 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.

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.

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.

(continued)

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.

(continued)

1.4 Frequency

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.

(continued)

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.

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.

(continued)

NUREG-1432 EXCEPTIONS
CHAPTER 1.0

1. ITS uses cold leg temperature in the definition of MODE and Table 1.2, Operational Modes. NUREG-1432 uses the term average reactor coolant temperature in the definition of MODE and Table 1.1-1, MODES. Palo Verde presently uses and will continue to use cold leg temperature rather than average reactor coolant temperature. This is acceptable because, first, all PVNGS safety analysis that specifies an initial RCS temperature expresses this in terms of cold leg temperature. It would not be cost effective to redo all safety analysis to use average RCS temperature. In addition, UFSAR (15.6.3.3.2), post-trip EOP analysis assumptions regarding operator actions, assumes operators use ADVs and auxiliary feed to maintain the post trip cold leg temperature. Also, all PVNGS control systems that interface with operators use cold leg temperature as a controlling parameter. The continued use of RCS cold leg temperature is a deviation from NUREG-1432 but is consistent with PVNGS licensing basis.

2. The plant specific titles, nomenclature, number, parameter/value, reference, system description, system design, operating practices or analysis description was used (additions, deletions, and/or changes are included). No technical or intent changes to the Specification are made by this change.

3. NUREG-1432 locates the definition of L_a in the Definitions Section. ITS locates the definition of La to ITS Chapter 5.0, "Administrative Controls" in the Containment Leakage Rate Testing Program. This is done based on Option B for Performance Based Testing to 10CFR50, Appendix J. This is a deviation from NUREG-1432 in L_a definition location only; definition intent is consistent with NUREG-1432.

4. NUREG-1432 assumes the use of a PTLR. ITS does not use a PTLR since there is no NRC approved topical report that defines the methodology for determining the P/T limits. The omission of the PTLR from ITS is a deviation from NUREG-1432 but is consistent with PVNGS licensing basis.

PVNGS CTS
CHAPTER 1.0
MARK UP

A.1

1.0 USE AND APPLICATION

Definitions 1.1

1.1 DEFINITIONS

NOTE

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

ACTION

Required Actions to be taken

1.1 ACTION shall be that part of a specification which prescribes ~~remedial measures required~~ under designated conditions within specified completion times.

AXIAL SHAPE INDEX (ASI)

1.2 ~~The AXIAL SHAPE INDEX~~ 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 ~~these powers~~ the power generated in the lower and upper halves of the core.

$$ASI = \frac{\text{lower} - \text{upper}}{\text{lower} + \text{upper}}$$

AZIMUTHAL POWER TILT (T_q)

1.3 AZIMUTHAL POWER TILT shall be the power asymmetry between azimuthally symmetric fuel assemblies.

A.2

CHANNEL CALIBRATION

1.4 A CHANNEL CALIBRATION shall be the adjustment, ~~as~~ necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter ~~which~~ the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor ~~and~~ alarm, display and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. The CHANNEL CALIBRATION may be performed by any series of sequential, overlapping, or total channel steps ~~such~~ that the entire channel is calibrated.

so that means of required

CHANNEL CHECK

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

M.2

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. Whenever a sensing element is replaced, the next required CHANNEL CALIBRATION shall include an inplace cross calibration that compares the other sensing elements with the recently installed sensing element.

Definitions 1.1

1.0 DEFINITIONS

CHANNEL FUNCTIONAL TEST

1.6 A CHANNEL FUNCTIONAL TEST shall be:

a. Analog channels - the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions.

b. Bistable channels - the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip functions.

c. Digital computer channels - the exercising of the digital computer hardware using diagnostic programs and the injection of simulated process data into the channel to verify OPERABILITY including alarm and/or trip functions.

d. Radiological effluent process monitoring channels - the CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps such that the entire channel is functionally tested.

The CHANNEL FUNCTIONAL TEST shall include adjustment, as necessary, of the alarm, interlock and/or trip setpoints such that the setpoints are within the required range and accuracy.

and bistable
required
or actual
interlock, display
use of
total digital computer hardware

A.2 L.1 L.5 M.2 A.2 L.1 A.3 L.6 L.4

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

a. All penetrations required to be closed during accident conditions are either:

1. Capable of being closed by an OPERABLE containment automatic isolation valve system, or

2. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.

b. All equipment hatches are closed and sealed,

c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,

d. The containment leakage rates are within the limits of Specification 3.6.1.2, and

e. The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is OPERABLE.

A.4

CONTROLLED LEAKAGE

1.8 Not Applicable.

CORE ALTERATION

1.9 CORE ALTERATION shall be the movement or manipulation of any components within the reactor pressure vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATION shall not preclude completion of movement of a component to a safe conservative position.

A.5 L.2

fuel, sources, or reactivity control

, excluding control element assemblies (CEAs) withdrawn into the upper guide structure, Definitions 1.1

1.1 DEFINITIONS

CORE OPERATING LIMITS REPORT (COLR)

1.9a The ~~CORE OPERATING LIMITS REPORT~~ COLR is the unit~~-~~specific document that provides ~~core operating~~ parameter limits for the current operating reload cycle. These cycle~~-~~specific ~~core operating~~ parameter limits shall be determined for each reload cycle in accordance with Technical Specification ~~6.9.1~~ 5.6.5. Plant operation within these operating limits is addressed in individual specifications.

cycle specific parameter

DOSE EQUIVALENT I-131

1.10 DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/gram) ~~which~~ 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, "Calculation of Distance Factors for Power and Test Reactor Sites."~~ ICRP-30, Supplement to part 1, page 192-212, Table titled, "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity." A.15

Ē - AVERAGE DISINTEGRATION ENERGY

1.11 Ē 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 greater than 15 minutes, making up at least 95% of the total noniodine activity in the coolant.

ENGINEERED SAFETY FEATURE~~S~~ (ESF) RESPONSE TIME

1.12 The ~~ENGINEERED SAFETY FEATURES~~ 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. L.6

~~FREQUENCY NOTATION~~

~~1.13 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.1.~~ A.6

~~GASEOUS RADWASTE SYSTEM~~

~~1.14 A GASEOUS RADWASTE SYSTEM shall be any system designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system offgases from the primary system and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.~~ A.7

LEAKAGE

A.8

1.15 ~~IDENTIFIED~~ LEAKAGE shall be: a. Identified LEAKAGE

1. ~~a.~~ ~~Leakage~~ LEAKAGE ~~into~~ such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff) ~~closed systems other than reactor coolant pump controlled bleed-off flow, such as pump seal or valve packing leaks~~ that ~~are~~ is captured and conducted to collection systems or a sump or collecting tank; ~~or~~
2. ~~b.~~ ~~Leakage~~ 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~~ pressure boundary LEAKAGE, or
3. ~~c.~~ Reactor Coolant System (RCS) ~~leakage~~ LEAKAGE through a steam generator (SG) to the ~~S~~secondary ~~S~~system.

Insert Unidentified LEAKAGE from CTS PG 1-7 & Pressure Boundary LEAKAGE from PG 1-5

Specification 1.0
(1.0 / 5.0)

Definitions 1.1

1.1 DEFINITIONS

K_{N-1}

1.16 K_{N-1} is the k effective calculated by considering the actual CEA configuration and assuming that the fully or partially inserted full-length CEA of the highest worth is fully withdrawn.

~~MEMBER(S) OF THE PUBLIC~~

~~1.17 MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the plant. This category does not include employees of the licensee, its contractors, or vendors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries. This category does include persons who use portions of the site for recreational, occupational, or other purposes not associated with the plant.~~ A.7

1.0

5.0 OFFSITE DOSE CALCULATION MANUAL (ODCM)

1.18 The OFFSITE DOSE CALCULATION MANUAL (ODCM) shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring Alarm/Trip Setpoints, and in the conduct of the Environmental Radiological Monitoring Program. The ODCM shall also contain (1) the Radioactive Effluent Controls and Radiological Environmental Monitoring Programs required by Section 6.8.4, and (2) descriptions of the information that should be included in the Annual Radiological Environmental Operating and Annual Radioactive Effluent Release Reports required by Specifications 6.9.1.7 and 6.9.1.8.

5.0

1.0 OPERABLE - OPERABILITY

safety A.10 L.8

~~1.19~~ A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s), normal or emergency and when all necessary attendant instrumentation, controls, electrical power, cooling ~~or~~ seal water, lubrication, ~~or~~ other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable and of performing their related support function(s).

A.10

~~OPERATIONAL MODE~~ - MODE

~~1.20 An OPERATIONAL~~ MODE ~~(i.e. MODE)~~ shall correspond to any one inclusive combination of core reactivity condition, power level, and cold leg reactor coolant temperature and reactor vessel head closure bolt tensioning specified in Table ~~1.2~~ 1.1-1 with fuel in the reactor vessel {Moved from CTS TBL 1.C}

A.9

Specification 1.0

Definitions 1.1

1.1 DEFINITIONS

PHYSICS TESTS

~~1.22~~ PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation ~~and~~ These tests are: a. ~~(1)~~ ~~described~~ in Chapter 14.0 of the FSAR, ~~(2)~~ ~~authorized~~ under the provisions of 10 CFR 50.59, or ~~(3)~~ otherwise approved by the Commission. c. Initial Test Program, b.

~~PLANAR RADIAL PEAKING FACTOR - F_{xy}~~

~~1.22 The PLANAR RADIAL PEAKING FACTOR is the ratio of the peak to plane average power density of the individual fuel rods in a given horizontal plane, excluding the effects of azimuthal tilt.~~ LA.1

c. ~~PRESSURE BOUNDARY~~ LEAKAGE Pressure Boundary

~~1.23~~ ~~PRESSURE BOUNDARY~~ LEAKAGE ~~shall be leakage~~ (except ~~steam generator tube leakage~~ SG LEAKAGE) through a nonisolable fault in ~~a Reactor Coolant System~~ an RCS component body, pipe wall, or vessel wall. A.8 Move to LEAKAGE definition

~~PROCESS CONTROL PROGRAM (PCP)~~

~~1.24 The PROCESS CONTROL PROGRAM (PCP) shall contain the current formulas, sampling, analyses, test, and determinations to be made to ensure that processing and packaging of solid radioactive wastes based on demonstrated processing of actual or simulated wet solid wastes will be accomplished in such a way as to assure compliance with 10 CFR Parts 20, 61, and 71, State regulations, burial ground requirements, and other requirements governing the disposal of solid radioactive waste.~~ LA.2

~~PURGE - PURGING~~

~~1.25 PURGE or PURGING shall be the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration, or other operating condition, in such a manner that replacement air or gas is required to purify the confinement.~~ A.7

RATED THERMAL POWER (RTP)

~~1.26~~ ~~RATED THERMAL POWER~~ RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3876 MWt.

REACTOR ~~TRIP~~ PROTECTION SYSTEM RESPONSE TIME (RPS)

~~1.27~~ The ~~REACTOR TRIP SYSTEM~~ RESPONSE TIME shall be ~~the~~ that time interval from when the monitored parameter exceeds its trip setpoint at the channel sensor until electrical power ~~is interrupted~~ to the CEA drive mechanism. 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. L.6

1.1 DEFINITIONS

A.7

~~REPORTABLE EVENT~~

~~1.28 A REPORTABLE EVENT shall be any of those conditions specified in Sections 50.72 and 50.73 to 10 CFR Part 50.~~

SHUTDOWN MARGIN (SDM)

SDM

1.29 SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming:

CEA

There is

L.3

c. ~~a.~~ No change in part-length control element assembly position, ~~and~~

CEAs CEA

a. ~~b.~~ All full-length control element assemblies (shutdown and regulating) are fully inserted except for the single assembly 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 full-length CEAs not capable of being fully inserted, the withdrawn reactivity worth of these full-length CEAs must be accounted for in the determination of the SHUTDOWN MARGIN.

b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design level; and

M.3

A.7

~~SITE BOUNDARY~~

~~1.30 The SITE BOUNDARY shall be that line beyond which the land is neither owned, nor leased, nor otherwise controlled by the licensee.~~

~~SOFTWARE~~

~~1.31 The digital computer SOFTWARE for the reactor protection system shall be the program codes including their associated data, documentation, and procedures.~~

~~SOURCE CHECK~~

~~1.32 A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a source of increased radioactivity.~~

STAGGERED TEST BASIS

~~1.33~~ A STAGGERED TEST BASIS shall consist of ~~:~~ Insert 1

A.11 L.7

~~a. A test schedule for n systems, subsystems, trains, or other designated components obtained by dividing the specified test interval into n equal subintervals, and~~

~~b. The testing of one system, subsystem, train, or other designated component at the beginning of each subinterval.~~

THERMAL POWER

~~1.34~~ THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

INSERT FOR CTS 1.1
STAGGERED TEST BASIS
(Units 1, 2, and 3)
INSERT 1

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.

Specification 1.0

Definitions 1.1

1.1 DEFINITIONS

Move to LEAKAGE definition

b. Unidentified

UNIDENTIFIED LEAKAGE

LEAKAGE that is not Identified

A.8

1.35 UNIDENTIFIED LEAKAGE shall be all leakage which does not constitute either IDENTIFIED LEAKAGE or reactor coolant pump controlled bleed-off flow.

UNRESTRICTED AREA

1.36 An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials, or any area within the SITE BOUNDARY used for residential quarters or for industrial, commercial, institutional, and/or recreational purposes.

VENTILATION EXHAUST TREATMENT SYSTEM

1.37 A VENTILATION EXHAUST TREATMENT SYSTEM shall be any system designed and installed to reduce gaseous radioiodine or radioactive material in particulate form in effluents by passing ventilation or vent exhaust gases through charcoal adsorbers and/or HEPA filters for the purpose of removing iodines or particulates from the gaseous exhaust stream prior to the release to the environment. Such a system is not considered to have any effect on noble gas effluents. Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be VENTILATION EXHAUST TREATMENT SYSTEM components.

A.7

VENTING

1.38 VENTING shall be the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration, or other operating condition, in such a manner that replacement air or gas is not provided or required during VENTING. Vent, used in system names, does not imply a VENTING process.

1.1 DEFINITIONS

TABLE 1.1

FREQUENCY NOTATION

NOTATION	FREQUENCY
S	At least once per 12 hours.
D	At least once per 24 hours.
W	At least once per 7 days.
4/M	At least 4 times per month at intervals no greater than 9 days and a minimum of 48 times per year.
M	At least once per 31 days.
Q	At least once per 92 days.
SA	At least once per 184 days.
R	At least once per 18 months.
P	Completed prior to each release.
S/U	Prior to each reactor startup.
N.A.	Not applicable.

A.6

TABLE ~~1.2~~ 1.1-1 (page 1 of 1)

~~OPERATIONAL~~ MODES

OPERATIONAL MODE	REACTIVITY CONDITION, K_{eff}	% OF RATED THERMAL POWER~~*~~(a)	COLD LEG TEMPERATURE (T_{cold})
1. POWER OPERATION	$\geq$ 0.99	> 5%	~~$\geq$ 350°F~~ NA LA.5
2. STARTUP	$\geq$ 0.99	$\leq$ 5%	~~$\geq$ 350°F~~ NA
3. HOT STANDBY	< 0.99	~~0~~ NA	$\geq$ 350°F
4. HOT SHUTDOWN(b) A.13	< 0.99	~~0~~ NA	350° > T_{cold} > 210°F
5. COLD SHUTDOWN(b)	< 0.99	~~0~~ NA	$\leq$ 210°F
6. REFUELING~~**~~(c) A.9	~~$\leq$ 0.95~~ N/A LA.3	~~0~~ NA	~~$\leq$ 135°F~~ NA LA.4

A.9 <moved to MODE definition>

(a) ~~*~~Excluding decay heat.

~~**~~Fuel in the reactor vessel ~~with the vessel head closure bolts less than fully tensioned or with the head removed.~~ A.9

(b) All reactor vessel head closure bolts fully tensioned. A.13

(c) One or more reactor vessel head bolts less than fully tensioned A.9

add: Section 1.2 Logical Connectors
Section 1.3 Completion Times
Section 1.4 Frequency
A.14 M.4

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.

(continued)

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.

(continued)

Palo Verde Units 1,2,3

A

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 not 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.

(continued)

1.3 Completion Times

DESCRIPTION (continued)

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

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.

(continued)

1.3 Completion Times (continued)

EXAMPLES

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

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.

(continued)

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.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-2 (continued)

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.

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.

(continued)

1.3 Completion Times

EXAMPLES (continued)

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

(continued)

1.3 Completion Times

EXAMPLES

<u>EXAMPLE 1.3-3</u> (continued)

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

(continued)

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.

(continued)

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.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-5 (continued)

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.

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

(continued)

Palo Verde Unit 1,2,3

EA

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-6 (continued)

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.

(continued)

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.	6 hours
	AND 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.

(continued)

1.3 Completion Times

EXAMPLES	EXAMPLE 1.3-7 (continued) 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.
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, 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.

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.

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.

(continued)

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.

(continued)

1.4 Frequency

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.

(continued)

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 <u>performance</u> 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.

DISCUSSION OF CHANGES
CHAPTER 1.0

ADMINISTRATIVE CHANGES

A.1 All reformatting and renumbering is in accordance with Combustion Engineering Plant (CEOG) Standard Technical Specifications NUREG-1432, Rev. 1 (NUREG-1432). As a result, the Palo Verde Nuclear Generating Station (PVNGS) Improved Technical Specifications (ITS) should be more readable, and therefore understandable, by plant operators as well as other users. During the reformatting and renumbering of the ITS, no technical changes (either actual or interpretational) to the Current Technical Specifications (CTS) were made unless they were identified and justified.

Editorial rewording (either adding or deleting) is made consistent with NUREG-1432. During NUREG-1432 development, certain wording preferences or English language conventions were adopted which resulted in no technical changes (either actual or interpretational) the CTS.

Additional information has also been added to more fully describe each subsection. This wording is consistent with NUREG-1432. Since the design is already approved by the NRC, adding more detail does not result in a technical change.

A.2 ITS clarifies the definitions of Channel Calibration and Channel Functional Test by directing testing of required interlocks and displays, respectively. Although not in CTS, PVNGS operating practice is to test displays (reference DOC M2 for additional discussion). The addition of these details is consistent with existing PVNGS operating practice. Testing interlocks and displays will ensure that their functions and indications, that are critical to safety, will perform as required. Therefore, this change does not affect plant safety. This change is consistent with NUREG-1432.

A.3 ITS provides a more accurate description of Channel Functional Test for Digital Computer Channels than exists in the CTS. The CTS uses the term exercise for Channel Functional Test of digital computer hardware. ITS more accurately describes what is really performed. ITS explicitly states that a Channel Functional Test of Digital Computer Channels is a test of the digital computer hardware rather than an exercise of digital computer hardware.

A Channel Functional Test of digital computer hardware consists of running diagnostic programs that test the equipment by inputting known values and observing for proper return results. The digital computer hardware is exercised during the performance of the Channel Functional Test.

ADMINISTRATIVE CHANGES (continued)

This method of Channel Functional Testing is the industry accepted method for functional testing of digital computer hardware. This information does not add any additional requirements or delete any existing requirements from the definition of Channel Functional Test. Therefore, the addition of this information is administrative in nature. This change is consistent with NUREG-1432.

A.4 ITS deletes the CTS definition of Containment Integrity. This was prompted because the term Containment Integrity is not used in the ITS. This change is administrative because all the requirements specifically addressed in the CTS definition are addressed in the ITS Containment Systems section. This change is consistent with NUREG-1432.

A.5 The CTS provides the allowance that suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe conservative position. ITS deletes the use of the word "conservative" from the definition of Core Alteration. When Core Alterations are required to be suspended, a specific movement may have to be completed in order to establish a "safe" configuration (e.g., no fuel assembly suspended from refueling machine). Eliminating the requirement to be in a "conservative" position avoids potential confusion since there is no reference to what "conservative" means as it relates to CORE ALTERATIONS. It is assumed that "conservative" reflects the same context as "safe." Given this understanding, the wording change is administrative and, therefore, acceptable.

A.6 ITS deletes the definition of Frequency Notation and CTS Table 1.1 which lists the Frequency Notations. The Frequency Notation definition and Table 1.1 are no longer required because ITS lists the specific frequencies (i.e., 12 hours, 31 days, 18 months, etc., versus S, M, R, etc.) in the SRs. Listing the specific frequencies in hours, days or months in the SRs eliminates the need for Frequency Notations. This change does not change any SR frequencies and is, therefore, administrative. This change is consistent with NUREG-1432.

ADMINISTRATIVE CHANGES (continued)

A.7 ITS deletes the following CTS definitions:
- Gaseous Radwaste System
- Member(s) of the Public
- Purge - Purging
- Reportable Event
- Site Boundary
- Software
- Source Check
- Unrestricted Area
- Ventilation Exhaust Treatment System
- Venting

These definitions were deleted because they are not used in either the LCOs or SRs. Also, "Member(s) of the Public," "Site Boundary", and "Unrestricted Area" are defined in 10CFR20.1003. Discussion of the technical aspects to the deletion of these definitions are addressed as applicable in the corresponding sections of ITS and Discussion of Changes. The term may also be defined and/or explained in the Bases. The removal of these definitions is, therefore, considered administrative. This change is consistent with NUREG-1432.

A.8 The CTS definitions of Identified Leakage, Pressure Boundary Leakage, and Unidentified Leakage are being combined into one compound definition called LEAKAGE in ITS. The new LEAKAGE definition incorporates the three definitions with no technical changes. Administrative changes with respect to the conversion to ITS are described in other administrative discussion of changes (A.1). This change is considered administrative and is consistent with NUREG-1432.

A.9 CTS Table 1.2 defines Refueling as fuel in the reactor vessel with the vessel head bolts less than fully tensioned or with the head removed. ITS deletes the words "or with the head removed". This change removes possible confusion or ambiguity associated with the term. If the head is removed, the vessel head bolts are less than fully tensioned. The term "head bolts less than fully tensioned" will remain in the form of a Note in the Table. Also, the words, "and reactor vessel head bolting," was added to the definition of Mode for consistency with the Mode Table. The phrase "fuel in the reactor vessel" will be moved to the definition of Mode since fuel presence in the vessel is common for Mode definition.

ADMINISTRATIVE CHANGES (continued)

A.10 The CTS definition of Operable requires the component or device to be able to perform its function(s). ITS will require the component or device to be able to perform its specified "safety" function(s). The CTS intent is to address the "safety" function(s) and not encompass non-safety functions a system may also perform. The incorporation of PVNGS operating practices into the definition is an administrative change. This change is consistent with NUREG-1432.

A.11 ITS revises the CTS definition of Staggered Test Basis from dividing the number of systems, components, etc., into the interval, to multiplying the number of systems, components, etc., by the interval to determine Surveillance Frequency. This change is administrative since the Frequency between Surveillances for the same system, component, etc., will not be changed based on this definition change. Any changes to Frequencies will be discussed in the individual section. This change is consistent with NUREG-1432.

A.12 NOT USED

A.13 ITS adds a footnote to Modes 4 and 5 in CTS Table 1.2 that requires all reactor head closure bolts to be fully tensioned. PVNGS is required to have all reactor vessel head closure bolts tensioned in Modes 4 and 5. This requirement is administrative because it incorporates a requirement which is already required at PVNGS. This change is consistent with NUREG-1432.

ADMINISTRATIVE CHANGES (continued)

A.14 ITS adds three sections to Technical Specifications. These additions aid in the understanding and use of the new format and presentation style of ITS. They are unique to the ITS and developed by the NRC and industry. The addition of these sections are neither more nor less restrictive in principle, and will be discussed specifically in those Specifications where applications of those sections warrant discussion. Thus, the addition of these sections is administrative. This change is consistent with NUREG-1432. The added sections are as follows:

- ITS 1.2 - Logical Connectors
  ITS 1.2 provides specific examples of the logical connectors "AND" and "OR" and the numbering sequence associated with their use.

- ITS 1.3 - Completion Times
  ITS 1.3 provides proper use and interpretation of Completion Times. The section also provides specific examples that aid the user in understanding Completion Times.

- ITS 1.4 - Frequency
  ITS 1.4 provides proper use and interpretation of the Surveillance Frequency. The section also provides specific examples that aid the user in understanding Surveillance Frequency.

A.15 CTS definition of Dose Equivalent I-131 is being modified. Dose Equivalent I-131 for Units 1, 2, and 3 is being modified to reference ICRP-30, Supplement to Part 1, page 192-212, per letter 102-03717-WLS/AKK/NLT, June 17, 1996.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 NOT USED

M.2 ITS adds a requirement for the required instrument display to be tested as part of the CHANNEL CALIBRATION. In addition, another requirement is added that requires an in-place cross-calibration whenever an RTD is replaced, at the next required CHANNEL CALIBRATION. The addition of these requirements constitutes a more restrictive change to PVNGS plant operation. Testing of required displays ensures that indications, that are critical to safety, will perform as required to provide operators with accurate values. Requiring an in-place, cross calibration after replacement of an RTD or thermocouple will ensure that the replaced RTD or thermocouple performs properly and will not detrimentally affect plant safety. This change is consistent with NUREG-1432.

M.3 ITS adds that SDM determination assumes the fuel and moderator temperatures are changed to nominal zero power design level in Modes 1 and 2. The addition of this requirement constitutes a more restrictive change to PVNGS plant operation. This is acceptable because it incorporates requirements into the definition that are already assumed in the SDM determination. This change is consistent with NUREG-1432.

M.4 ITS Section 1.3 describes Completion Times in order to assist the Technical Specification user to correctly apply them in the ITS. ITS Section 1.3 describes the use of Completion Times for the case in which two subsystems become inoperable concurrently, without a note that allows the Conditions to be entered separately. In this case, after one subsystem is restored to operable status within the Completion Time for two subsystems inoperable, ITS requires use of the shorter of 24 hours or the remainder of the Completion Time for the remaining inoperable subsystem (one subsystem inoperable). Requiring the use of the shorter remaining Completion Time constitutes a more restrictive change to PVNGS plant operation. This is acceptable because the CTS would allow a less conservative interpretation of this situation. It is possible that PVNGS would take the remainder of the Completion Time of the remaining inoperable subsystem which could be in excess of 24 hours. The intent is to limit the maximum time allowed for subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS

LA.1 The CTS definition of Planar Radial Peaking Factor is being relocated to the COLR. This information is not required to determine OPERABILITY of a system, component or structure and therefore is being relocated to the Bases.

Any changes to the Bases will be in accordance with the Bases Control Program. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This requirement is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to the Bases is acceptable and is consistent with NUREG-1432.

LA.2 The CTS definition of Process Control Program already exists in the ODCM. This information is not required to determine OPERABILITY of a system, component or structure and therefore is being relocated to the ODCM.

Any changes to the ODCM will be in accordance with 10 CFR 50.59. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This requirement is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to the ODCM is acceptable and is consistent with NUREG-1432.

LA.3 CTS Table 1.2 requires K_{eff} to be ≤ 0.95 in Mode 6. This information is not required to determine OPERABILITY of a system, component or structure and therefore is being relocated to the TRM.

Any changes to the TRM will be in accordance with 10 CFR 50.59. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This requirement is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to the TRM is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS (continued)

LA.4 CTS Table 1.2 requires the cold leg temperature in Mode 6 to be ≤135°F. ITS does not include this requirement. This limitation for operation in Mode 6 is not being deleted. This requirement is being relocated to the TRM. This requirement is not required to determine the OPERABILITY of a system, component, or structure and, therefore, is being relocated to the TRM. Any changes to the requirements in the TRM will be governed by the provisions of 10 CFR 50.59. This provides an equivalent level of regulatory control and is an administrative change with no impact on the margin of safety. This requirement is not required to be in the ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to the TRM is acceptable and is consistent with NUREG-1432.

LA.5 CTS Table 1.2 requires cold leg temperature in Modes 1 and 2 to be ≥350°F. ITS does not include this requirement. This limitation for operation in Modes 1 and 2 is not being deleted. This requirement is being relocated to the TRM. This requirement is not required to determine the OPERABILITY of a system, component, or structure and therefore is being relocated to the TRM. Any changes to the requirements in the TRM will be governed by the provisions of 10 CFR 50.59. This provides an equivalent level of regulatory control and is an administrative change with no impact on the margin of safety. This requirement is not required to be in the ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to the TRM is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 ITS combines analog and bistable channel requirements. CTS maintains the two as separate definitions. Combining the definitions allows the bistable channel test signal to be injected "as close to the sensor as practicable" in lieu of "into the sensor" as required by CTS. Injecting a signal at the sensor increases the probability of actuating related circuits that are not being tested in those cases where several logic channels are associated with one sensor. Therefore, performing the test by injecting a signal at the sensor may require: jumpering associated logic channels to prevent their initiation during the test; or, increasing the scope of the test to include the other logic channels. Either approach increases the difficulty of performing the surveillance. Allowing initiation of the signal close to the sensor provides a complete test of the desired logic channel while reducing the probability of an undesired initiation. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.2 The CTS defines Core Alteration as "tne movement or manipulation of any component within the reactor pressure vessel with the vessel head removed and fuel in the vessel." ITS will relax the requirement from any component to specify the components as fuel, source, or reactivity control components. There is also added information that specifically excludes movement of CEAs, when withdrawn into the upper guide structure, as a Core Alteration. The Specifications that use this definition are those that relate to reactivity excursion events. In keeping with this, the ITS definition excludes movement of other than fuel, sources, or reactivity control components as Core Alterations. The movement or manipulation of other components will have negligible (if any) affect on core reactivity. Therefore, there is no restriction on the movement of components other than fuel, sources, or reactivity control components. This change is consistent with NUREG-1432.

L.3 The CTS definition of SDM requires the calculation to account for the single CEA of highest worth being withdrawn. ITS will allow the single CEA of highest worth being fully withdrawn to not be accounted for in the calculation of SDM if all CEAs are verified to be fully inserted by two independent means. This change is acceptable because requiring the CEA of highest reactivity worth to be assumed withdrawn, when all CEAs are verified inserted by two independent means, is overly conservative. This change is consistent with NUREG-1432.

L.4 ITS deletes the statement in CTS about Channel Functional Test that states, "The Channel Functional Test shall include adjustments, as necessary, of the alarm, interlock and/or trip setpoints such that the setpoints are within the required range and accuracy." The intent of Channel Functional Test in ITS is to verify channel operability by observation of channel trip not to verify setpoints. Removing the requirement to check setpoints during a Channel Functional Test constitutes a less restrictive change. This change is reasonable because, by definition, setpoints are verified and, if required, adjusted during the performance of a Channel Calibration. A Channel Calibration is inclusive of a Channel Functional Test. This change will afford PVNGS the opportunity to remove setpoint verification from the Channel Functional Test and rely on the Channel Calibration for this function. This will be done on an individual basis as analysis shows that setpoint verification performance is not adversely affected when extended out to Channel Calibration frequencies. Also, setpoint verification frequency changes are controlled under the 10 CFR 50.59 evaluation process to ensure any changes receive appropriate review. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.5 ITS allows for an "actual" or "simulated" signal to be used during CHANNEL FUNCTIONAL TESTING. CTS does not make this differentiation. Allowing the use of an "actual" signal constitutes a less restrictive change. Some tests are performed by insertion of an actual signal. For others, where a simulated signal is typically used, there is no reason why an actual signal would not suffice for satisfactory performance of the test. Use of an actual signal instead of a simulated signal will not affect the performance of the channel. ITS will also allow credit for unplanned actuations if sufficient information is collected to satisfy the surveillance test requirements. Operability can be demonstrated in either case since the channel itself can not discriminate between the "actual" or "simulated" signal. ITS does not change the technical content or validity of the CHANNEL FUNCTIONAL TEST. Therefore, it does not detrimentally affect plant safety. This change is consistent with NUREG-1432.

L.6 ITS allows CHANNEL FUNCTIONAL TEST, ENGINEERED SAFETY FEATURES RESPONSE TIME and REACTOR PROTECTION SYSTEM RESPONSE TIME to be performed by any series of sequential, overlapping or total steps to all equipment covered by CHANNEL FUNCTIONAL TEST, ENGINEERED SAFETY FEATURES RESPONSE TIME and REACTOR PROTECTION SYSTEM RESPONSE TIME. Allowing the application of these definitions to all equipment covered by CHANNEL FUNCTIONAL TEST, ENGINEERED SAFETY FEATURES RESPONSE TIME and REACTOR PROTECTION SYSTEM RESPONSE TIME constitutes a less restrictive change. This is acceptable because it describes PVNGS application of the definition. Also, the expanded application of the definitions does not change the intent of CHANNEL FUNCTIONAL TEST, ENGINEERED SAFETY FEATURES RESPONSE TIME and REACTOR PROTECTION SYSTEM RESPONSE TIME. This change ensures the definitions of CHANNEL FUNCTIONAL TEST, ENGINEERED SAFETY FEATURES RESPONSE TIME and REACTOR PROTECTION SYSTEM RESPONSE TIME are applied uniformly to all applicable equipment. Therefore, this change does not detrimentally affect plant safety. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.7 The CTS definition of Staggered Test Basis requires that components tested on a Staggered Test Basis be performed in equal subintervals (e.g., CTS: 3 auxiliary feed pumps to be tested every 92 days on a Staggered Test Basis would require one pump to be tested every 31 days). The ITS would delete the requirement to test each component in equal subintervals (e.g., ITS: 3 auxiliary feed pumps required to be tested every 31 days on a STAGGERED TEST BASIS would require all three pumps to be tested within a 92 day period with the interval between components not specified). Removal of the requirement to test components in equal subintervals is a less restrictive change. This is acceptable because the purpose of staggered testing is to ensure common failures due to testing do not render more than one train inoperable. However, the interval between components should be such that the intent of staggering is satisfied. This change is consistent with NUREG-1432.

L.8 The CTS definition of OPERABLE only specifies that electrical power be available for the system, subsystem, train, component, or device. The ITS definition requires either "normal or emergency" power be available. Relaxing the requirement for power to specifically include "emergency" power constitutes a less restrictive change. This is acceptable because AC Sources Technical Specifications will be entered, which ensures that adequate measures (cross-train checks to ensure operability of redundant components, systems, etc.) are taken so that loss of a safety function does not exist. This ensures that the system is capable of meeting its safety analysis requirements even with a loss of a power source. This change provides clarification of PVNGS operating practices into the definition. This change is consistent with NUREG-1432.

NO SIGNIFICANT HAZARDS CONSIDERATION
CHAPTER 1.0

ADMINISTRATIVE CHANGES
(ITS 1.0 Discussion of Changes Labeled A.1, A.2, A.3, A.4, A.5, A.6, A.7, A.8, A.9, A.10, A.11, A.13, A.14 and A.15)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3, is converting to the ITS as outlined in NUREG-1432, "Standard Technical Specifications, Combustion Engineering Plants." The proposed changes involve the reformatting, renumbering, rewording of the Technical Specifications (TS) and Bases with no change in intent, and the incorporation of current operating practices consistent with NUREG-1432. These changes, since they do not involve technical changes to the Current TS (CTS), are administrative. Below are the No Significant Hazards Consideration (NSHC) for the conversion of this Chapter to NUREG-1432.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

> The proposed changes involve reformatting, renumbering, and rewording of the CTS and Bases along with incorporation of PVNGS current operating practices and other changes to the CTS discussed above in order to be consistent with NUREG-1432. The reformatting, renumbering, and rewording along with the other changes listed above, involves no technical changes to the CTS. Specifically, there will be no change in the requirements imposed on PVNGS due to these changes. During development of NUREG-1432, certain wording preferences or English language conventions were adopted. The proposed changes to this Chapter are administrative in nature and do not impact initiators of any analyzed events. They also do not impact the assumed mitigation of accidents or transient events. Therefore, these changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

ADMINISTRATIVE CHANGES
(ITS 1.0 Discussion of Changes Labeled (A.1, A.2, A.3, A.4, A.5, A.6, A.7, A.8, A.9, A.10, A.11, A.13, A.14 and A.15) (continued)

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed changes involve reformatting, renumbering, and rewording of the CTS, along with the incorporation of PVNGS current operating practices and other changes, as discussed above, in order to be consistent with NUREG-1432. The proposed changes do not involve a physical alteration of the plant (no new or different type of equipment will be installed) or change the methods governing normal plant operation. The proposed changes will not impose any new or different requirements or eliminate any existing requirements. Therefore, these changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

The proposed changes involve reformatting, renumbering, and rewording of the CTS, along with the incorporation of PVNGS current operating practices and other changes, as discussed above, in order to be consistent with NUREG-1432. The proposed changes are administrative in nature and will not involve any technical changes. The proposed changes will not reduce a margin of safety because they have no impact on any safety analysis assumptions. Also, because these changes are administrative in nature, no question of safety is involved. Therefore, these changes do not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - MORE RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled M.2, M.3, and M.4)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 is converting to the ITS as outlined in NUREG-1432. This particular NSHC is for the changes labeled "Technical Changes - More Restrictive" described in the specific Discussion of Changes listed above. The proposed changes incorporate more restrictive changes into the CTS by either making current requirements more stringent or adding new requirements which currently do not exist.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

> The proposed changes provide more stringent requirements than previously existed in the CTS. The more stringent requirements will not result in operation that will increase the probability of initiating an analyzed event. If anything, the new requirements may decrease the probability or consequences of an analyzed event by incorporating the more restrictive changes discussed above. These changes will not alter assumptions relative to mitigation of an accident or transient event. The more restrictive requirements will not alter the operation and will continue to ensure process variables, structures, systems, or components are maintained consistent with safety analyses and licensing basis. These changes have been reviewed to ensure that no previously evaluated accident has been adversely affected. Therefore, these changes will not involve a significant increase in the probability or consequences of an accident evaluated.

TECHNICAL CHANGES - MORE RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled M.2, M.3, and M.4) (continued)

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

> Making existing requirements more restrictive and adding more restrictive requirements to the CTS will not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal plant operation. These changes do impose different requirements. However, they are consistent with the assumptions made in the safety analyses, licensing basis, and NUREG-1432. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

> The proposed changes provide more stringent requirements than previously existed in the CTS. An evaluation of these changes concluded that adding these more restrictive requirements either increases or has no impact on the margin of safety. The changes provide additional restrictions which may enhance plant safety. These changes maintain requirements of the safety analysis, licensing basis, and NUREG-1432. As such, no question of safety is involved. Therefore, these changes will not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - RELOCATIONS
(ITS 1.0 Discussion of Changes Labeled LA.1, LA.2, LA.3, LA.4, and LA.5)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 is converting to the ITS as outlined in NUREG-1432. The proposed changes, since detail is being removed from the CTS to a Licensee Controlled Document, are less restrictive. The descriptions of these changes are in the Discussion of Changes listed above.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

> The proposed changes relocate requirements from the CTS to a Licensee Controlled Document. These changes do not result in any hardware changes or changes to plant operating practices. The details being relocated are not assumed to be an initiator of any analyzed event. The Licensee Controlled Document containing the relocated requirements will be maintained using the provisions of 10 CFR 50.59 and is subject to the change control process in the Administrative Controls Section of the ITS. Since any changes to a Licensee Controlled Document will be evaluated per 10 CFR 50.59, no increase in the probability or consequences of an accident previously evaluated will be allowed. Therefore, these changes will not involve a significant increase in the probability or consequences of an accident previously evaluated.

TECHNICAL CHANGES - RELOCATIONS
(ITS 1.0 Discussion of Changes Labeled LA.1, LA.2, LA.3, LA.4 and LA.5) (continued)

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed changes relocate requirements from the CTS to a Licensee Controlled Document. These changes will not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal plant operation. These changes will not impose different requirements and adequate control of information will still be maintained. These changes will not alter assumptions made in the safety analysis or licensing basis. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

The proposed changes relocate requirements from the CTS to a Licensee Controlled Document. These changes will not reduce a margin of safety since they have no impact on any safety analysis assumptions. In addition, the requirements to be transposed from the CTS to the Licensee Controlled Document are the same as the CTS. Since any future changes to this Licensee Controlled Document will be evaluated per the requirements of 10 CFR 50.59, no reduction (significant or insignificant) in a margin of safety will be allowed. Therefore, these changes will not involve a significant reduction in a margin of safety. The NRC review provides a certain margin of safety, and although this review will no longer be performed prior to implementation, the NRC still inspects the 10 CFR 50.59 process. The proposed changes are consistent with NUREG-1432, which was approved by the NRC Staff. The change controls for proposed relocated details and requirements provide an acceptable level of regulatory authority. Revising the CTS to reflect the approved level of detail reinforces the conclusion that there is not a significant reduction in the margin of safety. Therefore, revising the CTS to reflect the NRC accepted level of detail and requirements ensures no reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.1)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 is converting to the ITS as outlined in NUREG-1432. The proposed change involves making the CTS less restrictive. Below is the description of this less restrictive change and the NSHC for the conversion to NUREG-1432.

L.1 ITS combines analog and bistable channel requirements. CTS maintains the two as separate definitions. Combining the definitions allows the bistable channel test signal to be injected "as close to the sensor as practicable" in lieu of "into the sensor" as required by CTS. Injecting a signal at the sensor increases the probability of actuating related circuits that are not being tested in those cases where several logic channels are associated with one sensor. Therefore, performing the test by injecting a signal at the sensor may require: jumpering associated logic channels to prevent their initiation during the test; or, increasing the scope of the test to include the other logic channels. Either approach increases the difficulty of performing the surveillance. Allowing initiation of the signal close to the sensor provides a complete test of the desired logic channel while reducing the probability of an undesired initiation. This change is consistent with NUREG-1432.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.1) (continued)

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The CTS provides separate definitions for both the bistable and analog channel requirements. The proposed change combines the analog and bistable channel requirements which allows the bistable channel test signal to be injected "as close to the sensor as practicable." Testing the bistable instrument channels such that the test signal does not include the "sensor" will significantly reduce the complications associated with performance of a surveillance on a sensor that provides input to multiple logic channels. The sensor will still be checked during a CHANNEL CALIBRATION. This reduction of complication will not affect the failure probability of the equipment but may reduce the probability of personnel error during the surveillance. Such reductions will not involve a significant increase in the probability or consequences of an accident previously evaluated.

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change combines the analog and bistable channel requirements. The possibility of a new or different kind of accident from any accident previously evaluated is not created because the proposed change does not introduce a new mode of plant operation and does not involve any physical modifications to the plant.

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

The proposed change combines the analog and bistable channel requirements. This change does not involve a change to the limits or limiting condition of operation; only the method for performing a surveillance is changed. Since the proposed method affects only a single logic channel rather than potentially affecting multiple logic channels simultaneously, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.2)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 is converting to the ITS as outlined in NUREG-1432. The proposed change involves making the CTS less restrictive. Below is the description of this less restrictive change and the NSHC for conversion to NUREG-1432.

L.2 The CTS defines Core Alteration as the movement or manupulation of any component within the reactor pressure vessel with the vessel head removed and fuel in the vessel. ITS will relax the requirement from any component to specify the components as fuel, source, or reactivity control components. There is also added information that specifically excludes movement of CEAs, when withdrawn into the upper guide structure, as a Core Alteration. The specifications that use this definition are those that relate to reactivity excursion events. In keeping with this, the ITS definition excludes movement other than fuel, sources, or reactivity control components as Core Alterations. The movement or manipulation of other components will have negligible (if any) affect on core reactivity. Therefore, there is no restriction on the movement of components other than fuel, sources, or reactivity control components. This change is consistent with NUREG-1432.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.2) (continued)

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed change revises the definition of Core Alterations to be the movement or manipulation of fuel, sources, or reactivity control components within the reactor vessel rather than the movement of any component within the reactor vessel. This change will not affect the probability of an accident. The only component assumed to be an initiator of an analyzed event is an irradiated fuel assembly when it is dropped. None of the other components are initiators of any analyzed event. Furthermore, the probability of a fuel handling accident is minimized by administrative controls and physical limitations imposed on fuel handling operations. The movement of components other than fuel, sources, and reactivity control components will be handled under plant administrative controls. Also, this change has no affect on the boron dilution event because when boron concentration is below limits, Core Alterations are restricted to maintain the maximum SDM. Movement of other components will not change core reactivity. The consequences of an accident is not affected by this change. The accident analysis assumes an irradiated fuel assembly is dropped with the consequences well within 10CFR Part 100 limits. The dropping of other components is not addressed in the plant safety analyses. The consequences of a boron dilution event are not addressed because Core Alterations are not allowed when the boron concentration is below limits. The change will not alter assumptions relative to the mitigation of an accident or transient. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change revised the definition of Core Alterations to be the movement or manipulation of fuel, sources, or reactivity control components within the reactor vessel rather than the movement of any component within the reactor vessel. This change will not physically alter the plant (no new or different type of equipment will be installed). The changes will not require any new or unusual operator actions. Therefore, the change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.2) (continued)

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

The proposed change revises the definition of Core Alteration to be the movement or manipulation of fuel, sources, or reactivity control components within the reactor vessel rather that the movement of any component within the reactor vessel. The margin of safety is not affected by this change because the safety analysis assumes an irradiated fuel assembly is dropped. Controls for handling components other than fuel, sources, or reactivity control components are in the plant administrative controls. Also, the effect of a boron dilution event on SDM is limited due to the requirement to suspend Core Alterations when boron concentration is not within limits. The movement of other components will not change reactivity. No change is being proposed in the applicability of the definition to the movement of components which are factors in the design basis analyses. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.3)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 is converting to the ITS as outlined in NUREG-1432. The proposed change involves making the CTS less restrictive. Below is the description of this less restrictive change and the NSHC for conversion to NUREG-1432.

L.3 The CTS definition of SDM requires the calculation to account for the single CEA of highest worth being withdrawn. ITS will allow the single CEA of highest worth being fully withdrawn to be ignored in the calculation of SDM if all CEAs are verified to be fully inserted by two independent means. This change is acceptable because requiring the CEA of highest reactivity worth to be assumed withdrawn, when all CEAs are verified inserted by two independent means, is overly conservative. This change is consistent with NUREG-1432.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed change allows the Control Element Assembly (CEA) of highest reactivity worth to not be assumed fully withdrawn if all CEAs can be verified fully inserted by two independent means. This change will not affect the probability of an accident. The assumptions used in the SDM calculation are not assumed to be initiators of any analyzed event. The consequence of an accident is not affected by this change. The actual SDM will be adequately calculated and verified without assuming the CEA of highest reactivity worth is fully withdrawn, they will be accounted for in the SDM calculation. This change will not alter assumptions relative to the mitigation of an accident or transient. Therefore, this change will not involve a significant increase in the probability or consequence of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.3) (continued)

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change allows the CEA of highest reactivity worth to not be assumed fully withdrawn if all CEAs can be verified fully inserted by two independent means. This change will not physically alter the plant (no new or different type of equipment will be installed). The changes also do not require any new or unusual operator actions. Therefore, the change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

The proposed change allows the CEA of highest reactivity worth to not be assumed fully withdrawn if all CEAs can be verified fully inserted by two independent means. The margin of safety is not affected by this change because the SDM will still be adequately verified within limits. Assuming the CEA of highest reactivity worth is fully withdrawn is overly conservative when the means exist to accurately verify that all CEAs are fully inserted (by two independent means). The safety analysis assumptions will still be maintained. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.4)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 is converting to the ITS as outlined in NUREG-1432. The proposed change involves making the CTS less restrictive. Below is the description of this less restrictive change and the NSHC for conversion to NUREG-1432.

L.4 ITS deletes the statement in CTS about Channel Functional Test that states, "The Channel Functional Test shall include adjustments, as necessary, of the alarm, interlock and/or trip setpoints such that the setpoints are within the required range and accuracy." The intent of Channel Functional Test in ITS is to verify channel operability by observation of channel trip not to verify setpoints. Removing the requirement to check setpoints during a Channel Functional Test constitutes a less restrictive change. This change is reasonable because, by definition, setpoints are verified and, if required, adjusted during the performance of a Channel Calibration. A Channel Calibration is inclusive of a Channel Functional Test. This change will afford PVNGS the opportunity to remove setpoint verification from the Channel Functional Test and rely on the Channel Calibration for this function. This will be done on an individual basis as analysis shows that setpoint verification performance is not adversely affected when extended out to Channel Calibration frequencies. Also, setpoint verification frequency changes are controlled under the 10 CFR 50.59 evaluation process to ensure any changes receive appropriate review. This change is consistent with NUREG-1432.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.4) (continued)

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed change removes the requirement to include adjustments, as necessary, of the alarm, interlock and/or trip setpoints such that the setpoints are within the required range and accuracy for Channel Functional Test. This change will not affect the probability of an accident. The assumptions used in the Channel Functional Test are not assumed to be initiators of any analyzed event. Setpoints are verified and, if required, adjusted during the performance of a Channel Calibration. A Channel Calibration includes a Channel Functional Test. This change will afford PVNGS the opportunity to remove setpoint verification from the Channel Functional Test and rely on the Channel Calibration for this function. The consequence of an accident is not affected by this change. Changing setpoint verification frequencies will be done on an individual basis as analysis shows that setpoint verification performance is not adversely affected when extended out to Channel Calibration frequencies. Also, setpoint verification frequency changes are controlled under the 10 CFR 50.59 evaluation process to ensure any changes receive appropriate review. This change will not alter assumptions relative to the mitigation of an accident or transient. Therefore, this change will not involve a significant increase in the probability or consequence of an accident previously evaluated.

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change removes the requirement to include adjustments, as necessary, of the alarm, interlock and/or trip setpoints such that the setpoints are within the required range and accuracy for Channel Functional Test. This change will not physically alter the plant (no new or different type of equipment will be installed). The changes also do not require any new or unusual operator actions. Therefore, the change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.4) (continued)

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

The proposed change removes the requirement to include adjustments, as necessary, of the alarm, interlock and/or trip setpoints such that the setpoints are within the required range and accuracy for Channel Functional Test. This change does not involve a change to the limits or limiting condition of operation; only the frequency for performing setpoint verification is changed. Since changing setpoint verification frequencies will be done on (1) an individual basis with (2) analysis that shows setpoint verification performance is not adversely affected when extended out to Channel Calibration frequencies and (3) controlled under the 10 CFR 50.59 evaluation process to ensure any changes receive appropriate review, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.5)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 is converting to the ITS as outlined in NUREG-1432. The proposed change involves making the CTS less restrictive. Below is the description of this less restrictive change and the NSHC for conversion to NUREG-1432.

L.5 ITS allows for an "actual" or "simulated" signal to be used during CHANNEL FUNCTIONAL TESTING. CTS does not make this differentiation. Allowing the use of an "actual" signal constitutes a less restrictive change. Some tests are performed by insertion of an actual signal. For others, where a simulated signal is typically used, there is no reason why an actual signal would not suffice for satisfactory performance of the test. Use of an actual signal instead of a simulated signal will not affect the performance of the channel. ITS will also allow credit for unplanned actuations if sufficient information is collected to satisfy the surveillance test requirements. Operability can be demonstrated in either case since the channel itself can not discriminate between the "actual" or "simulated" signal. ITS does not change the technical content or validity of the CHANNEL FUNCTIONAL TEST. Therefore, it does not detrimentally affect plant safety. This change is consistent with NUREG-1432.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.5) (continued)

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed change allows for an "actual" or "simulated" signal to be used during Channel Functional Testing. CTS does not make this differentiation. The use of an "actual" or "simulated" signal for Channel Functional Testing is not derived from any design basis accidents. A Channel Functional Test is prescribed to verify a channel's expected response with a known input. This change will not affect the probability of an accident. Use of an "actual" or "simulated" signal for Channel Functional Testing is not an initiator of any analyzed event. The consequences of an accident are not significantly affected by this change. Also, use of an "actual" signal will not affect the performance of the channel. ITS will also allow credit for unplanned actuations if sufficient information is collected. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change does not involve a significant increase in the probability or consequence of an accident previously evaluated.

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change allows for an "actual" or "simulated" signal to be used during Channel Functional Testing. A Channel Functional Test is prescribed to verify a channel's expected response with a known input. Some tests are performed by insertion of an "actual" signal. For others, where a "simulated" signal is typically used, there is no reason why an "actual" signal would not suffice. Operability can be demonstrated in either case since the channel itself can not discriminate between the "actual" or "simulated" signal. Use of an "actual" signal instead of a "simulated" signal will not affect the performance of the channel. This change will not physically alter the plant (no new or different type of equipment will be installed). The change does not require any new or unusual operator actions. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.5) (continued)

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

> The proposed change allows for an "actual" or "simulated" signal to be used during Channel Functional Testing. The margin of safety is not affected by this change. While some tests are performed by insertion of a "simulated" signal, there is no reason why an actual signal would not suffice. Use of an "actual" signal instead of a "simulated" signal will not affect the performance of the channel. Operability can be demonstrated in either case since the channel itself can not discriminate between the "actual" or "simulated" signal. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.6)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 is converting to the ITS as outlined in NUREG-1432. The proposed change involves making the CTS less restrictive. Below is the description of this less restrictive change and the NSHC for conversion to NUREG-1432.

L.6 ITS allows CHANNEL FUNCTIONAL TEST, ENGINEERED SAFETY FEATURES RESPONSE TIME and REACTOR PROTECTION SYSTEM RESPONSE TIME to be performed by any series of sequential, overlapping or total steps to all equipment covered by CHANNEL FUNCTIONAL TEST, ENGINEERED SAFETY FEATURES RESPONSE TIME and REACTOR PROTECTION SYSTEM RESPONSE TIME. Allowing the application of these definitions to all equipment covered by CHANNEL FUNCTIONAL TEST, ENGINEERED SAFETY FEATURES RESPONSE TIME and REACTOR PROTECTION SYSTEM RESPONSE TIME constitutes a less restrictive change. This is acceptable because it describes PVNGS application of the definition. Also, the expanded application of the definitions does not change the intent of CHANNEL FUNCTIONAL TEST, ENGINEERED SAFETY FEATURES RESPONSE TIME and REACTOR PROTECTION SYSTEM RESPONSE TIME. This change ensures the definitions of CHANNEL FUNCTIONAL TEST, ENGINEERED SAFETY FEATURES RESPONSE TIME and REACTOR PROTECTION SYSTEM RESPONSE TIME are applied uniformly to all applicable equipment. Therefore, this change does not detrimentally affect plant safety. This change is consistent with NUREG-1432.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.6)

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed change allows Channel Functional Test, Engineered Safety Features Response Time and Reactor Protection system Response Time to be performed by any series of sequential, overlapping or total steps to all equipment covered by Channel Functional Test, Engineered Safety Features Response Time and Reactor Protection System Response Time. Performance of Channel Functional Test, Engineered Safety Features Response Time and Reactor Protection system Response Time by any series of sequential, overlapping or total steps are not derived from design basis accidents. A Channel Functional Test, Engineered Safety Features Response Time and Reactor Protection system Response Time is prescribed to verify a channel's expected response with a known input. This change will not affect the probability of an accident. Performance of a Channel Functional Test, Engineered Safety Features Response Time and Reactor Protection system Response Time by any series of sequential, overlapping or total steps is not an initiator of an analyzed event. The consequences of an accident are not significantly affected by this change. Also, this change ensures uniform application of intent associated with Channel Functional Test, Engineered Safety Features Response Time and Reactor Protection System Response Time. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change does not involve a significant increase in the probability or consequence of an accident previously evaluated.

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change allows Channel Functional Test, Engineered Safety Features response Time and Reactor Protection system Response Time to be performed by any series of sequential, overlapping or total steps to all equipment covered by Channel Functional Test, Engineered Safety Features Response Time and Reactor Protection System Response Time. The change describes PVNGS operating practice in application of the definitions. Also, the expanded application of the definitions does not change the intent of Channel Functional Test, Engineered Safety Features Response Time and Reactor Protection system Response Time. This change ensures the definitions of Channel Functional Test, Engineered Safety Features Response Time and Reactor Protection system Response Time are applied uniformly to all applicable equipment. This change will not physically alter the plant (no new or different type of equipment will be installed). The change does not require any new or unusual operator actions. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 1.0 Discussion of Changes Labeled L.6) (continued)

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

The proposed change allows Channel Functional Test, Engineered Safety Features response Time and Reactor Protection system Response Time to be performed by any series of sequential, overlapping or total steps to all equipment covered by Channel Functional Test, Engineered Safety Features Response Time and Reactor Protection System Response Time. The margin of safety is not affected by this change. The change describes PVNGS operating practice in application of the definitions. This change ensures the definitions of Channel Functional Test, Engineered Safety Features Response Time and Reactor Protection system Response Time are applied uniformly to all applicable equipment. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS Discussion of Changes Labeled L.7)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 is converting to the ITS as outlined in NUREG-1432. The proposed change involves making the CTS less restrictive. Below is the description of this less restrictive change and the NSHC for conversion to NUREG-1432.

L.7 The CTS definition of Staggered Test Basis requires that components tested on a Staggered Test Basis be performed in equal subintervals (e.g., CTS: 3 auxiliary feed pumps to be tested every 92 days on a Staggered Test Basis would require one pump to be tested every 31 days). The ITS would delete the requirement to test each component in equal subintervals (e.g., ITS: 3 auxiliary feed pumps required to be tested every 31 days on a STAGGERED TEST BASIS would require all three pumps to be tested within a 92 day period with the interval between components not specified). Removal of the requirement to test components in equal subintervals is a less restrictive change. This is acceptable because the purpose of staggered testing is to ensure common failures due to testing do not render more than one train inoperable. However, the interval between components should be such that the intent of staggering is satisfied. This change is consistent with NUREG-1432.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS Discussion of Changes Labeled L.7) (continued)

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

> The proposed change deletes the requirement to have equal subintervals between Surveillances for components that are tested on a Staggered Test Basis. This change will not affect the probability of an accident. The testing interval between components are not assumed to be an initiator of any analyzed event. The consequences of an accident are not affected by this change. Requiring equal subintervals between Surveillances for components is not necessary to ensure the equipment being tested is Operable and that common mode failures, due to testing, will not affect more than one train. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change does not involve a significant increase in the probability or consequence of an accident previously evaluated.

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

> The proposed change deletes the requirement to have equal subintervals between Surveillances for components that are tested on a Staggered Test Basis. This change will not physically alter the plant (no new or different type of equipment will be installed). The change does not require any new or unusual operator actions. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS Discussion of Changes Labeled L.7) (continued)

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

The proposed change deletes the requirement to have equal subintervals between Surveillances for components that are tested on a Staggered Test Basis. The margin of safety is not affected by this change. The change describes PVNGS operating practice in application of the definitions. This change ensures the definitions of Channel Functional Test, Engineered Safety Features Response Time and Reactor Protection system Response Time are applied uniformly to all applicable equipment. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS Discussion of Changes Labeled L.8) (continued)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 is converting to the ITS as outlined in NUREG-1432. The proposed change involves making the CTS less restrictive. Below is the description of this less restrictive change and the NSHC for conversion to NUREG-1432.

L.8 The CTS definition of OPERABLE only specifies that electrical power be available for the system, subsystem, train, component, or device. The ITS definition requires either "normal or emergency" power be available. Relaxing the requirement for power to specifically include "emergency" power constitutes a less restrictive change. This is acceptable because AC Sources Technical Specifications will be entered, which ensures that adequate measures (cross-train checks to ensure operability of redundant components, systems, etc.) are taken so that loss of a safety function does not exist. This ensures that the system is capable of meeting its safety analysis requirements even with a loss of a power source. This change provides clarification of PVNGS operating practices into the definition. This change is consistent with NUREG-1432.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed change specifies, in the definition of Operable, normal or emergency power must be available for the system, subsystem, train, component, or device. CTS only requires that electrical power be available. The definition of Operable is not derived from design basis accidents. The definition of Operable provides guidance that ensures a system is capable of meeting its safety analysis requirements, even with a loss of a power source. This change will not affect the probability of an accident.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS Discussion of Changes Labeled L.8) (continued)

1. (continued)

Although power availability can be an initiator of an analyzed event, associated AC Sources LCOs will be entered to ensure that adequate measures (cross-train checks to ensure operability of redundant components, systems, etc.) are taken so that loss of a safety function does not exist. Therefore, consequences of an accident are not affected by this change. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change does not involve a significant increase in the probability or consequence of an accident previously evaluated.

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change specifies, in the definition of Operable, normal or emergency power must be available for the system, subsystem, train, component, or device. While power availability can be an initiator of an analyzed event, associated AC Sources LCOs will be entered to ensure that adequate measures (cross-train checks to ensure operability of redundant components, systems, etc.) are taken so that loss of a safety function does not exist. This change will not physically alter the plant (no new or different type of equipment will be installed). The change does not require any new or unusual operator actions. Therefore, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

The proposed change specifies, in the definition of Operable, normal or emergency power must be available for the system, subsystem, train, component, or device. The margin of safety is not affected by this change. While Operability is now defined with either "normal' or "emergency" power, the associated AC Sources LCOs will be entered to ensure that adequate measures (cross-train checks to ensure operability of redundant components, systems, etc.) are taken so that loss of a safety function does not exist. Therefore, the change does not involve a significant reduction in a margin of safety.

ENVIRONMENTAL ASSESSMENT
ITS 1.0 USE AND APPLICATION

These proposed TS changes have been evaluated against the criteria for and identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21. It has been determined that the proposed changes meet the criteria for categorical exclusion as provided for under 10 CFR 51.22(c)(9). The following is a discussion of how the proposed TS changes meet the criteria for categorical exclusion.

10 CFR 51.22(c)(9): Although the proposed changes involve changes to requirements with respect to inspection or Surveillance Requirements with;

(i) the proposed changes involve No Significant Hazards Consideration (refer to the No Significant Hazards Consideration Section of this Technical Specification Change Request),

(ii) there is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite since the proposed changes do not affect generation of any radioactive effluent not do they affect any of the permitted release paths, and

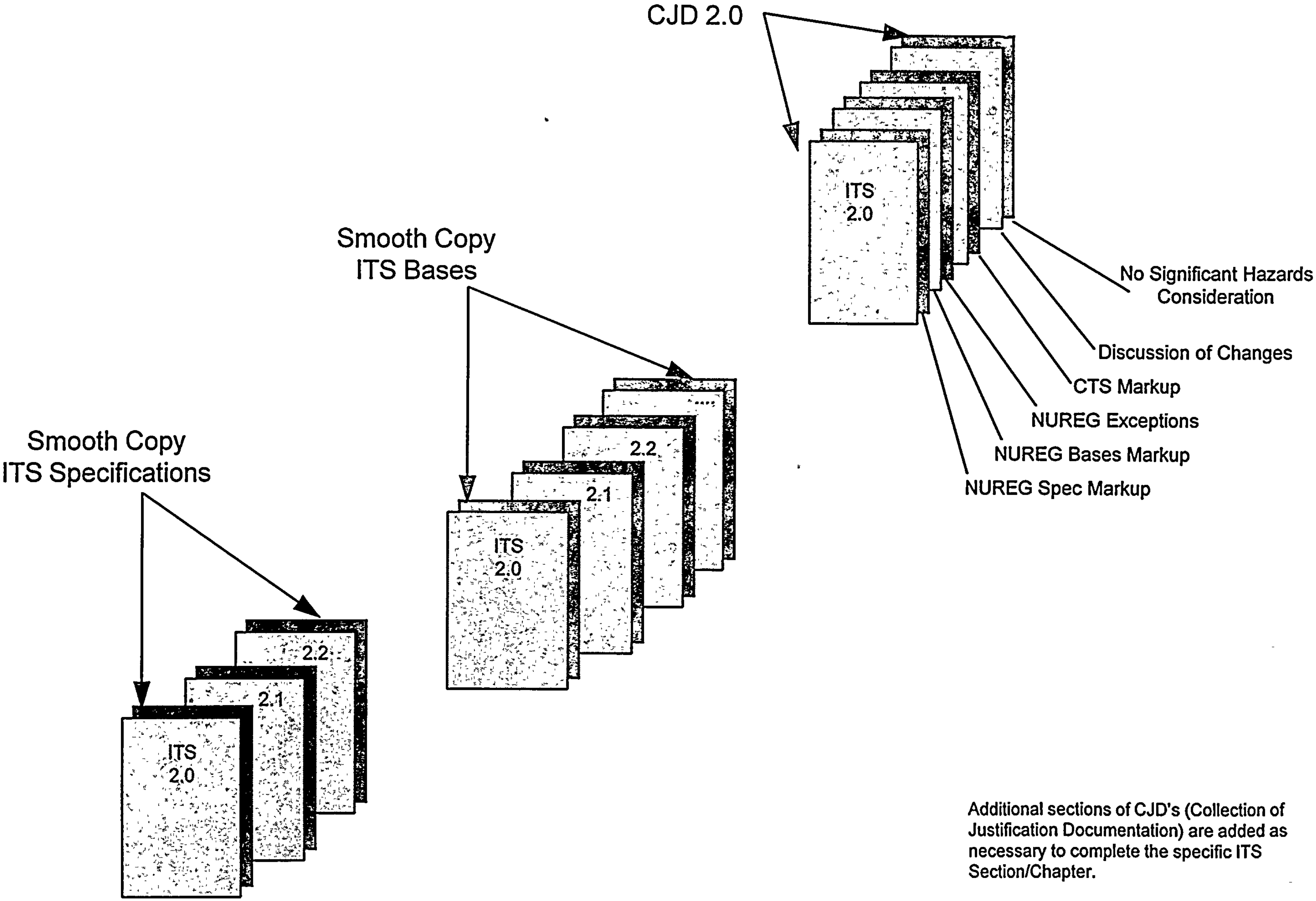
(iii) there is no significant increase in individual or cumulative occupational radiation exposure.

Accordingly, the proposed changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Based on the aforementioned and pursuant to 10 CFR 51.22(b), no environmental assessment or environmental impact statement need be prepared in connection with issuance of an amendment to the Technical Specifications incorporating the proposed changes of this request.

PVNGS ITS

CHAPTER 2.0 - SAFETY LIMITS (Sls)

ITS REVIEW PACKAGE CONTENTS (Volume 3)



Additional sections of CJD's (Collection of Justification Documentation) are added as necessary to complete the specific ITS Section/Chapter.

SMOOTH COPY
ITS CHAPTER 2.0

2.0 SAFETY LIMITS (SLs)

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 ≥ 1.3.

2.1.1.2 In MODES 1 and 2, the peak Linear Heat Rate (LHR) (adjusted for fuel rod dynamics) shall be maintained at ≤ 21.0 kW/ft.

2.1.2 Reactor Coolant System (RCS) Pressure SL

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

2.2 SL 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.

2.2.3 Within 1 hour, notify the NRC Operations Center, in accordance with 10 CFR 50.72.

2.2.4 Within 24 hours, notify the Director, Operations and Vice President, Nuclear Production.

2.2.5 Within 30 days of the violation, a Licensee Event Report (LER) shall be prepared pursuant to 10 CFR 50.73. The LER shall be submitted to the NRC and the Director, Operations and Vice President, Nuclear Production.

(continued)

2.0 SLs

2.2 SL Violations (continued)

2.2.6 Operation of the unit shall not be resumed until authorized by the NRC.

SMOOTH COPY
ITS CHAPTER 2.0 - BASES

B 2.0 SAFETY LIMITS (SLs)

B 2.1.1 Reactor Core SLs

BASES

BACKGROUND

GDC 10 (Ref. 1) requires and SLs ensure that specified acceptable fuel design limits are not exceeded during steady state operation, normal operational transients, and Anticipated Operational Occurrences (AOOs). This is accomplished by having a Departure from Nucleate Boiling (DNB) design basis, which corresponds to a 95% probability at a 95% confidence level (95/95 DNB criterion) that DNB will not occur and by requiring that fuel centerline temperature stays below the melting temperature.

The restrictions of this SL prevent overheating of the fuel and cladding and possible cladding perforation that would result in the release of fission products to the reactor coolant. Overheating of the fuel is prevented by maintaining the steady state, peak Linear Heat Rate (LHR) below the level at which fuel centerline melting occurs. Overheating of the fuel cladding is prevented by restricting fuel operation to within the nucleate boiling regime, where the heat transfer coefficient is large and the cladding surface temperature is slightly above the coolant saturation temperature.

Fuel centerline melting occurs when the local LHR, or power peaking, in a region of the fuel is high enough to cause the fuel centerline temperature to reach the melting point of the fuel. Expansion of the pellet upon centerline melting may cause the pellet to stress the cladding to the point of failure, allowing an uncontrolled release of activity to the reactor coolant.

Operation above the boundary of the nucleate boiling regime could result in excessive cladding temperature because of the onset of DNB and the resultant sharp reduction in the heat transfer coefficient. Inside the steam film, high cladding temperatures are reached, and a cladding water (zirconium water) reaction may take place. This chemical reaction results in oxidation of the fuel cladding to a structurally weaker form. This weaker form may lose its integrity, resulting in an uncontrolled release of activity to the reactor coolant.

(continued)

BASES

BACKGROUND (continued)

The Reactor Protective System (RPS), in combination with the LCOs, is designed to prevent any anticipated combination of transient conditions for Reactor Coolant System (RCS) temperature, pressure, and THERMAL POWER level that would result in a violation of the reactor core SLs.

APPLICABLE SAFETY ANALYSES

The fuel cladding must not sustain damage as a result of normal operation and AOOs. The reactor core SLs are established to preclude violation of the following fuel design criteria:

a. There must be at least a 95% probability at a 95% confidence level (95/95 DNB criterion) that the hot fuel rod in the core does not experience DNB; and

b. The hot fuel pellet in the core must not experience centerline fuel melting.

The RPS setpoints, LCO 3.3.1, "Reactor Protective System (RPS) Instrumentation," in combination with all the LCOs, are designed to prevent any anticipated combination of transient conditions for RCS temperature, pressure, flow rate and THERMAL POWER level that would result in a Departure from Nucleate Boiling Ratio (DNBR) of less than the DNBR limit and preclude the existence of flow instabilities.

Automatic enforcement of these reactor core SLs is provided by the following functions:

a. Pressurizer Pressure—High trip;

b. Pressurizer Pressure—Low trip;

c. Variable Overpower—High trip;

d. Steam Generator Pressure—Low trip;

e. Local Power Density—High trip;

f. DNBR—Low trip;

g. Steam Generator Level—Low trip;

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

h. Log Power Level – High trip;

i. Reactor Coolant Flow – Low trip; and

j. Steam Generator Safety Valves.

The limitation that the average enthalpy in the hot leg be less than or equal to the enthalpy of saturated liquid also ensures that the ΔT measured by instrumentation used in the protection system design as a measure of the core power is proportional to core power.

The SL represents a design requirement for establishing the protection system trip setpoints identified previously. LCO 3.2.1, "Linear Heat Rate (LHR)," and LCO 3.2.4, "Departure From Nucleate Boiling Ratio (DNBR)," or the assumed initial conditions of the safety analyses (as indicated in the UFSAR, Ref. 2) provide more restrictive limits to ensure that the SLs are not exceeded.

SAFETY LIMITS

SL 2.1.1.1 and SL 2.1.1.2 ensure that the minimum DNBR is not less than the safety analyses limit and that fuel centerline temperature remains below melting.

The minimum value of the DNBR during normal operation and design basis AOOs is limited to 1.3, based on a statistical combination of CE-1 CHF correlation and engineering factor uncertainties, and is established as an SL. Additional factors such as rod bow and spacer grid size and placement will determine the limiting safety system settings required to ensure that the SL is maintained. Maintaining the dynamically adjusted peak LHR to ≤ 21 kW/ft ensures that fuel centerline melt will not occur during normal operating conditions or design AOOs.

APPLICABILITY

SL 2.1.1.1 and SL 2.1.1.2 only apply in MODES 1 and 2 because these are the only MODES in which the reactor is critical. Automatic protection functions are required to be OPERABLE during MODES 1 and 2 to ensure operation within the reactor core SLs. The steam generator safety valves or automatic protection actions serve to prevent RCS heatup to the reactor core SL conditions or to initiate a reactor trip

(continued)

BASES

APPLICABILITY (continued)

function, which forces the unit into MODE 3. Setpoints for the reactor trip functions are specified in LCO 3.3.1.

In MODES 3, 4, 5, and 6, Applicability is not required, since the reactor is not generating significant THERMAL POWER.

SAFETY LIMIT VIOLATIONS

The following violation responses are applicable to the reactor core SLs.

2.2.1

If SL 2.1.1.1 or SL 2.1.1.2 is violated, the requirement to go to MODE 3 places the unit in a MODE in which this SL is not applicable.

The allowed Completion Time of 1 hour recognizes the importance of bringing the unit to a MODE where this SL is not applicable and reduces the probability of fuel damage.

2.2.3

If SL 2.1.1.1 or SL 2.1.1.2 is violated, the NRC Operations Center must be notified within 1 hour, in accordance with 10 CFR 50.72 (Ref. 3).

2.2.4

If SL 2.1.1.1 or SL 2.1.1.2 is violated, the appropriate senior management of the nuclear plant and the utility shall be notified within 24 hours. This 24 hour period provides time for the plant operators and staff to take the appropriate immediate action and assess the condition of the unit before reporting to the senior management.

2.2.5

If SL 2.1.1.1 or SL 2.1.1.2 is violated, a Licensee Event Report shall be prepared and submitted within 30 days to the NRC in accordance with 10 CFR 50.73 (Ref. 4). A copy of the

(continued)

BASES

SAFETY LIMIT VIOLATIONS

2.2.5 (continued)

report shall also be provided to the senior management of the nuclear plant, and the utility Vice President, Nuclear Production.

2.2.6

If SL 2.1.1.1 or SL 2.1.1.2 is violated, restart of the unit shall not commence until authorized by the NRC. This requirement ensures the NRC that all necessary reviews, analyses, and actions are completed before the unit begins its restart to normal operation.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 10, 1988.
2. UFSAR, Sections 6 and 15.
3. 10 CFR 50.72.
4. 10 CFR 50.73.

B 2.0 SAFETY LIMITS (SLs)

B 2.1.2 Reactor Coolant System (RCS) Pressure SL

BASES

BACKGROUND

The SL on RCS pressure protects the integrity of the RCS against overpressurization. In the event of fuel cladding failure, fission products are released into the reactor coolant. The RCS then serves as the primary barrier in preventing the release of fission products into the atmosphere. By establishing an upper limit on RCS pressure, continued RCS integrity is ensured. According to 10 CFR 50, Appendix A, GDC 14, "Reactor Coolant Pressure Boundary," and GDC 15, "Reactor Coolant System Design" (Ref. 1), the Reactor Coolant Pressure Boundary (RCPB) design conditions are not to be exceeded during normal operation and Anticipated Operational Occurrences (AOOs). Also, according to GDC 28 (Ref. 1), "Reactivity Limits," reactivity accidents, including rod ejection, do not result in damage to the RCPB greater than limited local yielding.

The design pressure of the RCS is 2500 psia. During normal operation and AOOs, the RCS pressure is kept from exceeding the design pressure by more than 10%, in accordance with Section III of the ASME Code (Ref. 2). To ensure system integrity, all RCS components are hydrostatically tested at 125% of design pressure, according to the ASME Code requirements prior to initial operation, when there is no fuel in the core. Following inception of unit operation, RCS components shall be pressure tested, in accordance with the requirements of ASME Code, Section XI (Ref. 3).

Overpressurization of the RCS could result in a breach of the RCPB. If this occurs in conjunction with a fuel cladding failure, fission products could enter the containment atmosphere, raising concerns relative to limits on radioactive releases specified in 10 CFR 100, "Reactor Site Criteria" (Ref. 4).

APPLICABLE SAFETY ANALYSES

The RCS pressurizer safety valves, the Main Steam Safety Valves (MSSVs), and the Reactor Pressure—High trip have settings established to ensure that the RCS pressure SL will not be exceeded.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The RCS pressurizer safety valves are sized to prevent system pressure from exceeding the design pressure by more than 10%, in accordance with Section III of the ASME Code for Nuclear Power Plant Components (Ref. 2). The transient that establishes the required relief capacity, and hence the valve size requirements and lift settings, is a complete loss of external load without a direct reactor trip. During the transient, no control actions are assumed except that the safety valves on the secondary plant are assumed to open when the steam pressure reaches the secondary plant safety valve settings, and nominal feedwater supply is maintained.

The Reactor Protective System (RPS) trip setpoints (LCO 3.3.1, "Reactor Protective System (RPS) Instrumentation"), together with the settings of the MSSVs (LCO 3.7.1, "Main Steam Safety Valves (MSSVs)") and the pressurizer safety valves, provide pressure protection for normal operation and AOOs. In particular, the Pressurizer Pressure—High Trip setpoint is specifically set to provide protection against overpressurization (Ref. 5). Safety analyses for both the Pressure—High Trip and the RCS pressurizer safety valves are performed, using conservative assumptions relative to pressure control devices.

More specifically, no credit is taken for operation of the following:

a. Steam Bypass Control System;

b. Pressurizer Level Control System; or

c. Pressurizer Pressure Control System.

SAFETY LIMITS

The maximum transient pressure allowable in the RCS under the ASME Code, Section III, is 110% of design pressure. Therefore, the SL on maximum allowable RCS pressure is established at 2750 psia.

(continued)

BASES

APPLICABILITY

SL 2.1.2 applies in MODES 1, 2, 3, 4, and 5 because this SL could be approached or exceeded in these MODES due to overpressurization events. The SL is not applicable in MODE 6 because the reactor vessel head closure bolts are not fully tightened, making it unlikely that the RCS can be pressurized.

SAFETY LIMIT VIOLATIONS

The following SL violation responses are applicable to the RCS pressure SLs.

<u>2.2.2.1</u>

If the RCS pressure SL is violated when the reactor is in MODE 1 or 2, the requirement is to restore compliance and be in MODE 3 within 1 hour.

With RCS pressure greater than the value specified in SL 2.1.2 in MODE 1 or 2, the pressure must be reduced to below this value. A pressure greater that the value specified in SL 2.1.2 exceeds 110% of the RCS design pressure and may challenge system integrity.

The allowed Completion Time of 1 hour provides the operator time to complete the necessary actions to reduce RCS pressure by terminating the cause of the pressure increase, removing mass or energy from the RCS, or a combination of these actions, and to establish MODE 3 conditions.

<u>2.2.2.2</u>

If the RCS pressure SL is exceeded in MODE 3, 4, or 5, RCS pressure must be restored to within the SL value within 5 minutes.

Exceeding the RCS pressure SL in MODE 3, 4, or 5 is potentially more severe than exceeding this SL in MODE 1 or 2, since the reactor vessel temperature may be lower and the vessel material, consequently, less ductile. As such, pressure must be reduced to less than the SL within 5 minutes. This action does not require reducing MODES, since this would require reducing temperature, which would

(continued)

BASES

SAFETY LIMIT VIOLATIONS

2.2.2.2 (continued)

compound the problem by adding thermal gradient stresses to the existing pressure stress.

2.2.3

If the RCS pressure SL is violated, the NRC Operations Center must be notified within 1 hour, in accordance with 10 CFR 50.72 (Ref. 6).

2.2.4

If the RCS pressure SL is violated, the appropriate senior management of the nuclear plant and the utility shall be notified within 24 hours. This 24 hour period provides time for the plant operators and staff to take the appropriate immediate action and to assess the condition of the unit before reporting to the senior management.

2.2.5

If the RCS pressure SL is violated, a Licensee Event Report shall be prepared and submitted within 30 days to the NRC in accordance with 10 CFR 50.73 (Ref. 7). A copy of the report shall also be provided to the senior management of the nuclear plant, and the utility Vice President, Nuclear Production.

2.2.6

If the RCS pressure SL is violated, restart of the unit shall not commence until authorized by the NRC. This requirement ensures the NRC that all necessary reviews, analyses, and actions are completed before the unit begins its restart to normal operation.

(continued)

BASES

REFERENCES

1. 10 CFR 50, Appendix A, GDC 14, GDC 15, and GDC 28.
2. ASME, Boiler and Pressure Vessel Code, Section III, Article NB-7000.
3. ASME, Boiler and Pressure Vessel Code, Section XI, Article IWX-5000.
4. 10 CFR 100.
5. UFSAR, Section 7.
6. 10 CFR 50.72.
7. 10 CFR 50.73.

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<CTS>
<DOC>

2.0 SAFETY LIMITS (SLs) ~~(Digital)~~

<2.1> 2.1 SLs

<2.1.1> 2.1.1 Reactor Core SLs

<2.1.1.1> 2.1.1.1 In MODES 1 and 2, departure from nucleate boiling ratio (DNBR) shall be maintained at ≥ ~~[1.19]~~ 1.3. (1)

<2.1.1.2> 2.1.1.2 In MODES 1 and 2, the peak linear heat rate (LHR) (adjusted for fuel rod dynamics) shall be maintained at ≤ ~~[~~21.0~~]~~ kW/ft. (1)

<2.1.2> 2.1.2 Reactor Coolant System (RCS) Pressure SL

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

2.2 SL Violations

<2.1.1.1 Action 2.1.1.2 Action> 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.

<2.1.2 Action> 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.

<6.7.1.a> 2.2.3 Within 1 hour, notify the NRC Operations Center, in accordance with 10 CFR 50.72.

<6.7.1.a> 2.2.4 Within 24 hours, notify the Director, Operations ~~[Plant Superintendent~~ and Vice President, ~~[~~Nuclear Production ~~Operations]~~. (1)

<6.7.1.b 6.7.1.c> 2.2.5 Within 30 days of the violation, a Licensee Event Report (LER) shall be prepared pursuant to 10 CFR 50.73. The LER shall be submitted to the NRC and the Director, Operations ~~[Plant Superintendent,~~ and Vice President, ~~[~~Nuclear Production ~~Operations]~~. (1)

(continued)

<CTS>
<DOC>

2.0 SLs ~~(Digital)~~

2.2 SL Violations (continued)

<6.7.1.d> 2.2.6 Operation of the unit shall not be resumed until authorized by the NRC.

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B 2.0 SAFETY LIMITS (SLs)

B 2.1.1 Reactor Core SLs ~~(Digital)~~

BASES

BACKGROUND

GDC 10 (Ref. 1) requires and SLs ensure that specified acceptable fuel design limits are not exceeded during steady state operation, normal operational transients, and anticipated operational occurrences (AOOs). This is accomplished by having a departure from nucleate boiling (DNB) design basis, which corresponds to a 95% probability at a 95% confidence level (95/95 DNB criterion) that DNB will not occur and by requiring that fuel centerline temperature stays below the melting temperature. 2

The restrictions of this SL prevent overheating of the fuel and cladding and possible cladding perforation that would result in the release of fission products to the reactor coolant. Overheating of the fuel is prevented by maintaining the steady state, peak linear heat rate (LHR) below the level at which fuel centerline melting occurs. Overheating of the fuel cladding is prevented by restricting fuel operation to within the nucleate boiling regime, where the heat transfer coefficient is large and the cladding surface temperature is slightly above the coolant saturation temperature. 2

Fuel centerline melting occurs when the local LHR, or power peaking, in a region of the fuel is high enough to cause the fuel centerline temperature to reach the melting point of the fuel. Expansion of the pellet upon centerline melting may cause the pellet to stress the cladding to the point of failure, allowing an uncontrolled release of activity to the reactor coolant.

Operation above the boundary of the nucleate boiling regime could result in excessive cladding temperature because of the onset of DNB and the resultant sharp reduction in the heat transfer coefficient. Inside the steam film, high cladding temperatures are reached, and a cladding water (zirconium water) reaction may take place. This chemical reaction results in oxidation of the fuel cladding to a structurally weaker form. This weaker form may lose its integrity, resulting in an uncontrolled release of activity to the reactor coolant.

(continued)

BASES

BACKGROUND (continued)

The Reactor Protective System (RPS), in combination with the LCOs, is designed to prevent any anticipated combination of transient conditions for Reactor Coolant System (RCS) temperature, pressure, and THERMAL POWER level that would result in a violation of the reactor core SLs.

APPLICABLE SAFETY ANALYSES

The fuel cladding must not sustain damage as a result of normal operation and AOOs. The reactor core SLs are established to preclude violation of the following fuel design criteria:

a. There must be at least a 95% probability at a 95% confidence level (95/95 DNB criterion) that the hot fuel rod in the core does not experience DNB; and

b. The hot fuel pellet in the core must not experience centerline fuel melting.

The RPS setpoints, LCO 3.3.1, "Reactor Protective System (RPS) Instrumentation," in combination with all the LCOs, are designed to prevent any anticipated combination of transient conditions for RCS temperature, pressure, and THERMAL POWER level that would result in a departure from nucleate boiling ratio (DNBR) of less than the DNBR limit and preclude the existence of flow instabilities. 1 , flow rate 2

Automatic enforcement of these reactor core SLs is provided by the following functions:

a. Pressurizer Pressure—High trip;

b. Pressurizer Pressure—Low trip; 1

c. ~~Linear Power Level—High trip;~~ Variable Overpower - High Trip

d. Steam Generator Pressure—Low trip;

e. Local Power Density—High trip;

f. DNBR—Low trip;

g. Steam Generator Level—Low trip;

(continued)

1

BASES

APPLICABLE SAFETY ANALYSES (continued)

h. Steam Generator Level—High trip; Log Power Level-High Trip

i. Reactor Coolant Flow—Low trip; and

j. Steam Generator Safety Valves.

The limitation that the average enthalpy in the hot leg be less than or equal to the enthalpy of saturated liquid also ensures that the ΔT measured by instrumentation used in the protection system design as a measure of the core power is proportional to core power.

The SL represents a design requirement for establishing the protection system trip setpoints identified previously. LCO 3.2.1, "Linear Heat Rate (LHR)," and LCO 3.2.4, "Departure From Nucleate Boiling Ratio (DNBR)," or the assumed initial conditions of the safety analyses (as indicated in the FSAR, Ref. 2) provide more restrictive limits to ensure that the SLs are not exceeded. 2 U

SAFETY LIMITS

SL 2.1.1.1 and SL 2.1.1.2 ensure that the minimum DNBR is not less than the safety analyses limit and that fuel centerline temperature remains below melting.

The minimum value of the DNBR during normal operation and design basis AOOs is limited to 1.3 ~~[1.19]~~, based on a statistical combination of CE-1 CHF correlation and engineering factor uncertainties, and is established as an SL. Additional factors such as rod bow and spacer grid size and placement will determine the limiting safety system settings required to ensure that the SL is maintained. Maintaining the dynamically adjusted peak LHR to ≤ 21 kW/ft ensures that fuel centerline melt will not occur during normal operating conditions or design AOOs. 1

APPLICABILITY

SL 2.1.1.1 and SL 2.1.1.2 only apply in MODES 1 and 2 because these are the only MODES in which the reactor is critical. Automatic protection functions are required to be OPERABLE during MODES 1 and 2 to ensure operation within the reactor core SLs. The steam generator safety valves or automatic protection actions serve to prevent RCS heatup to the reactor core SL conditions or to initiate a reactor trip

(continued)

BASES

APPLICABILITY (continued)

function, which forces the unit into MODE 3. Setpoints for the reactor trip functions are specified in LCO 3.3.1.

In MODES 3, 4, 5, and 6, Applicability is not required, since the reactor is not generating significant THERMAL POWER.

SAFETY LIMIT VIOLATIONS

The following violation responses are applicable to the reactor core SLs.

2.2.1

If SL 2.1.1.1 or SL 2.1.1.2 is violated, the requirement to go to MODE 3 places the unit in a MODE in which this SL is not applicable.

The allowed Completion Time of 1 hour recognizes the importance of bringing the unit to a MODE where this SL is not applicable and reduces the probability of fuel damage.

2.2.3

If SL 2.1.1.1 or SL 2.1.1.2 is violated, the NRC Operations Center must be notified within 1 hour, in accordance with 10 CFR 50.72 (Ref. 3).

2.2.4

If SL 2.1.1.1 or SL 2.1.1.2 is violated, the appropriate senior management of the nuclear plant and the utility shall be notified within 24 hours. This 24 hour period provides time for the plant operators and staff to take the appropriate immediate action and assess the condition of the unit before reporting to the senior management.

2.2.5

If SL 2.1.1.1 or SL 2.1.1.2 is violated, a Licensee Event Report shall be prepared and submitted within 30 days to the NRC in accordance with 10 CFR 50.73 (Ref. 4). A copy of the

(continued)

BASES

SAFETY LIMIT VIOLATIONS

2.2.5 (continued)

report shall also be provided to the senior management of the nuclear plant, and the utility Vice President, Nuclear ~~Operations~~. Production

(1)

2.2.6

If SL 2.1.1.1 or SL 2.1.1.2 is violated, restart of the unit, shall not commence until authorized by the NRC. This requirement ensures the NRC that all necessary reviews, analyses, and actions are completed before the unit begins its restart to normal operation.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 10, 1988.
2. U FSAR, Section ~~[ ]~~ 5, 6 and 15. (1)(2)
3. 10 CFR 50.72.
4. 10 CFR 50.73.

B 2.0 SAFETY LIMITS (SLs)

B 2.1.2 Reactor Coolant System (RCS) Pressure SL ~~(Digital)~~

BASES

BACKGROUND

The SL on RCS pressure protects the integrity of the RCS against overpressurization. In the event of fuel cladding failure, fission products are released into the reactor coolant. The RCS then serves as the primary barrier in preventing the release of fission products into the atmosphere. By establishing an upper limit on RCS pressure, continued RCS integrity is ensured. According to 10 CFR 50, Appendix A, GDC 14, "Reactor Coolant Pressure Boundary," and GDC 15, "Reactor Coolant System Design" (Ref. 1), the Reactor Coolant Pressure Boundary (RCPB) design conditions are not to be exceeded during normal operation and Anticipated Operational Occurrences (AOOs). Also, according to GDC 28 (Ref. 1), "Reactivity Limits," reactivity accidents, including rod ejection, do not result in damage to the RCPB greater than limited local yielding. 2

The design pressure of the RCS is 2500 psia. During normal operation and AOOs, the RCS pressure is kept from exceeding the design pressure by more than 10%, in accordance with Section III of the ASME Code (Ref. 2). To ensure system integrity, all RCS components are hydrostatically tested at 125% of design pressure, according to the ASME Code requirements prior to initial operation, when there is no fuel in the core. Following inception of unit operation, RCS components shall be pressure tested, in accordance with the requirements of ASME Code, Section XI (Ref. 3).

Overpressurization of the RCS could result in a breach of the RCPB. If this occurs in conjunction with a fuel cladding failure, fission products could enter the containment atmosphere, raising concerns relative to limits on radioactive releases specified in 10 CFR 100, "Reactor Site Criteria" (Ref. 4).

APPLICABLE SAFETY ANALYSES

The RCS pressurizer safety valves, the Main Steam Safety Valves (MSSVs), and the Reactor Pressure—High trip have settings established to ensure that the RCS pressure SL will not be exceeded. 2

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The RCS pressurizer safety valves are sized to prevent system pressure from exceeding the design pressure by more than 10%, in accordance with Section III of the ASME Code for Nuclear Power Plant Components (Ref. 2). The transient that establishes the required relief capacity, and hence the valve size requirements and lift settings, is a complete loss of external load without a direct reactor trip. During the transient, no control actions are assumed except that the safety valves on the secondary plant are assumed to open when the steam pressure reaches the secondary plant safety valve settings, and nominal feedwater supply is maintained. 1

The Reactor Protective System (RPS) trip setpoints (LCO 3.3.1, "Reactor Protective System (RPS) Instrumentation"), together with the settings of the MSSVs (LCO 3.7.1, "Main Steam Safety Valves (MSSVs)") and the pressurizer safety valves, provide pressure protection for normal operation and AOOs. In particular, the Pressurizer Pressure—High Trip setpoint is specifically set to provide protection against overpressurization (Ref. 5). Safety analyses for both the Pressure—High Trip and the RCS pressurizer safety valves are performed, using conservative assumptions relative to pressure control devices.

More specifically, no credit is taken for operation of the following:

~~a. Pressurizer power operated relief valves (PORVs);~~ 1

a ~~b~~. Steam Bypass Control System;

b ~~c~~. Pressurizer Level Control System; or

c ~~d~~. Pressurizer Pressure Control System.

SAFETY LIMITS

The maximum transient pressure allowable in the RCS ~~pressure vessel~~ under the ASME Code, Section III, is 110% of design pressure. ~~The maximum transient pressure allowable in the RCS piping, valves, and fittings under [USAS, Section B31.1 (Ref. 6)], is 120% of design pressure. The most limiting of these two allowances is the 110% of design pressure; therefore~~, Therefore, the SL on maximum allowable RCS pressure is established at 2750 psia. 7

(continued)

BASES (continued)

APPLICABILITY	SL 2.1.2 applies in MODES 1, 2, 3, 4, and 5 because this SL could be approached or exceeded in these MODES due to overpressurization events. The SL is not applicable in MODE 6 because the reactor vessel head closure bolts are not fully tightened, making it unlikely that the RCS can be pressurized.

SAFETY LIMIT VIOLATIONS

The following SL violation responses are applicable to the RCS pressure SLs.

2.2.2.1

If the RCS pressure SL is violated when the reactor is in MODE 1 or 2, the requirement is to restore compliance and be in MODE 3 within 1 hour.

With RCS pressure greater than the value specified in SL 2.1.2 in MODE 1 or 2, the pressure must be reduced to below this value. A pressure greater that the value specified in SL 2.1.2 exceeds 110% of the RCS design pressure and may challenge system integrity.

The allowed Completion Time of 1 hour provides the operator time to complete the necessary actions to reduce RCS pressure by terminating the cause of the pressure increase, removing mass or energy from the RCS, or a combination of these actions, and to establish MODE 3 conditions.

2.2.2.2

If the RCS pressure SL is exceeded in MODE 3, 4, or 5, RCS pressure must be restored to within the SL value within 5 minutes.

Exceeding the RCS pressure SL in MODE 3, 4, or 5 is potentially more severe than exceeding this SL in MODE 1 or 2, since the reactor vessel temperature may be lower and the vessel material, consequently, less ductile. As such, pressure must be reduced to less than the SL within 5 minutes. This action does not require reducing MODES, since this would require reducing temperature, which would

(continued)

BASES

SAFETY LIMIT VIOLATIONS

2.2.2.2 (continued)

compound the problem by adding thermal gradient stresses to the existing pressure stress.

2.2.3

If the RCS pressure SL is violated, the NRC Operations Center must be notified within 1 hour, in accordance with 10 CFR 50.72 (Ref. 7). {6} 2

2.2.4

If the RCS pressure SL is violated, the appropriate senior management of the nuclear plant and the utility shall be notified within 24 hours. This 24 hour period provides time for the plant operators and staff to take the appropriate immediate action and to assess the condition of the unit before reporting to the senior management.

2.2.5

If the RCS pressure SL is violated, {7} a Licensee Event Report shall be prepared and submitted within 30 days to the NRC in accordance with 10 CFR 50.73 (Ref. 8). A copy of the report shall also be provided to the senior management of the nuclear plant, and the utility Vice President, Nuclear ~~Operations~~ {Production}. 2 1

2.2.6

If the RCS pressure SL is violated, restart of the unit shall not commence until authorized by the NRC. This requirement ensures the NRC that all necessary reviews, analyses, and actions are completed before the unit begins its restart to normal operation.

(continued)

BASES (continued)

REFERENCES

1. 10 CFR 50, Appendix A, GDC 14, GDC 15, and GDC 28.
2. ASME, Boiler and Pressure Vessel Code, Section III, Article NB-7000.
3. ASME, Boiler and Pressure Vessel Code, Section XI, Article IWX-5000.
4. 10 CFR 100.
5. UFSAR, Section ~~[ ]~~. 7 1 2
6. ~~ASME, USAS B31.1, Standard Code for Pressure Piping, 1967.~~

6 ~~7~~. 10 CFR 50.72.

7 ~~8~~. 10 CFR 50.73.

NUREG-1432 EXCEPTIONS
CHAPTER 2.0

1. The plant specific titles, nomenclature, number, parameter/value, reference, system description, system design, operating practices or analysis description was used (additions, deletions, and/or changes are included). Plant specific parameters/values were directly transferred from the CTS to the ITS.

2. Grammar and/or editorial changes have been made to enhance clarity. No technical or intent changes to the Specification are made by this change.

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CHAPTER 2.0

2.0 2.0 SAFETY LIMITS ~~AND LIMITING SAFETY SYSTEM SETTINGS~~ A.1

2.1 2.1 SAFETY LIMITS

2.1.1 2.1.1 REACTOR CORE

DNBR

2.1.1.1 2.1.1.1 The ~~calculated~~ DNBR of the reactor core shall be maintained greater than or equal to 1.30.

APPLICABILITY: MODES 1 and 2.

2.2.1 ACTION:

Whenever the ~~calculated~~ DNBR of the reactor has decreased to less than 1.30, be in HOT STANDBY within 1 hour, ~~and comply with the requirements of Specification 6.7.1~~. A.2

2.1.1.2 PEAK LINEAR HEAT RATE

2.1.1.2 The peak linear heat rate (adjusted for fuel rod dynamics) of the fuel shall be maintained less than or equal to 21 kW/ft.

APPLICABILITY: MODES 1 and 2.

2.2.1 ACTION:

Whenever the peak linear heat rate (adjusted for fuel rod dynamics) of the fuel has exceeded 21 kW/ft, be in HOT STANDBY within 1 hour, ~~and comply with the requirements of Specification 6.7.1~~. A.2

REACTOR COOLANT SYSTEM PRESSURE

2.1.2 2.1.2 The Reactor Coolant System pressure shall not exceed 2750 psia.

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

2.2.2 ACTION:

MODES 1 and 2:

2.2.2.1 Whenever the Reactor Coolant System pressure has exceeded 2750 psia, be in HOT STANDBY with the Reactor Coolant System pressure within its limit within 1 hour, ~~and comply with the requirements of Specification 6.7.1~~. A.2

MODES 3, 4, and 5:

2.2.2.2 Whenever the Reactor Coolant System pressure has exceeded 2750 psia, reduce the Reactor Coolant System pressure to within its limit within 5 minutes, ~~and comply with the requirements of Specification 6.7.1~~.

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A.1

SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

2.2 LIMITING SAFETY SYSTEM SETTINGS

REACTOR TRIP SETPOINTS

2.2.1 The reactor protective instrumentation setpoints shall be set consistent with the Trip Setpoint values shown in Table ~~2.2-1.~~

APPLICABILITY: As shown for each channel in Table 3.3-1.

ACTION:

With a reactor protective instrumentation setpoint less conservative than the value shown in the Allowable Values column of Table 2.2-1, declare the channel inoperable and apply the applicable ACTION statement requirement of Specification 3.3.1 until the channel is restored to OPERABLE status with its trip setpoint adjusted consistent with the Trip Setpoint value.

(CTS 2.2.1 has been moved to ITS 3.3.1.)

TABLE 2.2-1

REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
I. TRIP GENERATION		
A. Process		
1. Pressurizer Pressure - High	≤ 2383 psia	≤ 2388 psia
2. Pressurizer Pressure - Low	≥ 1837 psia (2)	≥ 1821 psia (2)
3. Steam Generator Level - Low	≥ 44.2% (4)	≥ 43.7% (4)
4. Steam Generator Level - High	≤ 91.0% (9)	≤ 91.5% (9)
5. Steam Generator Pressure - Low	≥ 919 psia (3)	≥ 911 psia (3)
6. Containment Pressure - High	≤ 3.0 psig	≤ 3.2 psig
7. Reactor Coolant Flow - Low		
a. Rate	≤ 0.115 psi/sec (6)(7)	≤ 0.118 psi/sec (6)(7)
b. Floor	≥ 11.9 psid (6)(7)	≥ 11.7 psid(6)(7)
c. Band	≤ 10.0 psid (6)(7)	≤ 10.2 psid (6)(7)
8. Local Power Density - High	≤ 21.0 kW/ft (5)	≤ 21.0 kW/ft (5)
9. DNBR - Low	≥ 1.30 (5)	≥ 1.30 (5)
B. Excore Neutron Flux		
1. Variable Overpower Trip		
a. Rate	≤10.6%/min of RATED THERMAL POWER (8)	≤11.0%/min of RATED THERMAL POWER (8)
b. Ceiling	≤110.0% of RATED THERMAL POWER (8)	≤111.0% of RATED THERMAL POWER (8)
c. Band	≤9.7% of RATED THERMAL POWER (8)	≤9.9% of RATED THERMAL POWER (8)

CTS Table 2.2-1 has been moved to ITS 3.3.1

A1

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(2.0/3.3.1)

TABLE 2.2-1 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
2. Logarithmic Power Level - High (1)		
a. Startup and Operating	< 0.010% of RATED THERMAL POWER	< 0.011% of RATED THERMAL POWER
b. Shutdown	< 0.010% of RATED THERMAL POWER	< 0.011% of RATED THERMAL POWER
C. Core Protection Calculator System		
1. CEA Calculators	Not Applicable	Not Applicable
2. Core Protection Calculators	Not Applicable	Not Applicable
D. Supplementary Protection System		
Pressurizer Pressure - High	≤ 2409 psia	≤ 2414 psia
II. RPS LOGIC		
A. Matrix Logic	Not Applicable	Not Applicable
B. Initiation Logic	Not Applicable	Not Applicable
III. RPS ACTUATION DEVICES		
A. Reactor Trip Breakers	Not Applicable	Not Applicable
B. Manual Trip	Not Applicable	Not Applicable

CTS Table 2.2-1 has been moved to ITS 3.3.1

A.1

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(2.0/3.3.1)

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(2.0/3.3.1)

A.1

TABLE 2.2-1 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

TABLE NOTATIONS

(1) Trip may be manually bypassed above 10^{-4}% of RATED THERMAL POWER; bypass shall be automatically removed when THERMAL POWER is less than or equal to 10^{-4}% of RATED THERMAL POWER.

(2) In MODES 3-4, value may be decreased manually, to a minimum of 100 psia, as pressurizer pressure is reduced, provided the margin between the pressurizer pressure and this value is maintained at less than or equal to 400 psi; the setpoint shall be increased automatically as pressurizer pressure is increased until the trip setpoint is reached. Trip may be manually bypassed below 400 psia; bypass shall be automatically removed whenever pressurizer pressure is greater than or equal to 500 psia.

(3) In MODES 3-4, value may be decreased manually as steam generator pressure is reduced, provided the margin between the steam generator pressure and this value is maintained at less than or equal to 200 psi; the setpoint shall be increased automatically as steam generator pressure is increased until the trip setpoint is reached.

(4) % of the distance between steam generator upper and lower level wide range instrument nozzles.

(5) As stored within the Core Protection Calculator (CPC). Calculation of the trip setpoint includes measurement, calculational and processor uncertainties. Trip may be manually bypassed below 10^{-4}% of RATED THERMAL POWER; bypass shall be automatically removed when THERMAL POWER is greater than or equal to 10^{-4}% of RATED THERMAL POWER.

<CTS Table 2.2-1 has been moved to ITS 3.3.1>

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(2.0/3.3.1)

A1

TABLE 2.2-1 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION TRIP SETPOINT LIMITS

TABLE NOTATIONS (Continued)

(6) RATE is the maximum rate of decrease of the trip setpoint. There are no restrictions on the rate at which the setpoint can increase.
FLOOR is the minimum value of the trip setpoint.
BAND is the amount by which the trip setpoint is below the input signal unless limited by Rate or Floor.
Setpoints are based on steam generator differential pressure.

(7) The setpoint may be altered to disable trip function during testing pursuant to Specification 3.10.3.

(8) RATE is the maximum rate of increase of the trip setpoint. (The rate at which the setpoint can decrease is no slower than five percent per second.)
CEILING is the maximum value of the trip setpoint.
BAND is the amount by which the trip setpoint is above the steady state input signal unless limited by the rate or the ceiling.

(9) % of the distance between steam generator upper and lower level narrow range instrument nozzles.

<CTS Table 2.2-1 has been moved to ITS 3.3.1>

CHAPTER 2.0
(2.0/5.0)

A.1

2.2 ~~6.7~~ SAFETY LIMIT VIOLATION

A.3

~~6.7.1~~ The following actions shall be taken in the event a Safety Limit is violated:

in accordance with 10 CFR 50.72

2.2.3 ~~a.~~ The NRC Operations Center shall be notified by telephone as soon as possible and in all cases within 1 hour. The Vice President Nuclear Production, Director, Site Operations and ~~Chairman of the OSRC~~ shall LA.1

2.2.4 be notified within 24 hours.

LER

~~b.~~ A ~~Safety Limit Violation~~ Report shall be prepared. ~~The report shall be reviewed by the PRB.~~ This report shall describe (1) applicable circumstances preceding the violation, (2) effects of the violation upon facility components, systems, or structures, and (3) corrective action taken to prevent recurrence.

pursuant to 10 CFR 50.73

A4 2.2.5 LA.2

LER

LA.1 ~~c.~~ The ~~Safety Limit Violation Report~~ shall be submitted to the ~~Commission, the Chairman of the OSRC~~ and the Vice President, Nuclear Production within 30 days of the violation.

NRC, the Director, Site Operations,

2.2.6 ~~d.~~ Critical operation of the unit shall not be resumed until authorized by the ~~Commission.~~ NRC

ITS 2.0

ITS 5.0 6.8 PROCEDURES AND PROGRAMS

6.8.1 Written procedures shall be established, implemented, and maintained covering the activities referenced below:

a. The applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978, and those required for implementing the requirements of NUREG-0737.

b. Refueling operations.

c. Surveillance and test activities of safety-related equipment.

d. Not used.

e. Not used.

f. Fire Protection Program implementation.

g. Modification of Core Protection Calculator (CPC) Addressable Constants.

NOTES: (1) Modification to the CPC Addressable Constants based on information obtained through the Plant Computer - CPC data link shall not be made without prior approval of the PRB.

(2) Modifications to the CPC software (including algorithm changes and changes in fuel cycle specific data) shall be performed in accordance with the most recent version of CEN-39(A)-P, "CPC Protection Algorithm Software Change Procedure," that has been determined to be applicable to the facility. Additions or deletions to CPC Addressable Constants or changes to Addressable Constant software limit values shall not be implemented without prior NRC approval.

DISCUSSION OF CHANGES
CHAPTER 2.0

ADMINISTRATIVE CHANGES

A.1 All reformatting and renumbering is in accordance with the Combustion Engineering Plant (CE) Standard Technical Specifications NUREG-1432, Rev. 1 (NUREG-1432). As a result, the Palo Verde Nuclear Generating Station (PVNGS) Improved Technical Specifications (ITS) should be more readable, and therefore understandable, by plant operators as well as other users. During the reformatting and renumbering of the ITS, no technical changes (either actual or interpretational) to the PVNGS Current Technical Specifications (CTS) were made unless they were identified and justified.

Editorial rewording (either adding or deleting) is made consistent with NUREG-1432. During NUREG-1432 development, certain wording preferences or English language conventions were adopted which resulted in no technical changes (either actual or interpretational) to the CTS.

Additional information has also been added to more fully describe each subsection. This wording is consistent with NUREG-1432. Since the design is already approved by the NRC, adding more detail does not result in a technical change.

A.2 CTS 2.1 Actions require compliance "with the requirements of Specification 6.7.1". The requirements of CTS 6.7.1 have moved to ITS 2.2, SL Violation. Therefore, this is a change in presentation and considered an administrative change with no impact on safety. This change is consistent with NUREG-1432.

A.3 CTS 6.7.1.a and ITS 2.2.3 require notification of the NRC Operations Center within 1 hour of a Safety Limit Violation. ITS 2.2.3 in addition includes a reference to 10 CFR 50.72, which provides notification requirements. This is an administrative change with no impact on safety. This change is consistent with NUREG-1432.

A.4 CTS 6.7.1.b and c require submittal of a Safety Limit Violation Report as well as provides details for what information is to be included in the report. ITS 2.2.5 requires submittal of a LER in accordance with 10 CFR 50.73. 10 CFR 50.73 provides the requirements for a 30 day report, including the content of the report, which is consistent with the information provided in the Safety Limit Violation Report. Therefore, this is an administrative change with no impact on safety. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

None

TECHNICAL CHANGES - RELOCATIONS

LA.1 CTS 6.7.1.a requires that the OSRC Chairman be notified within 24 hours of a Safety Limit Violation. CTS 6.7.1.c requires submittal of the Safety Limit Violation Report to the OSRC Chairman. These requirements are being moved to the Quality Assurance Program (QAP) requirements in the UFSAR. These requirements can be adequately defined and controlled in documents that require change control in accordance with 10 CFR 50.54(a). This approach provides an effective level of regulatory control and provides for a more appropriate change control process. NRC and PVNGS resources associated with processing license amendments to these Administrative Control requirements will be reduced. Any changes to the requirements in the QAP requirements in the UFSAR will be governed by the provisions of 10 CFR 50.54(a). This provides an equivalent level of regulatory control and is an administrative change with no impact on the margin of safety. This requirement is not required to be in the ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement is acceptable and is consistent with NUREG-1432.

LA.2 CTS 6.7.1.b requires that the Safety Violation Report be reviewed by PRB. The review requirements are being moved to the QAP requirements in the UFSAR. These requirements can be adequately defined and controlled in documents that require change control in accordance with 10 CFR 50.54(a). This approach provides an effective level of regulatory control and provides for a more appropriate change control process. NRC and PVNGS resources associated with processing license amendments to these Administrative Control requirements will be reduced. Any changes to the requirements in the QAP requirements in the UFSAR will be governed by the provisions of 10 CFR 50.54(a). This provides an equivalent level of regulatory control and is an administrative change with no impact on the margin of safety. This requirement is not required to be in the ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

None

NO SIGNIFICANT HAZARDS CONSIDERATION
CHAPTER 2.0

ADMINISTRATIVE CHANGES
(ITS 2.0 Discussion of Changes Labeled A.1, A.2, A.3, and A.4)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3, is converting to the ITS as outlined in NUREG-1432, "Standard Technical Specifications, Combustion Engineering Plants." The proposed changes involve the reformatting, renumbering, rewording of the Technical Specifications (TS) and Bases with no change in intent, and the incorporation of current operating practices consistent with NUREG-1432. These changes, since they do not involve technical changes to the Current TS (CTS), are administrative. Below are the No Significant Hazards Consideration (NSHC) for the conversion of this Chapter to NUREG-1432.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

> The proposed changes involve reformatting, renumbering, and rewording of the CTS and Bases along with incorporation of PVNGS current operating practices and other changes to the CTS, as discussed in the specific Discussion of Changes listed above, in order to be consistent with NUREG-1432. The reformatting, renumbering, and rewording along with the other changes listed above, involves no technical changes to the CTS. Specifically, there will be no change in the requirements imposed on PVNGS due to these changes. During development of NUREG-1432, certain wording preferences or English language conventions were adopted. The proposed changes to this Chapter are administrative in nature and do not impact initiators of any analyzed events. They also do not impact the assumed mitigation of accidents or transient events. Therefore, these changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

ADMINISTRATIVE CHANGES
(ITS 2.0 Discussion of Changes Labeled A.1, A.2, A.3, and A.4)

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed changes involve reformatting, renumbering, and rewording of the CTS, along with the incorporation of PVNGS current operating practices and other changes, as discussed, in order to be consistent with NUREG-1432. The proposed changes do not involve a physical alteration of the plant (no new or different type of equipment will be installed) or change the methods governing normal plant operation. The proposed changes will not impose any new or different requirements or eliminate any existing requirements. Therefore, these changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

The proposed changes involve reformatting, renumbering, and rewording of the CTS, along with the incorporation of PVNGS current operating practices and other changes, as discussed, in order to be consistent with NUREG-1432. The proposed changes are administrative in nature and will not involve any technical changes. The proposed changes will not reduce a margin of safety because they have no impact on any safety analysis assumptions. Also, because these changes are administrative in nature, no question of safety is involved. Therefore, these changes do not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - RELOCATIONS
(ITS 2.0 Discussion of Changes Labeled LA.1 and LA.2)

Arizona Public Service Company, Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3 is converting to the ITS as outlined in NUREG-1432. The proposed changes, since detail is being removed from the CTS to a Licensee Controlled Document, are less restrictive. The descriptions of these changes are in the Discussion of Changes listed above.

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility, in accordance with a proposed amendment, would not 1) involve a significant increase in the probability or consequences of an accident previously evaluated; 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

Standard 1.-- Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

> The proposed changes relocate requirements from the CTS to a Licensee Controlled Document. These changes do not result in any hardware changes or changes to plant operating practices. The details being relocated are not assumed to be an initiator of any analyzed event. The Licensee Controlled Document containing the relocated requirements will be maintained using the provisions of 10 CFR 50.59 or other specified control processes and is subject to the change control process in the Administrative Controls Section of the ITS. Since any changes to a Licensee Controlled Document will be evaluated, no increase in the probability or consequences of an accident previously evaluated will be allowed. Therefore, these changes will not involve a significant increase in the probability or consequences of an accident previously evaluated.

TECHNICAL CHANGES - RELOCATIONS
(ITS 2.0 Discussion of Changes Labeled LA.1 and LA.2) (continued)

Standard 2.-- Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed changes relocate requirements from the CTS to a Licensee Controlled Document. These changes will not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal plant operation. These changes will not impose different requirements and adequate control of information will still be maintained. These changes will not alter assumptions made in the safety analysis or licensing basis. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

Standard 3.-- Does the proposed change involve a significant reduction in a margin of safety?

The proposed changes relocate requirements from the CTS to a Licensee Controlled Document. These changes will not reduce a margin of safety since they have no impact on any safety analysis assumptions. In addition, the requirements to be transposed from the CTS to the Licensee Controlled Document are the same as the CTS. Since any future changes to this Licensee Controlled Document will be evaluated per the requirements of 10 CFR 50.59, or other specified control processes, no reduction (significant or insignificant) in a margin of safety will be allowed. Therefore, these changes will not involve a significant reduction in a margin of safety.

The NRC review provides a certain margin of safety, and although this review will no longer be performed prior to implementation, the NRC still inspects the 10 CFR 50.59 process. The proposed changes are consistent with NUREG-1432, which was approved by the NRC Staff. The change controls for proposed relocated details and requirements provide an acceptable level of regulatory authority. Revising the CTS to reflect the approved level of detail per NUREG-1432 reinforces the conclusion that there is not a significant reduction in the margin of safety. Therefore, revising the CTS to reflect the NRC accepted level of detail and requirements ensures no reduction in a margin of safety.

ENVIRONMENTAL ASSESSMENT
ITS 2.0 - SAFETY LIMITS (SL)

These proposed TS changes have been evaluated against the criteria for and identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21. It has been determined that the proposed changes meet the criteria for categorical exclusion as provided for under 10 CFR 51.22(c)(9). The following is a discussion of how the proposed TS changes meet the criteria for categorical exclusion.

10 CFR 51.22(c)(9): Although the proposed changes involve changes to requirements with respect to inspection or Surveillance Requirements with;

(i) the proposed changes involve No Significant Hazards Consideration (refer to the No Significant Hazards Consideration Section of this Technical Specification Change Request),

(ii) there is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite since the proposed changes do not affect generation of any radioactive effluent not do they affect any of the permitted release paths, and

(iii) there is no significant increase in individual or cumulative occupational radiation exposure.

Accordingly, the proposed changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Based on the aforementioned and pursuant to 10 CFR 51.22(b), no environmental assessment or environmental impact statement need be prepared in connection with issuance of an amendment to the Technical Specifications incorporating the proposed changes of this request.