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SUBJECT: Responds to 970422 RAI re improved TS Section 3.4, "RCS." Proposed TS encl.

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July 18, 1997

U. S. Nuclear Regulatory Commission
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Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528/529/530
Response to NRC Request for Additional Information (RAI) for Improved Technical Specification (ITS) Section 3.4, "Reactor Coolant System"

Dear Sirs:

Enclosed please find the response to your request for additional information (RAI) dated April 22, 1997, regarding ITS Section 3.4, "Reactor Coolant System." The NRC "Description of Issue" and the corresponding PVNGS responses are provided as Enclosure 1 in a tabular format similar to the RAI. ITS 3.4 submittal pages, as modified by responses to the RAI, are provided as Enclosure 2.

Generic change TSTF numbers 057, 066, 114, 129, and 137 to NUREG-1432, Revision 1 were incorporated into Revision A of ITS Section 3.4. TSTF number 060 was determined to be unnecessary, based on the enclosed response to RAI 3.4.16-3.

Please contact Mr. Scott Bauer at (602) 393-5978 if you have any questions or would like additional information regarding this matter.

Sincerely,

James M. Levine

JML/SAB/GAM/mah 310080

cc: E. W. Merschoff (w/o enclosure 2)
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C. R. Thomas (with enclosures) (2 copies)
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A001 1/1

Enclosure 1 Response to Request for Additional Information
Enclosure 2 ITS Section 3.4, "Reactor Coolant System"

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, J. M. Levine, represent that I am Senior Vice President - Nuclear, Arizona Public Service Company (APS), that the foregoing document has been signed by me on behalf of APS with full authority to do so, and that to the best of my knowledge and belief, the statements made therein are true and correct.

J. M. Levine

Sworn To Before Me This 18 Day Of July, 1997.

Notary Public

My Commission Expires

"OFFICIAL SEAL"
A. K. Krainik
Notary Public-Arizona
Maricopa County
My Commission Expires 5/6/2000

PVNGS LICENSING DOCUMENT AMENDMENT/ AMENDMENT REQUEST **APPROVAL**

DATE

UNIT	☐ PVNGS-1 ☐ PVNGS-2 ☐ PVNGS-3 ☒ GENERIC	LOG NO.
DOCUMENT	☐ UFSAR ☐ OL ☐ EPP ☐ OTHER ☐ Proposed USQ ☒ TS ☐ RMAC	SECTION(S) AFFECTED (ATTACH REVISED OR MARKED-UP PAGES) 3.4.1, 3.4.3, 3.4.6, 3.4.7, 3.4.8, 3.4.11, 3.4.13, 3.4.16, 3.4.17

DESCRIPTION *(BASIS/JUSTIFICATION)*

The changes to the Improved Technical Specifications are described on the attached Summary sheet, and shown on the attached marked-up pages. These changes are being made in response to NRC Request for Additional Information dated April 22, 1997.

Glenn Michael — PREPARED BY — DATE 7/16/97

TN Webb — REVIEWED BY — DATE 7/17/97

SECTION LEADER - LICENSING — DATE 7/17/97

NRC PRIOR APPROVAL OR NOTIFICATION REQUIRED: ☒ YES ☐ NO

REQUIRED CONCURRENCE/APPROVALS:

☐	CONCUR:	N/A — APPLICABLE DEPARTMENT HEAD	DATE
☐	CONCUR:	N/A — APPLICABLE DEPARTMENT HEAD	DATE
☐	CONCUR:	for D Smith — OPERATIONS DIRECTOR	DATE 7/17/97
☐	CONCUR:	N/A — DIRECTOR, NUCLEAR ASSURANCE	DATE
☒	CONCUR:	A. Krainik — PLANT REVIEW BOARD A. Krainik	DATE 7/17/97
☒	CONCUR:	G. Overbeck — OSRC G. Overbeck	DATE 7/17/97
☒	APPROVE:	A. Krainik — DEPARTMENT LEADER, NUCLEAR REGULATORY AFFAIRS	DATE 7/17/97

ENCLOSURE 1

Response to Request for Additional Information

9708010147

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.1-1	A.3	CTS Figure 3.2-1 ITS Figure 3.4-1	DOC A.3 states "CTS 3.2.6, Figure 3.2-1, for Units 1, 2, and 3 is modified per TS Amendments No. 108, 100 and 80 for PVNGS Units 1,2 and 3 respectively, related to power uprate." What is the change? This DOC can not be evaluated because the change is not identified. Also, the "endpoint" value of "100,560" is missing in the ITS "smooth" copy Figure.	1) DOC A.3 has been deleted. The referenced license amendments have been fully implemented and ITS Figure 3.4.1-1 is the same as CTS Figure 3.2-1. 2) ITS Figure 3.4.1-1 has been enhanced to include the end point values of "100, 560" as shown on CTS Figure 3.2-1.
3.4.1-2	M.1	CTS 3.2.5 ITS SR 3.4.1.3, Note	A new note is added to CTS 4.2.5. This note requires RCS total flowrate met in MODE 1 with all RCPs running. This note is not included in the CTS. Given that ITS 3.4.4 requires two RCS loops to be OPERABLE and in operation and that ITS 3.4.4 BASES LCO section states that it includes having both pumps operating in both loops, it is unclear what need the note addresses. According to ITS 3.4.4, if the plant is in Mode 1 by definition all four pumps have to be operating.	The Note in ITS SR 3.4.1.3 requiring RCS total flow rate to be met in MODE 1 with all RCPs running is directly from NUREG-1432 (CEOG STS), Rev. 1. This Note was specified in ITS SR 3.4.1.3 to be consistent with NUREG (to not take an exception to the NUREG).

PVNGS ITS 3.4.1 RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING LIMITS

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.1-3	L.2	CTS 3.2.5 Action	CTS 3.2.5 Action requires that thermal power be reduced to less than 5% within 4 hours when actual RCS flow rate is determined to be less than the limit. ITS 3.4.1, Condition A and B relax the Required Action requirement by allowing 2 hours to restore RCS flow plus allowing an additional 6 hours to reach Mode 2 if flow is not restored to within limits. Allowing more time, an additional 4 hours, for the Completion Time is less restrictive. Comments: Was the 4 hours specified in the CTS an unreasonable amount of time to reduce power? If it is/was not, then 8 hours will not be either and the discussion provided does not explain anything. Why is the extension of the time acceptable from a plant safety perspective?	The Completion Times of 2 hours for ITS 3.4.1 Action A.1 and 6 hours for Action B.1 are consistent with NUREG-1432. The Bases for ITS 3.4.1 Action A.1 states: "The 2 hour Completion Time for restoration of RCS flow rate provides sufficient time to determine the cause of the off normal condition, and to restore the readings within limits. The Completion Time is based on plant operating experience." The Bases for Action B.1 states: "Six hours is a reasonable time that permits the plant power to be reduced at an orderly rate in conjunction with even control of Steam Generator (SG) heat removal." These Bases are consistent with NUREG-1432.

PVNGS ITS 3.4.1 RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING LIMITS

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.1-4	JFD.3	ITS SR 3.4.1.4 and ITS 3.4.1.c, SR 3.4.1.3	1. STS SR 3.4.1.4 is deleted which is a one time precision heat balance performed after refueling only once before reaching 90% RTP. JFD-3 indicates that use of the calorimetric will penalize the PVNGS safety analyses with less margin. However, having to perform the heat balance once every 18 months does not mean that the plant has to operate based on it (As stated by the licensee SRs 3.3.1.2 and 3.3.1.5 which allow either method). Rather, the heat balance is performed as a once a cycle check on the changes to the core configuration (See STS SR 3.4.14 bases). If SR 3.4.1.4 is not included how is this check accomplished and if it is not why doesn't it need to be? 2. ITS 3.4.1.c and SR 3.4.1.3 are both missing the pounds-<u>mass</u> unit of measurement, as is in the CTS. Comments: What specifically in the current licensing basis justifies never doing the precision heat balance?	1) CTS SR 4.3.1.1 (Table 4.3-1, Table Notation no. 2), which has been carried over to ITS SR 3.3.1.4, is the current licensing basis requirement for performing the heat balance. Also, ITS SRs 3.3.1.2 and 3.3.1.5 in the Reactor Proctective Instrumentation - Operating section of ITS satisfy NUREG-1432 SR 3.4.1.4 on much more frequent 12-hour and 31-day frequencies. 2) ITS LCO 3.4.1.c and SR 3.4.1.3 have been revised to state "lbm/hr" as stated in CTS LCO 3.2.5.

PVNGS ITS 3.4.1 RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING LIMITS

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.1-5	JFD 4	CTS 3.2.6 (#) footnote ITS 3.4.1 Applica-bility	This CTS footnote only applies to MODE 2. In the ITS markup and the smooth copy, as written it applies to both Modes 1 and 2. (Modes 1 and 2 Keff greater than or equal to one). This is confusing as it should be - Mode 1 and Mode 2, Keff greater than or equal to one, ... or per the Writer Guide each on separate lines.	The unique MODE 2 Applicability for RCS cold leg temperature of ITS 3.4.1 has been moved to a separate line from the Mode 1 Applicability for clarification.

PVNGS ITS 3.4.2 RCS MINIMUM TEMPERATURE FOR CRITICALITY

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
No Com-ments			No Comments	

PVNGS ITS 3.4.3 RCS PRESSURE AND TEMPERATURE (P/T) LIMITS

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.3-1	A.3	CTS 3.4.8.1, Action/ ITS 3.4.3 Action A.2 and C.2	The CTS 3.4.8.1 Action requires an engineering evaluation to be performed to determine the effects of an out of limits condition on the structural integrity of the RCS and then separately a determination that the RCS remains acceptable for continued operations. A.3 justifies the accepting of the STS language as an administrative change by stating the CTS Action "requires an engineering evaluation to be performed to determine the effects of an out of limits condition in order to determine that the RCS remains acceptable ...." Such a reading implies that the two separate analyses of the CTS had one purpose rather than two separate purposes as implied by the CTS language. The A.3 reading of the CTS language should be further justified.	The DOC for 3.4.3, item A.3 has been revised to include additional justification.

PVNGS ITS 3.4.3 RCS PRESSURE AND TEMPERATURE (P/T) LIMITS

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.3-2	JFD #2	ITS Figures 3.4.3-1, -2,-3, &-4	These CTS Figures have been recreated for the ITS and there are errors and differences. The minimum temperature for boltup is now 30°F; the lower "core critical" is not connected to the line by being attached (as it is in CTS) or by an arrow. Therefore, it is unclear whether it is referring to the line or the region to the right of the line. Comments: Revise the Figure to match the CTS requirements.	ITS Figures 3.4.3-1, 3.4.3-2, 3.4.3-3, and 3.4.3-4 have been revised to accurately reflect their corresponding CTS figures, CTS Figures 3.4-2a, 3.4-2b, 3.4-2c, and 3.4-2d, respectively.
3.4.3-3	LA.1	CTS 4.4.8.1.2	CTS 4.4.8.1.2, addresses the reactor vessel material irradiation Surveillance Requirements. ITS 3.4.3 does not contain this information. This information is moved to licensee controlled documents which are not identified by specific name, number, and location or method of control.	CTS SR 4.4.8.1.2, which addresses the reactor vessel material irradiation surveillance requirements, will be relocated to the TRM.

PVNGS ITS 3.4.3 RCS PRESSURE AND TEMPERATURE (P/T) LIMITS

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.3-4	L.1	CTS 3.4.8.1 Action	CTS 3.4.8.1, Action, allows 6 hours and 30 minutes (following out of limit parameters) to restore limits, to perform an engineering evaluation, and to determine that the RCS is acceptable for continued operation. If any action is not completed within the allowed time, then action must commence to place the plant in Mode 3. ITS 3.4.3, allows the evaluation to be completed within 72 hours before com-mencing actions to place the plant in Mode 3. L.1 needs justification, from a safety per-spective, why it is acceptable to allow the plant to remain at pressure and temperature for the extended time while the evaluation is performed.	The 72-hour Completion Time is from NUREG-1432 LCO 3.4.3 Action A.2. Operation outside the P/T limits must be corrected so that the reactor coolant pressure boundary (RCPB) is returned to a condition that has been verified by stress analyses (i.e., operating parameters that provide a margin to brittle failure of the reactor vessel and piping of the RCPB). The 30 minute completion time for ACTION A.1 reflects the urgency of restoring the parameters to within the analyzed range. Most violations will not be severe, and the activity can be accomplished in this time in a controlled manner.

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.3-4 (cont'd)	-	-		Besides restoring operation to within limits, an evaluation is required to determine if RCS operation can continue. The evaluation must verify the RCPB integrity remains acceptable and must be completed before continuing operation beyond the 72-hour action completion time. Several methods may be used, including comparison with pre-analyzed transients in the stress analyses, new analyses, or inspection of the components. The 72 hour completion time for ACTION A.2 is reasonable to accomplish the evaluation. The evaluation for a mild violation is possible within this time, but more severe violations may require special, event specific stress analyses or inspections.

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.3-4 (cont'd)	-	-		For a mild violation, when the RCPB integrity evaluation could be completed within 72 hours, it would be preferable to allow continued operation while the evaluation was being performed rather than require a shutdown that may be unnecessary. A mild violation of the P/T limits would likely have minimal effect on RCS integrity due to the large margin built into the P/T limits, and therefore would be expected to support continued operation. If a more severe violations occurred that would require more than 72 hours to perform the evaluation, a shutdown would be warranted.

PVNGS ITS 3.4.4 RCS LOOPS - MODES 1 AND 2

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.4-1	None	ITS 3.4.4 Bases - LCO	The discussion of SG operability with respect to level is confusing in the Bases discussion. It says operability with regard to SG water level is ensured by RPS in Modes 1 and 2 by a trip at 44%. But then goes on to say that 25% level is the minimum at which the SG can be considered operable. What is implied but not stated is that the 25% applies in Modes other than 1 and 2. The STS language would be acceptable if the same level was to go in both places.	The ITS Bases B 3.4.4 has been revised to state that the minimum water level to declare the S/G operable in MODES 1 or 2 is 44%.

PVNGS ITS 3.4.4 RCS LOOPS - MODES 1 AND 2

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.4-2	L.1	CTS 3.4.1.1 Action	CTS 3.4.1.1 requires entering Mode 3 within 1 hour with less than 2 RCPs operating in each loop. ITS 3.4.4, Action A, requires entering Mode 3 within 6 hours with less than 2 RCPs operating in each loop. The relaxation of Completion Time for entering Mode 3 constitutes a less restrictive change. L.1 indicates that 6 hours is a reasonable time to get from full power to Mode 3 but then indicates that the RPS will put the plant there instantaneously if less than four RCPs operating is sensed. So why would 6 hours ever be a reasonable time?	ITS 3.4.4 Action A requires entering MODE 3 within 6 hours when less than two RCS loops are OPERABLE and in operation. ITS Bases B 3.4.4 LCO defines an OPERABLE loop to include a steam generator that is OPERABLE in accordance with the SG tube surveillance program. If it is discovered during MODES 1 or 2 that a SG is determined to be INOPERABLE due to discovery of a failure to have complied with the SG tube surveillance program, 6 hours would be a reasonable time to shut down to MODE 3. This is within the Completion Time limit allowed by ITS 3.4.14. ITS 3.4.14 Action C.1 requires entering 3.0.3 immediately if one or more SGs are inoperable. 3.0.3 requires shutdown to MODE 3 in 7 hours.

PVNGS ITS 3.4.5 RCS LOOPS - MODE 3

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.5-1	None	TS 3.4.5 Bases	The insert (#1) into the LCO Bases is vague and the intent is unclear - An operable SG is further defined as "the ability to feed and the ability to steam". What is that statement intending to address, having the proper valve lineup? Necessary water level is already addressed elsewhere (at least 25% wide range level) and given the definition of Mode 3, steam will be available. Comments: Similar comment for ITS 3.4.6 LCO Bases	The inserts regarding "the ability to feed and the ability to steam" have been deleted from ITS Bases B 3.4.5 LCO and B 3.4.6 LCO because they are not consistent with NUREG-1432 and are not needed to define an operable SG in this Bases.

PVNGS ITS 3.4.6 RCS LOOPS - MODE 4

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.6-1	None	Bases ITS 3.4.6 LCO	RCPs required to meet section XI?	The parenthetical "Current Section IX" has been deleted from ITS Bases B 3.4.6 LCO because it is not consistent with NUREG-1432 and is not needed to define operable RCPs and SDC pumps in this Bases.
3.4.6-2	None	Bases ITS 3.4.6 C.1 and C.2	The meaning of "Boron dilution requires forced circulation ... " is unclear. Comments: Similar comment for Bases ITS 3.4.7 B.1 and B.2.	The sentence in ITS Bases B 3.4.6 Actions C.1 and C.2 stating "Boron dilution requires forced circulation for proper mixing, and the margin to criticality must not be reduced in this type of operation" is directly from NUREG-1432. "Boron dilution" refers to all operations involving a reduction in RCS boron concentration. ITS (and NUREG) LCO 3.4.6 Action C.1 requires suspension of all operations involving reduction of RCS boron concentration if no RCS loop or SDC train is operable. When RCS boron is diluted, the margin to criticality is reduced. ITS Bases B 3.4.6 Actions C.1 and C.2, explains that the margin to criticality must not be reduced (i.e., boron dilution) when the proper mixing of boron in the RCS is not being ensured by forced circulation of RCPs or SDC pumps.

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.6-3	LA1	CTS 3.4.1.3	CTS 3.4.1.3 Footnote**, second paragraph, includes information about RCP operating limitations which is similar to the previous footnote requirements already included in the ITS as LCO Notes 1 and 2. Because the basis for limitations in the second paragraph is not discussed it is unclear whether or not the information meets the criteria of 50.36 c.2. ii its removal should be further justified or should be retained in the ITS.	CTS 3.4.1.3 Footnote **, second paragraph, which restricts RCP operation when below certain RCS temperatures, has been added as a Note to ITS LCO 3.4.6. These RCP restrictions are necessary to maintain the analysis assumptions of flow induced pressure correction factors due to RCP operation, and meet Criterion 2 of 10 CFR 50.36(c)(2)(ii). ITS Bases B 3.4.6 have been revised to be consistent with this change. See also RAI 3.4.7-1.
3.4.6-4	LA.2	CTS SR 4.4.1.3.3	CTS SR 4.4.1.3.3 contains a minimum flow rate that SDC must equal or exceed. This information will not be used in ITS SR 3.4.6.1 and it is moved to the Bases and to licensee controlled normal operating procedures for Surveillances. These Licensee Controlled Documents are not identified by specific name, number and location nor is the method of control to those documents specified.	The minimum SDC flow rate in CTS SR 4.4.1.3.3 will be relocated to ITS Bases B3.4.6 SR 3.4.6.1.

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.6-5	LA.5	CTS SR 4.4.1.3.2	CTS SR 4.4.1.3.2 specifies that "indicated wide range" level is used for verification of SG level. All values in ITS SR 3.4.6.2 are indicated values. This information, about specifying the "indicated wide range level" instrumentation, less the word "indicated", is moved to ITS 3.4.6 Bases and to licensee controlled procedures. These Licensee Controlled Documents are not identified by specific name, number and location. Also, the identity of the regulatory change control process is not identified for procedures.	ITS 3.4.6 DOC LA.5 discusses the change to CTS 4.4.1.3.2, "indicated wide range." LA.5 describes that this information, less the word "indicated," is being moved to ITS Bases B 3.4.6. LA.5 has been revised to specify the ITS Bases section, Bases SR 3.4.6.2. See also RAI 3.4.7-5.

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.6-6	JFD #4	ITS 3.4.6 LCO Note 2.a	STS 3.4.6 LCO Note 2.a uses pressurizer level as a condition to preclude RCS pressure surges when starting an RCP in MODE 4. ITS deletes this requirement only because it is not in the CTS. There is no technical justification for the deletion. In other words what in the current licensing basis justifies not having this condition?	NUREG-1432 LCO 3.4.6 Note 2 prohibits starting an RCP when RCS temperature is below a specified temperature unless <u>either</u>: (1) pressurizer water level is below a specified level; <u>or</u> (2) secondary side water temperature is within a specified temperature above RCS temperature. ITS LCO 3.4.6 Note 2 prohibits starting an RCP when RCS temperature is below specified temperatures unless secondary side water temperature is within a specified temperature above RCS temperature. ITS LCO 3.4.6 is more restrictive than NUREG-1432 LCO 3.4.6 because ITS does not allow starting an RCP when RCS temperature is below a specified temperature when pressurizer water level is below a specified level, as allowed by NUREG-1432. This RCP starting restriction in ITS LCO 3.4.6 is consistent with CTS LCO 3.4.1.3 Footnote **, which also does not provide a provision that would allow starting an RCP when RCS temperature is below a specified temperature if pressurizer water level is below a specified level. NUREG-1432 Specification 3.4.6 Exception no. 4 has been revised to more clearly describe this more-restrictive NUREG exception. See also RAI 3.4.7-2.

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.7-1	LA.1	CTS 3.4.1.4.1	CTS 3.4.1.4.1 Footnote ##, second paragraph, includes information about RCP operating limitations which is similar to the previous requirements already included in the ITS as LCO Notes 1 and 2. Because the basis for the requirements in that paragraph are not discussed it is unclear whether or not the information can be relocated or should be retained. Comments: Similar comment made in Section 3.4.6	CTS 3.4.1.3 Footnote **, second paragraph, which restricts RCP operation when below certain RCS temperatures, has been added as a Note to ITS LCO 3.4.7. These RCP restrictions are necessary to maintain the analysis assumptions of flow induced pressure correction factors due to RCP operation, and meet Criterion 2 of 10 CFR 50.36(c)(2)(ii). ITS Bases B 3.4.7 have been revised to be consistent with this change. See also RAI 3.4.6-3.

PVNGS ITS 3.4.7 RCS LOOPS - MODE 5, LOOPS FILLED

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.7-2	JFD #5	ITS 3.4.7 LCO Note 3.a CTS 3.4.1.4.1	STS 3.4.7 LCO Note 3.a uses pressurizer level as a condition to preclude RCS pressure surges when starting an RCP in MODE 5. ITS deletes this requirement only because it is not in the CTS. There is no technical justification for the deletion. In other words, what in the current licensing basis justifies not having this requirement. Comments: Similar comment made in Section 3.4.6	NUREG-1432 LCO 3.4.7 Note 3 prohibits starting an RCP when RCS temperature is below a specified temperature unless <u>either</u>: (1) pressurizer water level is below a specified level; <u>or</u> (2) secondary side water temperature is within a specified temperature above RCS temperature. ITS LCO 3.4.7 Note 3 prohibits starting an RCP when RCS temperature is below specified temperatures unless secondary side water temperature is within a specified temperature above RCS temperature. ITS LCO 3.4.7 is more restrictive than NUREG-1432 LCO 3.4.7 because ITS does not allow starting an RCP when RCS temperature is below a specified temperature when pressurizer water level is below a specified level, as allowed by NUREG-1432. This RCP starting restriction in ITS LCO 3.4.7 is consistent with CTS LCO 3.4.1.3 Footnote **, which also does not provide a provision that would allow starting an RCP when RCS temperature is below a specified temperature if pressurizer water level is below a specified level. See also RAI 3.4.6-6.

PVNGS ITS 3.4.7 RCS LOOPS - MODE 5, LOOPS FILLED

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.7-3	LA.2	CTS SR 4.4.1.4.1.2	CTS SR 4.4.1.4.1.2 contains a minimum flow rate that SDC must equal or exceed. This information is not used in ITS SR 3.4.7.1 and it is moved to the Bases and to licensee controlled procedures. These Licensee Controlled Documents are not identified by specific name, number and location. Also, the identity of the regulatory change control process is not identified for procedures.	The minimum SDC flow specified in CTS SR 4.4.1.4.1.2 will be relocated to ITS Bases B 3.4.7, SR 3.4.7.1.
3.4.7-4	None	Bases ITS 3.4.7 LCO	It would appear that reversing the order of the paragraphs or otherwise altering insert #1 would be appropriate in order to put the SG heat sink requirements together. As proposed the last existing par. will end with one statement on SG requirements and then after one paragraph of the insert some qualifications to that statement on SG heat sink capability are added.	The comment is correct. The paragraphs in ITS Bases B 3.4.7, LCO have been reversed to put the SG heat sink requirements together, as suggested.

PVNGS ITS 3.4.7 RCS LOOPS - MODE 5, LOOPS FILLED

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.7-5	LA.3	CTS 3.4.1.4.1.b	CTS 3.4.1.4.1.b specifies that "indicated wide range" level is used for verification of SG level. All values in ITS 3.4.7.2 are indicated values. This information is moved to ITS 3.4.7 Bases and to licensee controlled procedures. These Licensee Controlled Documents are not identified by specific name, number and location. Also, the identity of the regulatory change control process is not identified for procedures.	ITS 3.4.7 DOC LA.3 discusses the change to CTS 3.4.1.4.1.b, "indicated wide range." LA.3 describes that this information, less the word "indicated," is being moved to ITS Bases B 3.4.7. See also RAI 3.4.6-5.

PVNGS ITS 3.4.8 RCS LOOPS - MODE 5, LOOPS NOT FILLED

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.8-1	M.1, M.4, and JFD #3	CTS 3.4.1.4.2 ITS 3.4.8	Contrary to the discussion in M.4, CTS requirements only allow a single SDC pump to be deenergized for up to an hour. STS Note 1 allows both trains to be deenergized for 15 minutes to switch trains. The ITS, as proposed, would allow both trains of SDC to be deenergized for up to one hour. This appears to be a less restrictive change that has not been justified.	CTS 3.4.1.4.2 Footnote * allows the SDC pump of the SDC loop which is in operation (as required for LCO compliance) to be deenergized for up to one hour. During the one hour period the other SDC loop must be operable (per LCO requirement) but need not be in operation. Typically, a SDC loop that is operable but not in operation has its SDC pump deenergized. Thus, the CTS allows the SDC pumps of both SDC loops to be deenergized for up to one hour as long as both trains are operable.
3.4.8-2	None	ITS 3.4.8 LCO Bases	In the 3.4.8 Bases, a SDC pump is defined as either a CS or LPSI pump. Is there some plant condition dependent reason that similar wording shouldn't also be included in the Bases for ITS 3.4.6 and 3.4.7? If so which pumps are considered SDC pumps in those TS? If not shouldn't similar language be included in the appropriate Bases location?	ITS Bases B 3.4.6 and B 3.4.7 have been revised to define a SDC pump as either a CS or LPSI pump to be consistent with CTS Bases B 3.4.8.

PVNGS ITS 3.4.8 RCS LOOPS - MODE 5, LOOPS NOT FILLED

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.8-3	JFD #6 A.3	ITS 3.4.8 CTS 3.4.1.4.2	ITS 3.4.8 Condition B is reworded because the licensee states "NUREG 1432 uses the term "required" in LCO Actions 3.4.5, 3.4.6 and 3.4.7 inconsistently." 3.4.8 appears to be the only place the ITS attempts to correct the supposed inconsistencies. If "required" is applied as described by the licensee, then Action B and the sentence in the Bases that has been change to reflect that usage are inconsistent with the next sentence of the ITS Bases. The second Bases sentence states "Action to restore one SDC train to OPERABLE status ..." However, under the licensee's usage of the term "required", the ITS would never address having less than one OPERABLE train (and the intent of the other Bases sentence would be unclear). Under the proposed ITS, Action A would be for the OPERABLE but not operating train and Action B would be for the OPERABLE and operating train. The STS intended	ITS LCO 3.4.8 Action B has been revised to be consistent with NUREG-1432 LCO 3.4.8 Action B by specifying the Condition as the "required SDC trains" (plural) inoperable. ITS Bases B 3.4.8 Actions B.1 and B.2 have also been revised to be consistent with NUREG-1432 Bases. In addition, the NUREG-1432 3.4.8 Exemption nos. 5 and 6 have been deleted, the DOC Specification 3.4.8 item no. A.3 has been deleted, and DOC no. M.5 has been added to be consistent with the ITS changes.

PVNGS ITS 3.4.8 RCS LOOPS - MODE 5, LOOPS NOT FILLED

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.8-3 (cont'd)	-	-	Comments: The STS intent should be complied with or the change justified on an adequate basis with the ITS Bases modified to remove the existing inconsitency.	
3.4.8-4	LA.1	CTS 4.4.1.4.2	CTS SR 4.4.1.4.2 contains a minimum flow rate that SDC must equal or exceed. This information will not be used in ITS SR 3.4.8.1 and it is moved to Licensee Controlled Documents which are not identified by specific name, number and location. Also, the identity of the regulatory change control process is not identified for procedures.	The minimum flow rate specified in CTS SR 4.4.1.4.2 will be relocated to the ITS Bases B 3.4.8.

PVNGS ITS 3.4.9 PRESSURIZER

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.9-1	LA.1	CTS 4.4.3.1.3	CTS 4.4.3.1.3 tests the emergency power supply for the pressurizer heaters. The STS SR 3.4.9.3 only requires tests if the heaters are not permanently connected to Class 1E power supplies. PVNGS pressurizer heaters are permanently connected to class 1E power. Therefore, the CTS requirements for this Surveillance can be moved relocated to Licensee controlled Documents. The discussion indicates that this requirement is relocated to the Bases section. However, review of the Bases shows no discussion of the requirments of CTS 4.4.3.1.3.	CTS SR 4.4.3.1.3 requirements regarding the emergency power supply for the pressurizer heaters will be relocated to the Technical Requirements Manual (TRM).

PVNGS ITS 3.4.9 PRESSURIZER

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.9-2	JFD #4 LA.2	ITS 3.4.9 CTS 3.4.3.1	STS and ITS 3.4.1 each contains the an exclusion for pressurizer pressure range limits during transients. In ITS 3.4.9 a similar exclusion is being made for pressurizer water level and the CTS usage of the term "steady state" does support having some range of exclusion. However, the ITS 3.4.9 exclusion should have a justification similar to L.1 of 3.4.1. Additionally, "water" should be added before "level" in the proposed Note in order to make it consistent with ITS LCO 3.4.9 a.	The CTS 3.4.3.1 markup and DOC have been revised to add A.2 to explicitly discuss the addition of the Note to ITS 3.4.9 regarding the exclusion for pressurizer level limit during transients. The word "water" has been added to the proposed ITS LCO 3.4.9 Applicability (resulting in "pressurizer water level") for clarification.

PVNGS ITS 3.4.10 PRESSURIZER SAFETY VALVES - MODES 1, 2, AND 3

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.10-1	LA.1	CTS 3.4.2.2	CTS LCO 3.4.2.2, footnote *, contains maintenance information concerning the approved method for setting pressurizer safety valve lift setpoints. ITS 3.4.10 does not contain this information since it is moved to Licensee Controlled Documents which are not identified by specific name, number and location. Also, the identity of the regulatory change control process is not identified for procedures.	CTS LCO 3.4.2.2. Footnote * containing maintenance information concerning the approved method for setting PSV lift setpoints will be relocated to ITS Bases SR 3.4.10.1.

PVNGS ITS 3.4.10 PRESSURIZER SAFETY VALVES - MODES 1, 2, AND 3

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.10-2	LA.2 JFD #1	CTS 3.4.2.2 Action ITS 3.4.10, Action B.2	CTS 3.4.2.2 Action requires entry into Mode 4 with Shutdown Cooling System suction line relief valves aligned to RCS if all safety valves are inoperable. ITS 3.4.10, Action B.2 only requires entry into Mode 4. Under the proposed ITS construction with two separate LCOs, 3.4.10 will allow 12 hours to get to Mode 4 and then 3.4.11 will allow another 12 hours to establish the SDC relief. CTS gives a total of 12 hours to get to that condition and the STS also allows 12 hours to get to the equivalent condition.	ITS 3.4.11 Action Completion Times for A.1 and A.2 have been changed from "12 hours" to "immediately," and the ITS Bases B 3.4.11 have been revised to be consistent with this change. In addition, ITS DOC 3.4.10 LA.2 has been deleted and L.3 has been added to describe the deletion of the CTS 3.4.2.2 requirement to be in Mode 4 with SDC relief valves in service if less than all but more than one PSVs are Operable (which was inconsistent with CTS 3.4.2.1).

PVNGS ITS 3.4.10 PRESSURIZER SAFETY VALVES - MODES 1, 2, AND 3

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.10-3	None	ITS 3.4.10 Bases Applica-bility	ITS 3.4.10 Bases Applicability states that overpressure protection is not required in MODE 6 with the reactor vessel head detensioned (fully?). ITS 3.4.11 Bases Background states it as MODE 6 with head on. ITS 3.4.11 Bases Applicability states it as head fully detensioned. ITS 3.4.12 Bases Applicability also states it as fully detensioned. ITS 3.4.13 Applicability is MODE 6 when the head is on and the BASES of that Applicability states when it is not required as Head off or fully detensioned (where does less than fully detensioned fit?). Given the different methods of relief in different Modes or conditions, some of the differences may be justified. However, within the same TS and between TS that use the same method of relief the statements should be verified as being consistent.	The ITS Bases Applicability for LCOs 3.4.10, 3.4.11, and 3.4.13 have been revised to be consistent with each other and simplified to be consistent with the LCOs.

PVNGS ITS 3.4.11 PRESSURIZER SAFETY VALVES - MODE 4

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.11-1	LA.1	CTS 3.4.2.1	CTS 3.4.2.1, footnote *, contains maintenance information concerning the approved method for setting pressurizer safety valve lift setpoints. ITS 3.4.11 does not contain this information since it is moved to Licensee Controlled Documents which are not identified by specific name, number and location. Also, the identity of the regulatory change control process is not identified for procedures.	The maintenance information in CTS 3.4.2.1 Footnote * concerning the approved method for setting PSV lift setpoints will be relocated to ITS Bases SR 3.4.11.1. The DOC no. LA.1 has been revised to reflect this relocation.

PVNGS ITS 3.4.11 PRESSURIZER SAFETY VALVES - MODE 4

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.11-2	L.1	CTS 3.4.2.1 Action a ITS 3.4.11, Condition A	CTS 3.4.2.1 Action a, requires the "immediate" suspension of all operations involving positive reactivity changes and placing an SDC loop into operation. ITS 3.4.11 requires only one SDC suction line relief valve in service in 12 hours, or the unit in a condition where the LCO does not apply in 20 hours. The deletion of the requirement to suspend all operations involving positive reactivity can be evaluated without a discussion of specifically why that requirement was in the CTS.	The DOC 3.4.11 no. L.1 has been revised to provide additional justification for removal of the requirement to suspend positive reactivity changes (CTS 3.4.2.1 Action a).

PVNGS ITS 3.4.11 PRESSURIZER SAFETY VALVES - MODE 4

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.11-3	L.2 JFD #5	CTS 3.4.2.1 Insert #1 ITS 3.4.11	CTS 3.4.2.1, Action b, allows the suspension of CTS 3.0.4 for up to 12 hours for entry into Mode 4 for the purpose of setting the pressurizer safety valve lift settings under ambient conditions, provided a preliminary cold setting was made prior to heatup. ITS 3.4.11 contains the same requirements in an Applicability Note except 72 hours is allowed following entry into Mode 3. The ITS note is not correct because this LCO is only Applicable for Mode 4. Comments: A similar comment applies to the ITS 3.4.10 Note except that in that case the reference to MODE 4 is inappropriate for an LCO that is only applicable in MODE 3.	The same Applicability Note that allows the PSV lift settings to be outside the LCO limits during MODES 3 and 4 for the purpose of setting the PSVs under ambient (hot) conditions is used in both ITS LCO 3.4.10 (MODES 1, 2 and 3) and 3.4.11 (MODE 4 above LTOP temperatures). The note is from NUREG-1432 LCO 3.4.10 (MODES 1, 2, 3, and MODE 4 above LTOP temperatures), which was split into ITS LCO 3.4.10 and 3.4.11 to be consistent with CTS 3.4.2.1 and 3.4.2.2 (current licensing basis). The same note is used in both ITS 3.4.10 and 3.4.11 for consistency to eliminate any possibility of confusion about the applicability of the Note and confirmation that the Note is for the same purpose in both ITS 3.4.10 and 3.4.11. Having the same note in both LCOs would not result in confusion about its applicability or conflict with other Technical Specifications. The benefit of consistency of the Notes in both ITS 3.4.10 and 3.4.11 is greater than any cost associated with the Note covering a greater range of MODES than the APPLICABILITY of the specific separate LCOs.

PVNGS ITS 3.4.11 PRESSURIZER SAFETY VALVES - MODE 4

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.11-4	JFD #4 JFD #6	ITS 3.4.11 Required Action A.1	The JFD #4 is confusing because 1) it refers to a pressure limit which is not indicated in either the CTS or the ITS markup (the type of overpressure protection required is dictated by temperature) and 2) the SDC reliefs can only provide overpressure relief at their setpoints and not "at a pressure less than" that setpoint. JFD #6 states that the 8 hour Completion Time is in accordance with the PVNGS licensing basis. It is not in the CTS.	NUREG-1432 Exceptions 3.4.11 no. 4 has been revised to more clearly describe and justify the NUREG exception. NUREG-1432 Exceptions no. 6 has been revised to clarify that the LTOP temperatures are consistent with CTS, and refer to DOC M.2.

PVNGS ITS 3.4.12 PRESSURIZER VENTS

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES

3.4.12-1	JFD #1 A.2 A.3 M.1 LA.1 LA.2 LA.3 L.1	ITS 3.4.12 CTS 3.4.10	The ITS 3.4.12 retains the requirements for pressurizer pathway vents and relocates the reactor vessel head vents. The issues identified are as follows: (1) The CTS specified two vents paths operable. ITS relocated the reactor vessel head vent path (leaving one vent path) and then in the ITS, pressurizer vent path became four vents paths. The first sentences of the Bases - Background, Applicable Safety Analyses and LCO further illustrate the confusing mulitple uses of the term "vent path" (2) The Bases Background states that the vent paths are of "appropriate quality class to conform to existing standards" What are the appropriate quality classes for - piping, valves, solenoids? Existing standards for what? Are the classes and standards described in the FSAR or other design document so that it can be referenced? Just making the statement provided raises as many questions as it answers. (3) The Bases Background states "No single active failure can prevent the RCGVS from performing its	(1) CTS LCO 3.4.10 refers to "both vent paths" at each of two locations, the reactor vessel head and the pressurizer steam space (four paths). This LCO failed to give specific requirements for the two additional alternative paths downstream of the four required vent paths. The two alternative downstream paths lead to either the reactor drain tank (RDT) or directly to the containment atmosphere. Thus, there is a combination of eight vent paths that could be used from the reactor vessel head and the pressurizer to either the RDT or directly to the containment atmosphere (see attached Figure 1). Four vent paths lead from the reactor head to either the RDT or containment, and four vent paths lead from the pressurizer to either the RDT or containment. The reactor coolant system vent configuration is described in UFSAR 18.II.B.1. CTS LCO 3.4.10 required the vent paths from both the reactor vessel head and the pressurizer to be operable to comply with commitments to NUREG-0737, TMI Action Plan Requirements, (Ref. CTS BASES 3/4.4.10). However, only a pressurizer vent path is part of the primary success path to mitigate a design basis accident (steam generator tube

3.4.12.-1 (cont'd)	-	-	design function." Now however, with one vent path of the RCGVS relocated out of ITS, it leaves only one vent path in the ITS. Is the necessary design function assured by what is left in ITS? This situation is not discussed in any DOC or JFD provided. Provide explanation and discussion as necessary. (4) The Bases state vent path satisfies Criterion #3 and JFD #1 states it meets Criterion #4. (5) PVNGS states the ITS is consistent with the licensing basis when the proposed LCO appears, throughout, to be a less restrictive than the CTS (as the reactor vent which was in the CTS has been removed). Why was the reactor vent in the CTS? (6) The A.3 & LA.1 DOCs make various statements that regardless of a valves position, it is not determining; or, it does not directly relate to flow path operability. The operability of a flowpath is directly related to required position of the valve. Therefore, the intent of the discusssion is unclear.	rupture with loss of offsite power [SGTR with LOP]), as described in UFSAR 15.6.3, and falls under the criteria (criterion 3) of 10 CFR 50.36(c)(2)(ii) for establishing a technical specification LCO. Thus, the reactor head vent path requirements, since they are outside the 10 CFR 50.36(c)(2)(ii) criteria, are to be relocated from the TS to a licensee controlled document, as described and justified in the Split Report. The reactor head vent path requirements will be relocated to the TRM. The ITS BASES B 3.4.12 has been revised to more clearly describe the four required pressurizer vent paths. (2) The statement that "appropriate quality class to conform to existing standards" was copied directly from UFSAR section 18.II.B.1. This wording has been deleted from the ITS Bases B 3.4.12 and replaced with a reference to UFSAR section 18.II.B.1. (3) The PVNGS pressurizer vent design, as described in response to (1) above, consists of four vent paths. The analysis for SGTR with LOP assumes

3.4.12-1 (cont)	-	-		only the smallest of the pressurizer vent paths is available. Although a single failure of one of the vent valves would render two of the four vent paths inoperable, two vent paths would continue to be operable. Thus, no single active failure can prevent the pressurizer vent system from providing its design function to reduce RCS pressure following a SGTR and LOP. The justification for relocating the reactor vessel head vent path requirements from the TS to a licensee controlled document was provided in the Split Report. The reactor head vent path requirements will be relocated to the TRM. (4) The pressurizer vent path falls under 10 CFR 50.36(c)(2)(ii) Criterion 3. The NUREG-1432 Exceptions 3.4.12, no. 1 has been corrected to state Criterion 3 instead of Criterion 4. (5) As described in the response to (1) above, CTS LCO 3.4.10 required the vent paths from both the reactor vessel head and the pressurizer to be operable to comply with commitments to NUREG-0737, TMI Action Plan Requirements, (Ref. CTS BASES 3/4.4.10). However, only a pressurizer vent

3.4.12.-1 (cont'd)	-	-		path is part of the primary success path to mitigate a design basis accident (steam generator tube rupture with loss of offsite power [SGTR with LOP]), as described in UFSAR 15.6.3, and falls under the criteria (criterion 3) of 10 CFR 50.36(c)(2)(ii) for establishing a technical specification LCO. Thus, the reactor head vent path requirements, since they are outside the 10 CFR 50.36(c)(2)(ii) criteria, are to be relocated from the TS to a licensee controlled document, as described and justified in the Split Report. The reactor head vent path requirements will be relocated to the TRM. NUREG Exceptions 3.4.12, no. 1 states that including the requirements associated with pressurizer vent paths in ITS 3.4.12 is consistent with the PVNGS licensing basis. This is correct because CTS LCO 3.4.10 requires the pressurizer vent paths to be operable, and UFSAR section 15.6.3 describes that the use of a pressurizer vent path is assumed in the SGTR with LOP safety analysis. (6) DOC 3.4.12 item A.3 has been revised to clarify the CTS 3.4.10 requirement for the pressurizer vent valves to be closed is not required to mitigate the SGTR with LOP design basis accident , does not fall under the criterion of 10 CFR 50.36(c)(2)(ii), and is

3.4.12.-1 (cont'd)	-	-		therefore not required to be included in ITS LCO 3.4.12. The function required for safety analysis is for a pressurizer vent path to be operable, which will be provided by the ITS 3.4.12 requirement that four pressurizer vent paths must be operable. It should be noted that NUREG-1432 LCO 3.4.11 for pressurizer PORVs does not include a requirement that the valves be operable and closed, but only that they be operable. Not including a requirement in ITS LCO 3.4.12 for the pressurizer vent paths to be closed is consistent with NUREG-1432 3.4.11. (PORVs are not part of the PVNGS design and thus not included in ITS, but the pressurizer vent paths perform a similar function as the PORVs of providing the capability to manually reduce RCS pressure in the event of SGTR with LOP.) DOC 3.4.12 item LA.1 has been revised to clarify that the CTS 4.4.10 surveillance requirement to verify all manual isolation valves in each vent pathway are locked in the open position every 18 months is not required to mitigate the SGTR with LOP design basis accident , does not fall under the criterion of 10 CFR 50.36(c)(2)(ii), and is therefore not required to be included in ITS LCO 3.4.12. The function required for safety analysis is for a pressurizer vent path to be operable, which will be

3.4.12-1 (cont'd)	-	-		provided by the ITS 3.4.12 requirement that four pressurizer vent paths must be operable and the ITS SR 3.4.12.2 surveillance requirement to verify flow through each pressurizer vent path every 18 months.

3.4.12-2	A.3	CTS 3.4.10	CTS LCO 3.4.10 requires the pressurizer vent paths to be "operable and closed." ITS 3.4.12 requires pressurizer vent paths to be operable, but does not detail "and closed." PVNGS states the necessity for the closed vent paths is adequately addressed in the ITS 3.4.14 for "RCS LEAKAGE." However, if the vent was intentionally opened under procedural control for some reason other than performing its intended post-accident function how would ITS 3.4.14 apply? Precluding operation of the vent system, other than when required to perform its intended function appears to be the reason "and closed" was in CTS. Without an explanation of why the "and closed" is in the CTS, a conclusion on A.3 cannot be reached and the appropriateness of removing the reactor coolant vent with its similar provision, cannot be fully evaluated.	The CTS BASES 3/4.4.10 for CTS LCO 3.4.10 describes why the reactor coolant system vent paths must be operable (see response to RAI 3.4.12-1, item 1), but the CTS BASES does not describe why the requirement for the vent paths to be closed is in the LCO. UFSAR Section 15.6.3 describes that a pressurizer vent path is part of the primary success path to mitigate a design basis accident (steam generator tube rupture with loss of offsite power [SGTR with LOP]), but the accident analysis does not specifically require that the path be closed during normal operation to meet the primary success path to mitigate the accident. UFSAR 18.II.B.1 states in section D, LOCA Analysis, "consistent with NRC requirements, the system design is acceptable in accordance with 10CFR50.46. Both the reactor vessel head vent and pressurizer vent nozzles are equipped with 7/32 inch orifices which limit flow to about 500 standard cubic feet per minute." No discussion can be found in the NRC Safety Evaluation Report and 12 Supplements (NUREG-0857) or any other NRC Safety Evaluations for PVNGS license amendments that describe the reason for the CTS 3.4.10 requirement for the vent paths to be closed. Thus no bases can be found for the CTS 3.4.10 requirement for the vent paths to be closed. It can only be speculated that the author of CTS 3.4.10 for

3.4.12-2 (cont'd)	-	-		the reactor coolant system vents at PVNGS (which was not in the original CE standard technical specifications) thought it would be a good idea to specify in the TS that the vent path must be closed. The CTS 3.4.10 requirement for the pressurizer vent valves to be closed is not required to mitigate the SGTR with LOP design basis accident , does not fall under the criterion of 10 CFR 50.36(c)(2)(ii), and is therefore not required to be included in ITS LCO 3.4.12. The function required for safety analysis is for a pressurizer vent path to be operable, which will be provided by the ITS 3.4.12 requirement that four pressurizer vent paths must be operable. It should be noted that NUREG-1432 LCO 3.4.11 for pressurizer PORVs does not include a requirement that the valves be operable and closed, but only that they be operable. Not including a requirement in ITS LCO 3.4.12 for the pressurizer vent paths to be closed is consistent with NUREG-1432 3.4.11. (PORVs are not part of the PVNGS design and thus not included in ITS, but the pressurizer vent paths perform a similar function as the PORVs of providing the capability to manually reduce RCS pressure in the event of SGTR with LOP.)

3.4.12-3	LA 2 and LA.3	CTS 4.4.10	CTS SR 4.4.10 requires vent path Surveillances be performed "when in MODES 5 or 6." Also, CTS SR 4.4.10.b details that the method for cycling each vent valve be "from the control room." PVNGS states these are not needed in the ITS SRs; however, 1) specifically where they will be located to and how they will be controlled is not stated and 2) specifically restricting the SR to Modes 5 and 6 may appropriately be required for the ITS (see comment #2 above).	(1) The requirements that the vent path surveillances be performed in Modes 5 or 6 have been relocated to ITS BASES SR 3.4.12.1 and 3.4.12.2. The requirement that the vent valves be cycled from the control room has been relocated to ITS BASES SR 3.4.12.1. (2) Restricting SR 3.4.12.1 and 3.4.12.2 to modes 5 and 6 is not required to mitigate the SGTR with LOP design basis accident , does not fall under the criterion of 10 CFR 50.36(c)(2)(ii), and is therefore not required to be included in ITS LCO 3.4.12. The function required for safety analysis is for a pressurizer vent path to be operable, which will be provided by the ITS 3.4.12 requirement that four pressurizer vent paths must be operable. See also the response to RAI 3.4.12-2.

PVNGS ITS 3.4.13 LOW TEMPERATURE OVERPRESSURE PROTECTION (LTOP) SYSTEM

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.13-1	A.3	CTS 3.4.8.3 Action f	The CTS states that the provisions of 3.0.4 are not applicable to this Specification; so, the ITS 3.4.13 has deleted this requirement. ITS 3.0.4 has an exclusion that states Mode 5 and Mode 6 are not applicable. The Applicability of the ITS 3.4.13 includes MODE 4. The ITS appears to still need the 3.0.4 exclusion or changes to ITS Condition B (formerly STS Condition F) to account for changing from Mode 5 to Mode 4 (According to ITS 3.0.4 Bases, ITS 3.0.4 is applicable in that situation).	The exemption to the provisions of ITS 3.0.4 will be specified in a Note in the Required action for ITS LCO 3.4.13 Action A.
3.4.13-2	M.1	CTS 3.4.8.3 ITS 3.4.13.b	The following more restrictive change was added to the markup of CTS 3.4.8.3 as new item stating "The RCS depressurized and an RCS vent of ≥ 16 square inches." There is no M.1 DOC justification provided in the submittal.	The DOC justification has been changed from M.1 to L.2 on the CTS 3.4.8.3 markup. L.2 has been added to the DOCs and the No Significant Hazards Considerations for ITS 3.4.13.

PVNGS ITS 3.4.13 LOW TEMPERATURE OVERPRESSURE PROTECTION (LTOP) SYSTEM

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.13-3	LA.1	CTS 3.4.8.3 Actions a, b, and c	The CTS provides information about restricting RCP starts with SG water temperature > 100 °F above cold leg temperature. This is one of two limiting event for the Shutdown Cooling System suction line relief valve. ITS 3.4.13 does not contain this information; however, this restriction is located and clearly stated in ITS 3.4.6, Note 2.b and in ITS 3.4.7, Note 3b for Modes 4 and 5, respectively. Given that the event in question is most limiting specifically for the SDC, it is unclear why it is not included in ITS 3.4.13 as well. In any case, the justification in LA.1 is inconsistent with restrictions in place in other portions of the ITS.	The restriction from CTS 3.4.8.3 Actions a, b, and c regarding RCP starts with SG water temperature >100° above RCS cold leg temperature will be retained in ITS LCO 3.4.13 as a Note to the LCO, to be consistent with ITS LCO 3.4.6, Note 2, and LCO 3.4.7, Note 3. The temperature thresholds of applicability when RCS cold leg is ≤214°F during cooldown and ≤291°F during heatup are in the Applicability section of ITS LCO 3.4.13 and therefore are not included in the Note. See also RAI 3.4.13-6.

PVNGS ITS 3.4.13 LOW TEMPERATURE OVERPRESSURE PROTECTION (LTOP) SYSTEM

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.13-4	LA.2	CTS 3.4.8.3, Actions b and c,	The CTS states that with one or two Shutdown Cooling System suction line relief valves not operable in Modes 4, 5 or 6; either (1) restore the valve to operable status or (2) reduce cold leg temperature to less than 200°F, and (3) complete depressurization and venting the RCS through at least 16 sq. in. vent(s) in the respective AOTs. The reducing cold leg temperature is relocated to plant procedures however, the specific procedure and specific method of control are not provided.	The requirement to reduce RCS cold leg temperature to <200°F prior to venting the RCS will be relocated to the ITS Bases B 3.4.13 Action A.1. The DOC and NUREG Exceptions have been revised to reflect this relocation.

PVNGS ITS 3.4.13 LOW TEMPERATURE OVERPRESSURE PROTECTION (LTOP) SYSTEM

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.13-5	L.1 JFD #12	CTS 3.4.8.3, Action d ITS SR 3.4.13.2	The L.1 DOC states there are no valves in the RCS vent pathway which, indicates the DOC was written with a certain vent path (one welded or otherwise sealed during operations) in mind. However, CTS 3.4.8.3, Action d clearly requires verification of the RCS vent pathway when the pathway is provided by a valve(s) that is locked, sealed, or otherwise secured in the open position. The CTS appears to provide for the possibility of different vent paths or a combination of paths (some with valves in them) to provide the required 16 square inches of vent. If PVNGS will only use one vent path then, ITS as proposed is acceptable as long as it is made clear in the Bases that only that vent is to be used. If use of alternate vent paths is to be allowed then the requirement to verify valves needs to be included in the ITS.	ITS Bases B 3.4.13 Background states that for an RCS vent to meet the specified flow capacity, it requires removing all pressurizer safety valves (PSVs) or opening the pressurizer manway. This information has now been added to ITS Bases B3.4.13 LCO and SR 3.4.13.1 and 3.4.13.2. There are no valves in the RCS vent paths through removed PSVs or through an open pressurizer manway.

PVNGS ITS 3.4.13 LOW TEMPERATURE OVERPRESSURE PROTECTION (LTOP) SYSTEM

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.13-6	JFD #1, JFD #2	ITS 3.4.13	The following STS requirements were deleted from the ITS: (1) LCO statement; (2) Applicability Note; (3) Conditions A, B, C, and D; (4) SRs 3.4.12.1, 2, and 3. These deleted parts contained various requirements restricting operation of HPSI pumps, charging pumps and the SITs to prevent exceeding the relief capacity of LTOP system; and thus, overpressurize the RCS. JFD #2 statements concerning RCPs are inconsistent. First it says there are limits on RCPs in the ITS (which is true) and then it says that "this" (referring to the previous sentence on RCPs and ITS?) is acceptable because operation "this equipment and RCPs" is either controlled by plant procedures or within design relief capacity. Second, given that the two most limiting events for LTOP are starting the RCP and inadvertent SIAS with two HPSI pumps injecting (see Insert #1 for Bases 3.4.13) and the second of these two	The restriction from CTS 3.4.8.3 Actions a, b, and c regarding RCP starts with SG water temperature >100° above RCS cold leg temperature will be retained in ITS LCO 3.4.13 as a Note to the LCO, to be consistent with ITS LCO 3.4.6, Note 2, and LCO 3.4.7, Note 3. The temperature thresholds of applicability when RCS cold leg is ≤214°F during cooldown and ≤291°F during heatup are in the Applicability section of ITS LCO 3.4.13 and therefore are not included in the Note. NUREG-1432 Exception no. 2 has been revised to be reflect this change. See also RAI 3.4.13-6.

PVNGS ITS 3.4.13 LOW TEMPERATURE OVERPRESSURE PROTECTION (LTOP) SYSTEM

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.13-7	JFD #4	ITS 3.4.13	The STS requirements of SRs 3.4.12.5 were deleted from the ITS. Operability of the SDC suction reliefs is dependent on RCS isolation valves SI-651, 652, 653 and 654 being fully open. Therefore, it is unclear why no verification of valve position is periodically required similar to that required for the PORV block valves in the STS.	ITS Bases 3.4.13 Background identifies valves SI-651, 652, 653, and 654 as the shutdown cooling system (SCS) suction line relief valves. ITS SR 3.4.13.2 requires verification of alignment of SCS suction line relief valves to provide overpressure protection. This verification provides a requirement similar to the PORV block valve verification in NUREG-1432 SR 3.4.12.5.
3.4.13-8	None	CTS 3.4.8.3 Action e ITS 5.6.4	This Action is moved to ITS 5.6.4 per the CTS markup. The text in ITS 5.6.4 does not include the CTS requirement for special reports for events when "an RCS vent(s)" ("vent" would be appropriate if ITS is only to allow a single vent path) are used to mitigate an RCS pressure transient. This would be a less restrictive change.	The relocation of CTS 3.4.8.3 Action e reporting requirements to ITS 5.6.4 with modifications is addressed in ITS section 5.

PVNGS ITS 3.4.14 RCS OPERATIONAL LEAKAGE

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.14-1	LA.1	CTS 4.4.5.2.1.b	CTS 4.4.5.2.1.b requires monitoring the containment sump inventory and discharge every 12 hours. The ITS does not retain this CTS requirement. The moving of the CTS requirements to licensee controlled documents are not identified by specific name, number and location. Also, the identity of the regulatory change control process is not identified for procedures.	DOC 3.4.14 LA.1 has been revised to identify that the requirements of CTS 4.4.5.2.1.b and 4.4.5.2.1.d will be relocated to the Technical Requirements Manual (TRM). See RAI 3.4.14-2.
3.4.14-2	LA.1	CTS 4.4.5.2.1.d	CTS 4.4.5.2.1.d requires the reactor head flange leakoff system to be monitored every 24 hours. The ITS does not retain this requirement. However, where it is relocated to is not identified by specific name, number and location. Also, the identity of the regulatory change control process is not identified for procedures.	DOC 3.4.14 LA.1 has been revised to identify that the requirements of CTS 4.4.5.2.1.b and 4.4.5.2.1.d will be relocated to the Technical Requirements Manual (TRM). See RAI 3.4.14-1.

PVNGS ITS 3.4.15 RCS PRESSURE ISOLATION VALVE (PIV) LEAKAGE

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.15-1	LA.2	CTS 4.4.5.2.2.c	CTS 4.4.5.2.2.c requires a demonstration of operability following maintenance, repair, or replacement work. ITS 3.4.15 does not specify any such requirements because these CTS requirements are moved to licensee controlled documents. These licensee controlled documents are not identified by specific name, number and location. Also, the identity of the regulatory change control process is not identified for these documents.	The requirement of CTS 4.4.5.2.2.c to demonstrate operability of a RCS pressure isolation valve prior to returning to service following maintenance, repair, or replacement will be relocated to ITS Bases SR 3.4.15.1. LA.2 has been revised and NUREG-1432 Exception no. 9 has been added to reflect this relocation.
3.4.15-2	LA.3	CTS 4.7.11	CTS 4.7.11 states that performance of the Surveillance is accomplished during shutdown. ITS SR 3.4.15.2 does not specify the plant condition under which the Surveillance is performed because these CTS requirements are moved to licensee controlled documents. These licensee controlled documents are not identified by specific name, number and location. Also, the identity of the regulatory change control process is not identified for these documents.	ITS Bases SR 3.4.15.2 specifies the need to perform the surveillance under conditions that apply during a plant outage. LA.3 has been revised to reflect this relocation to the ITS Bases.

PVNGS ITS 3.4.15 RCS PRESSURE ISOLATION VALVE (PIV) LEAKAGE

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.15-3	L.3	CTS 3.4.5.2, Action c	CTS 3.4.5.2, Action c, only allows the use of one manual or de-energized automatic valve. ITS 3.4.15, Required Action A.1, allows the use of one manual, de-energized automatic, or check valve to perform the function of isolation. Further discussion of why PVNGS previously did not use the check valves even though they were leak tested should be provided. Additionally, discuss the acceptability of check valve isolation for those cases in which the next available isolation is not a check valve tested to PIV requirements.	Palo Verde previously did not credit check valves to perform the function of isolation because that provision was not included in CTS 3.4.5.2 Action c. (No Bases is provided in CTS for that omission.) However, CTS also does not contain the more-restrictive ITS 3.4.15 Action A.1 requirement that each valve used to isolate the high pressure from low pressure systems must have been verified to meet the ITS SR 3.4.15.1 leakage limits. Because this more-restrictive requirement is included in ITS, the option to use a check valve that meets this requirement is acceptable. If the next available isolation is not a check valve tested to PIV requirements, it would not meet the ITS requirements.
3.4.15-4	JFD #4 LA.1	ITS 3.4.14 Action A CTS 4.4.5.2.2 Footnote "*"	CTS 4.4.5.2.2 Footnote "*" states "Provisions of Specification 4.4.5.2.2.b, d, and e are not applicable for the SDC valves due to a position indication of valves in the control room." CTS Table carries this provision for 4.4.5.2.2.d only. Which is the current licensing basis? The appropriate discussion should be modified to address this difference.	NUREG-1432 Exceptions Specification 3.4.15, item no. 4, has been revised to reference CTS 4.4.5.2.2 Footnote * as the current licensing basis. CTS Table 3.4-1 Footnote * contains only part of the exclusion specified in CTS 4.4.5.2.2 Footnote *. CTS Table 3.4-1 Footnote * does not exclude or prohibit the additional exceptions provided by CTS 4.4.5.2.2 Footnote *, but is not as complete as CTS 4.4.5.2.2 Footnote *.

PVNGS ITS 3.4.15 RCS PRESSURE ISOLATION VALVE (PIV) LEAKAGE

ISSUE #	DOC # or JFD #	CTS/STS REF.	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.15-5	JFD #6	ITS SR 3.4.15.2	It appears the use of the term "ITS" should be "STS" in the JFD.	The comment is correct; NUREG-1432 Exception 3.4.15, no. 6 has been revised to refer to NUREG-1432 instead of ITS.

PVNGS ITS 3.4.16 RCS LEAKAGE DETECTION INSTRUMENTATION

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.16-1	LA.1	CTS 3.3.3.1, Table 3.3-6	CTS 3.3.3.1, Table 3.3-6, contains the particulate and gaseous radioactivity monitor alarm setpoint and measurement range. ITS 3.4.16 does not contain this detailed information because these CTS requirements are moved to licensee controlled documents. These licensee controlled documents are not identified by specific name, number and location. Also, the identity of the regulatory change control process is not identified for these documents.	The alarm setpoints for the containment building atmosphere monitor (RU-1) from CTS Table 3.3-6 are being relocated to ITS Bases SR 3.4.16.2. The measurement ranges for RU-1 will be relocated to the UFSAR. NUREG-1432 Exception 3.4.16, no. 6 has been added and DOC 3.4.16 LA.1 has been revised to reflect these relocations.

PVNGS ITS 3.4.16 RCS LEAKAGE DETECTION INSTRUMENTATION

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.16-2	LA.2	CTS 3.3.3.1, Table 3.3-6, Action 27	CTS 3.3.3.1, Table 3.3-6, Action 27, requires the preparation and submittal of a special report to the commission within 30 days outlining the action taken, cause of the inoperability, and the plans and schedule for restoring the system to operable status. ITS 3.4.16 does not contain this information. The moving of the CTS requirements to licensee controlled documents are not identified by specific name, number and location. Also, the identity of the regulatory change control process is not identified for these documents.	The special reporting requirements of CTS Table 3.3-6 Action 27.3 will be relocated to the Technical Requirements Manual (TRM). DOC 3.4.16 LA.2 has been revised to reflect this relocation.

PVNGS ITS 3.4.16 RCS LEAKAGE DETECTION INSTRUMENTATION

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.16-3	L.1 and JFD #1	ITS 3.4.16 New Actions Note	CTS 3.3.3.1 Action c states the provisions of Specification 3.0.3 and 3.0.4 are not applicable. STS 3.4.15 adds an LCO 3.0.4 exemption to only Condition A and B. ITS 3.4.16 adds an LCO 3.0.4 exemption to all the Required Actions. Contrary to L.1, this is NOT consistent with the STS. Applying an LCO 3.0.4 to Conditions C and D introduces an ambiguity. LCO 3.0.4. already contains specific language to allow such Actions (SD tracks) to be complied with, so why is a condition written to apply (by not applying in such situations) now exempted?	The comment is correct. The Note that specifies the 3.0.4 exemption has been specified for ITS LCO 3.4.16 Actions A and B only, to be consistent with NUREG-1432 LCO 3.4.15 (model for ITS 3.4.16). DOC 3.4.16 L.1 has been revised to reflect this.

PVNGS ITS 3.4.16 RCS LEAKAGE DETECTION INSTRUMENTATION

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.16-4	JFD #2	ITS 3.4.16 LCO, Conditions A, B, C & D, SR 3.4.15.5 CTS 3.4.5.1	The number of gas and particulate channels at PVNGS is unclear. CTS Table 3.3-6 #2 requires a minimum of two operable channels and from the construction of the table that seems there is one of each type. Similarly, ITS LCO 3.4.16 b indicates there is one monitor with two channels and ACTION B should be read to apply if either channel is inoperable (JFD #2 is consistent with that reading). However, ITS 3.4.16 Bases Actions B.1.1, B.1.2 and B.2 states "With either gaseous or particulate containment..." Indicating two of each type. If the intent of the Bases was to be consistent with the above discussion, the Bases should changed to read "With either <u>the</u> gaseous ..." (also make channel singular).	The comment is correct. ITS Bases 3.4.16 Actions B.1.1, B.1.2, and B.2 have been revised as suggested.

PVNGS ITS 3.4.16 RCS LEAKAGE DETECTION INSTRUMENTATION

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.16-5		ITS SR 3.4.16.3	The CTS Table 4.3-3 is referenced as containing the requirements for the CHANNEL CALIBRATION of the required containment sump monitor. The portion of the Table provided did not contain the containment sump monitor therefore, this CTS requirement cannot be verified.	CTS SR 4.4.5.1.b, which is identified on the CTS and ITS markups to correspond with ITS 3.4.16.3, specifies the requirement for containment sump monitor channel calibration. The reference to CTS Table 4.3-3 on the ITS SR 3.4.16.3 markup is incorrect and not needed, and has been deleted.

PVNGS ITS 3.4.17 RCS SPECIFIC ACTIVITY

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4-17-1	LA.1	CTS SR Table 4.4-4, Item 4.b.	CTS Table 4.4-4 Item 4.b states that one sample is sufficient if the plant has gone through a unit shutdown or is completed in 6 hours. The ITS does not retain this type of detail for performing surveillance requirements which are moved to licensee documents. LA.1 states the information is moved to the BASES. A review of the BASES shows this change was not made.	ITS SR 3.4.17.2 Bases has been revised to include the details concerning iodine sampling from CTS Table 4.4-4. In addition, NUREG-1432 Exceptions for Specification 3.4.17 has been revised to include item no. 9 which addresses this change.

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.17.2	JFD #5	ITS SR 3.4.17.2	STS SR 3.4.17.2 has a note under the surveillance column which reads "Only required to be performed in MODE 1". PVNGS proposes this is better placed in the frequency column. 1) This is contrary to the convention used in STS and elsewhere in the ITS 2) It is unclear that the licensee interpretation of the SR in the JFD and Bases is correct (having to perform the SR after a reactor trip). It is true that a power change of greater than or equal to 15% RTP has occurred upon a trip and the plant is still in a Mode of Applicability. However, the plant is no longer in Mode 1 (where the SR is to be performed) and Required Action A.1 which requires compliance with Figure 3.4.16-1 would be have to be addressed. Given the plant would now then in Mode 3, how would that Figure be entered? Based on the last power level before the trip, some average power based on time since the trip, or would it be ignored?	1) NUREG-1432 utilizes a convention of placing Notes in the Frequency column similar to this ITS proposal. For example, NUREG-1432 SR 3.4.13.1 (ITS SR 3.4.14.1) contains a Note in the Frequency column stating "Only required to be performed during steady state operation." NUREG-1432 SR 3.5.1.4 (ITS 3.5.1.4) contains a Note in the Frequency column that states "Only required to be performed for affected SIT," and applies the note to only one of the two frequency requirements. 2) The ITS Bases SR 3.4.17.2 NUREG Exception no. 5 has been revised to more clearly describe that the requirement to sample for iodine following a power change of greater than or equal to 15% within one hour is carried over from CTS SR 4.4.7 (Table 4.4-4). The revised Exception no. 5 discussion explains that this ITS requirement will ensure that the CTS requirement for iodine sampling in Modes 1, 2, or 3 following a rapid power change will continue to be met. If the plant were to trip and resulted in being in Mode 3 with T-cold greater than 500°F, and the required iodine sample indicated activity greater than the 1.0 microcurie/gm limit of ITS 3.4.17 Action Condition A, the Required Action A.1 would require verification that the Dose Equivalent I-131 was within the acceptable region of ITS Figure 3.4.17-1. Since

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
3.4.17.2 (cont'd)	-	-	Comments: Given that fuel failures are most likely after large power changes, sampling for activity following a Rx trip is prudent. However, the SR is unclear as to whether that is required and it is questionable as to how Required Action A.1 would be applied. The licensee should pursue its position through the CEOG.	
3.4-17-3	None	ITS Figure 3.4-1 (Smooth Copy)	The ITS Figure 3.4-1 (Smooth Copy) does not match the CTS Figure 3.4-1. The horizontal line at 80% power dividing acceptable and unacceptable operation appears to be at "65" rather than the intended "60". Also, "reactor coolant" is used instead of "primary coolant" in three places.	The limit curve in ITS Figure 3.417-1, has been revised to accurately reflect the corresponding CTS Figure 3.4-1. The term "Primary Coolant" in CTS Figure 3.4-1 is changed to "Reactor Coolant" in ITS Figure 3.4.17-1 as an administrative editorial change to be consistent with the terminology in ITS LCO 3.4.17 and NUREG-1432 3.4.16. Note that CTS uses "reactor coolant" and primary coolant" synonymously, as shown by CTS 3.4.6 (reactor coolant system chemistry) and CTS 3.4.7 (primary coolant specific activity). NUREG-1432 and ITS corrects this mixing of terminology by using "reactor coolant" exclusively.

PVNGS ITS 3.4.17 RCS SPECIFIC ACTIVITY

ISSUE #	DOC # or JFD #	CTS/STS REF	DESCRIPTION OF ISSUE	PVNGS RESPONSES
New Issue	-	-	N/A	ITS Bases B 3.4.17, "RCS Specific Activity," Applicable Safety Analysis, includes a discussion of plant operation with RCS dose equivalent iodine-131 activity levels above the LCO limit but below the limits of Figure 3.4.17-1, as allowed by ITS LCO 3.4.17 Action A. The Revision A ITS Bases, which utilized the NUREG-1432 Bases B 3.4.16, stated that "The occurrence of an SGTR accident at these permissible levels could increase the site boundary dose levels, but still be within 10 CFR 100 dose guideline limits." The PVNGS safety analyses do not support that statement. Instead, ITS Bases has been revised in Revision B to reflect the PVNGS current licensing bases, CTS Bases 3/4.4.7, by stating "The allowable limits shown on Figure 3.4.17-1 accommodate possible iodine spiking phenomenon which may occur following changes in THERMAL POWER."

PVNGS

Palo Verde Nuclear Generating Station
Units 1, 2, and 3

Improved Technical Specifications

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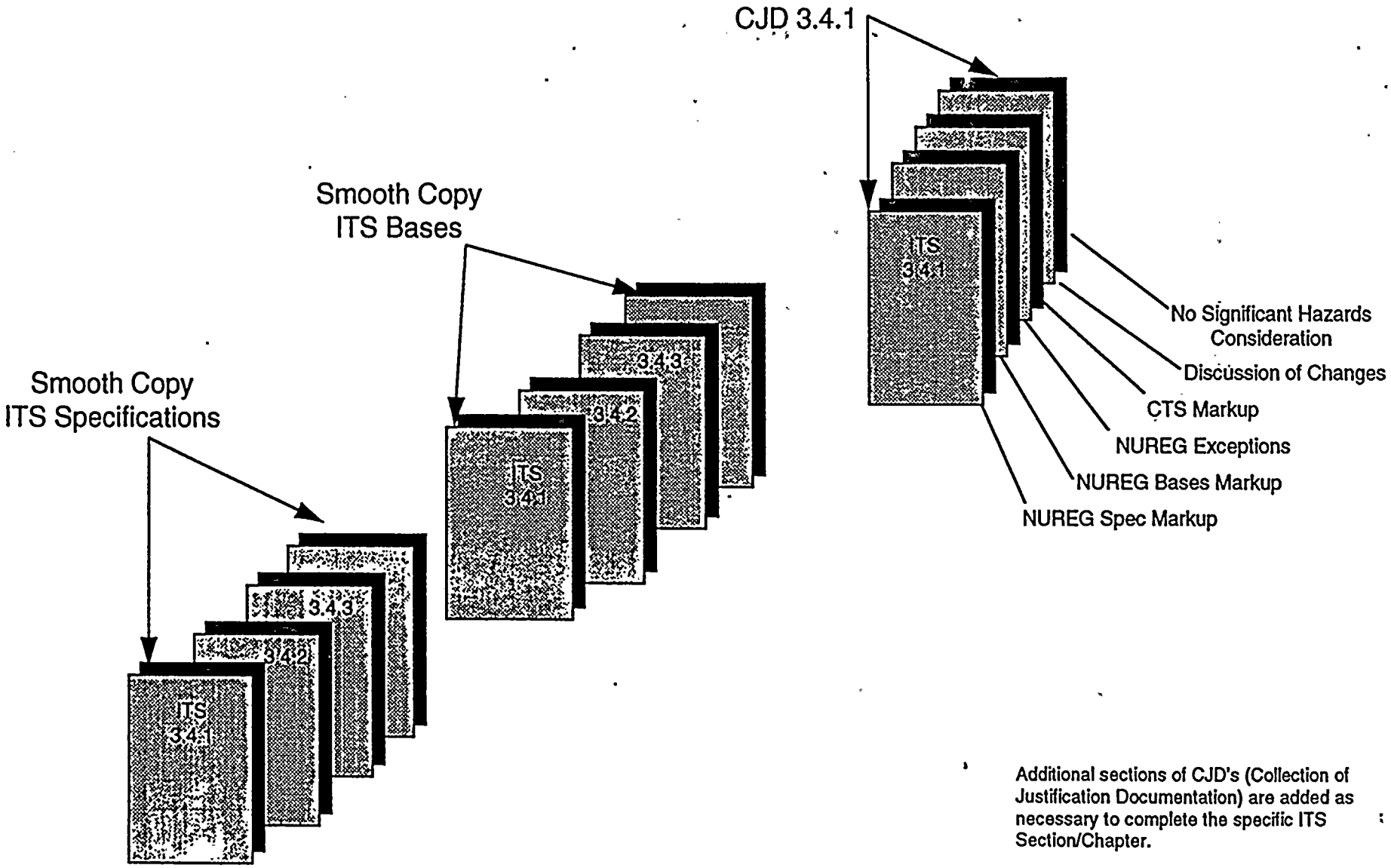
(Volume 9)



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

ITS REVIEW PACKAGE CONTENTS
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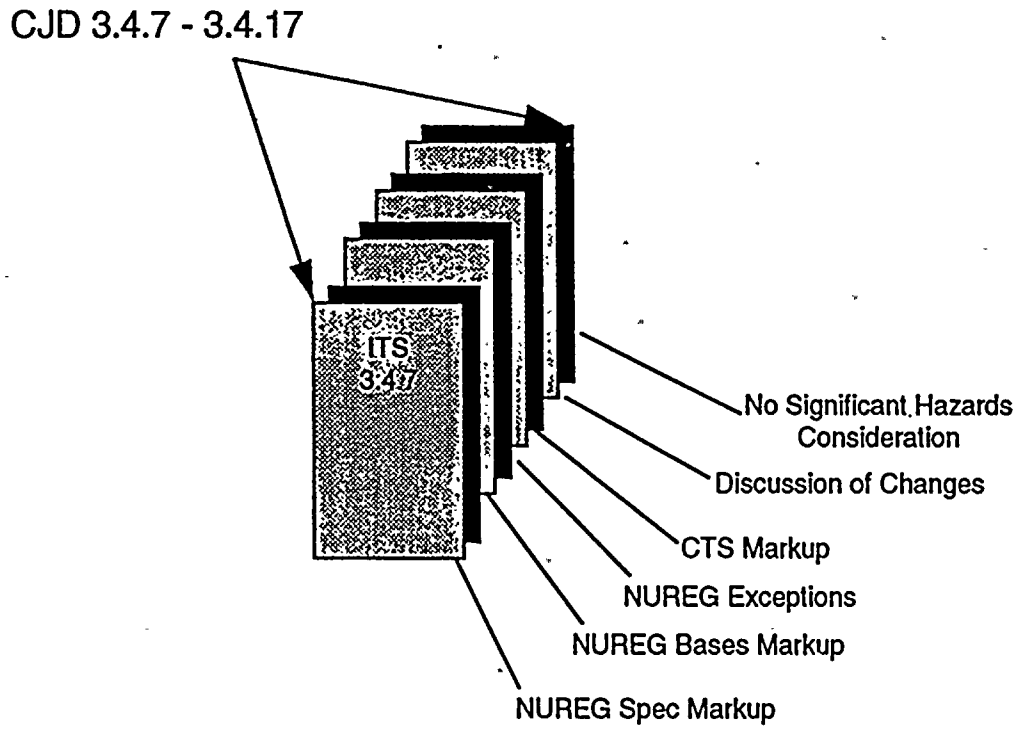


Additional sections of CJD's (Collection of Justification Documentation) are added as necessary to complete the specific ITS Section/Chapter.

PVNGS ITS
SECTION 3.4 - REACTOR COOLANT SYSTEM (RCS)

SMOOTH COPY
ITS SECTION 3.4

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, cold leg temperature, and RCS total flow rate shall be within the limits specified below:

a. Pressurizer pressure ≥ 2130 psia and ≤ 2295 psia; and

b. RCS cold leg temperature (T_c) shall be within the area of acceptable operation shown in Figure 3.4.1-1; and

c. RCS total flow rate ≥ 155.8 E6 lbm/hour.

APPLICABILITY: MODE 1 for RCS total flow rate,

MODES 1 and 2 for pressurizer pressure,

MODE 1 for RCS cold leg temperature (Tc).

MODE 2 with K_{eff} ≥ 1 for RCS cold leg temperature (Tc).

----------NOTE----------
Pressurizer pressure limit does not apply during:

a. THERMAL POWER ramp > 5% RTP per minute; or

b. THERMAL POWER step > 10% RTP.

ACTIONS

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

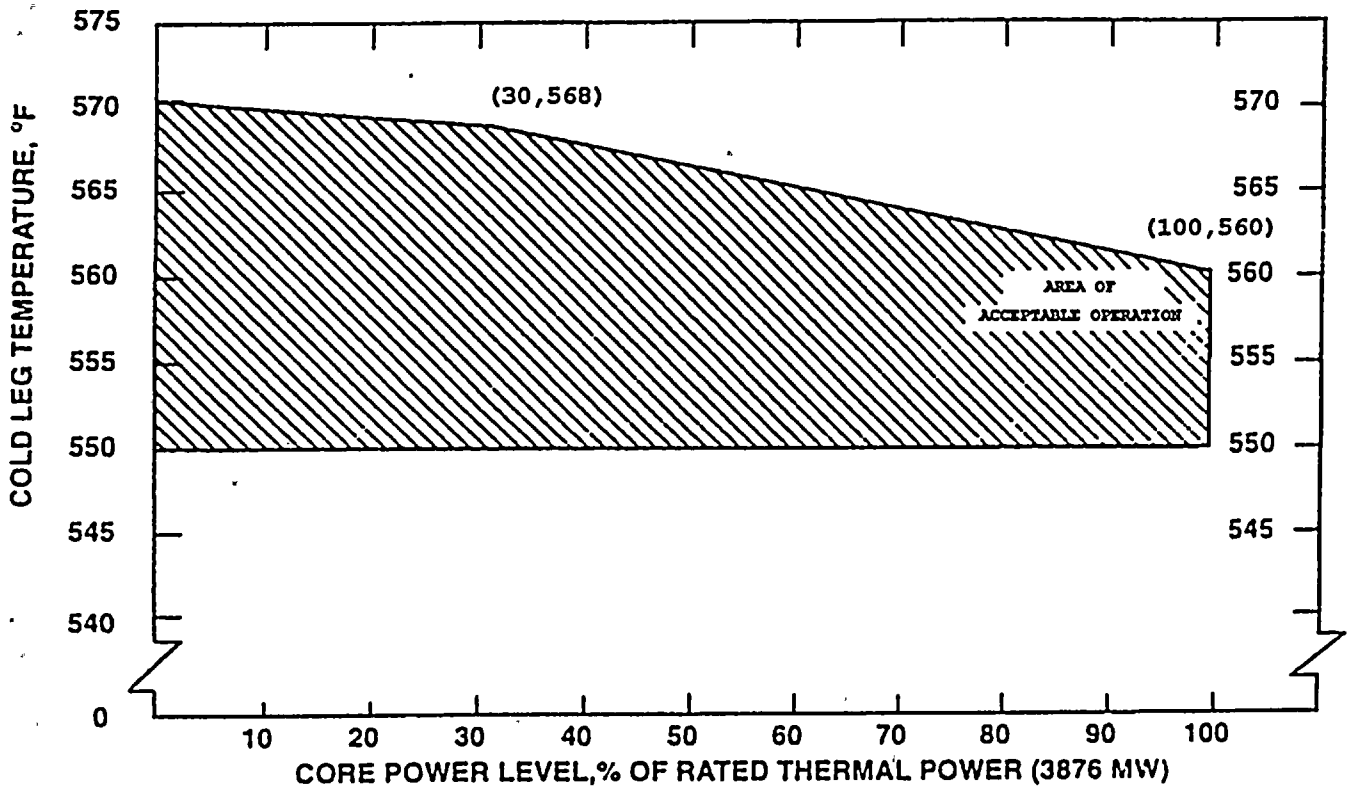
ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Pressurizer pressure or RCS cold leg temperature not within limits.	C.1 Restore parameter(s) to within limits.	2 hours
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	Verify pressurizer pressure ≥ 2130 psia and ≤ 2295 psia.	12 hours
SR 3.4.1.2	Verify RCS cold leg temperature within limits as shown in Figure 3.4.1-1.	12 hours
SR 3.4.1.3	----------NOTE---------- Required to be met in MODE 1 with all RCPs running. ---------- Verify RCS total flow rate ≥ 155.8 E6 lbm/hour.	12 hours

Figure 3.4.1-1
Reactor Coolant Cold Leg Temperature vs. Core Power Level



REACTOR COOLANT COLD LEG TEMPERATURE vs. CORE POWER LEVEL

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 RCS Minimum Temperature for Criticality

LCO 3.4.2 Each RCS loop temperature (T_{cold}) shall be ≥ 545°F.

APPLICABILITY: MODE 1,
MODE 2 with K_{eff} ≥ 1.0.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. T_{cold} in one or more RCS loops not within limit.	A.1 Be in MODE 3.	30 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.2.1 Verify RCS T_{cold} in each loop ≥ 545°F.	------NOTE----- Only required if any RCS loop T_{cold} < 550°F. ---------- 30 minutes AND Once within 30 minutes prior to reaching criticality

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 RCS Pressure and Temperature (P/T) Limits

LCO 3.4.3 RCS pressure, RCS temperature, and RCS heatup and cooldown rates shall be limited in accordance with the limits shown in Figures 3.4.3-1 or 3.4.3-2 during heatup, cooldown criticality, and inservice leak and hydrostatic testing with:

a. Maximum heatup and cooldown specified in Table 3.4.3-1.

b. A maximum temperature change of 10°F in any 1-hour period during inservice hydrostatic testing operations.

APPLICABILITY: At all times; except when reactor vessel head is fully detensioned such that the RCS cannot be pressurized.

ACTIONS

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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ---------NOTE--------- Required Action C.2 shall be completed whenever this Condition is entered. ---------- Requirements of LCO not met any time in other than MODE 1, 2, 3, or 4.	C.1 Initiate action to restore parameter(s) to within limits.	Immediately
	AND	
	C.2 Determine RCS is acceptable for continued operation.	Prior to entering MODE 4

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	----------NOTE---------- Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. ---------- Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates within limits specified in Table 3.4.3-1, and Figures 3.4.3-1 and 3.4.3-2.	30 minutes

TABLE 3.4.3-1
Maximum Allowable Heatup and Cooldown Rates

<8 Effective Full Power Years

Heatup

T_c^x (°F)	Rate (°F/HR)
< 128°F	20°F/HR
128°F - 180°F	30°F/HR
181° - 230°F	50°F/HR
> 230°F	75°F/HR

Cooldown

T_c^x (°F)	Rate (°F/HR)
≤ 93°F	See Figure 3.4.3-3
94°F - 114°F	10°F/HR
115°F - 148°F	20°F/HR
> 148°F	100°F/HR

8-32 Effective Full Power Years

Heatup

T_c^x (°F)	Rate (°F/HR)
< 116°F	10°F/HR
117°F - 150°F	20°F/HR
151° - 199°F	30°F/HR
200°F - 246°F	50°F/HR
> 246°F	75°F

Cooldown

T_c^x (°F)	Rate (°F/HR)
≤ 108°F	See Figure 3.4.3-4
109° - 126°F	10°F/HR
127°F - 147°F	20°F/HR
148°F - 162°F	40°F/HR
>162°F	100°F/HR

x Indicated Cold Leg Temperature

Figure 3.4.3-1
Reactor Coolant System Pressure/Temperature
Limitations for Less Than 8 Effective
Full Power Years of Operation

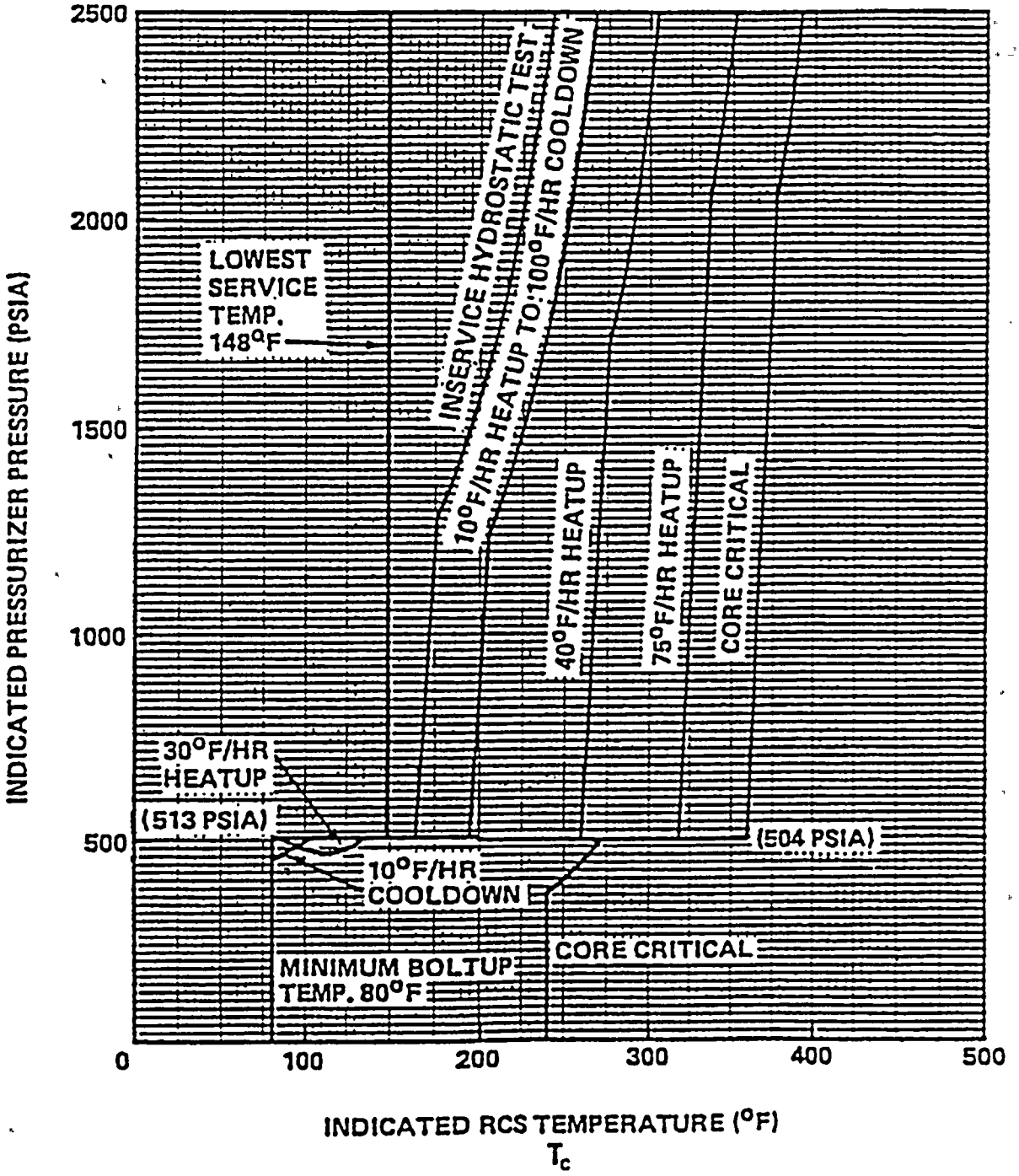


Figure 3.4.3-2
Reactor Coolant System Pressure/Temperature
Limitations for 8 to 32 Effective Full
Power Years of Operation

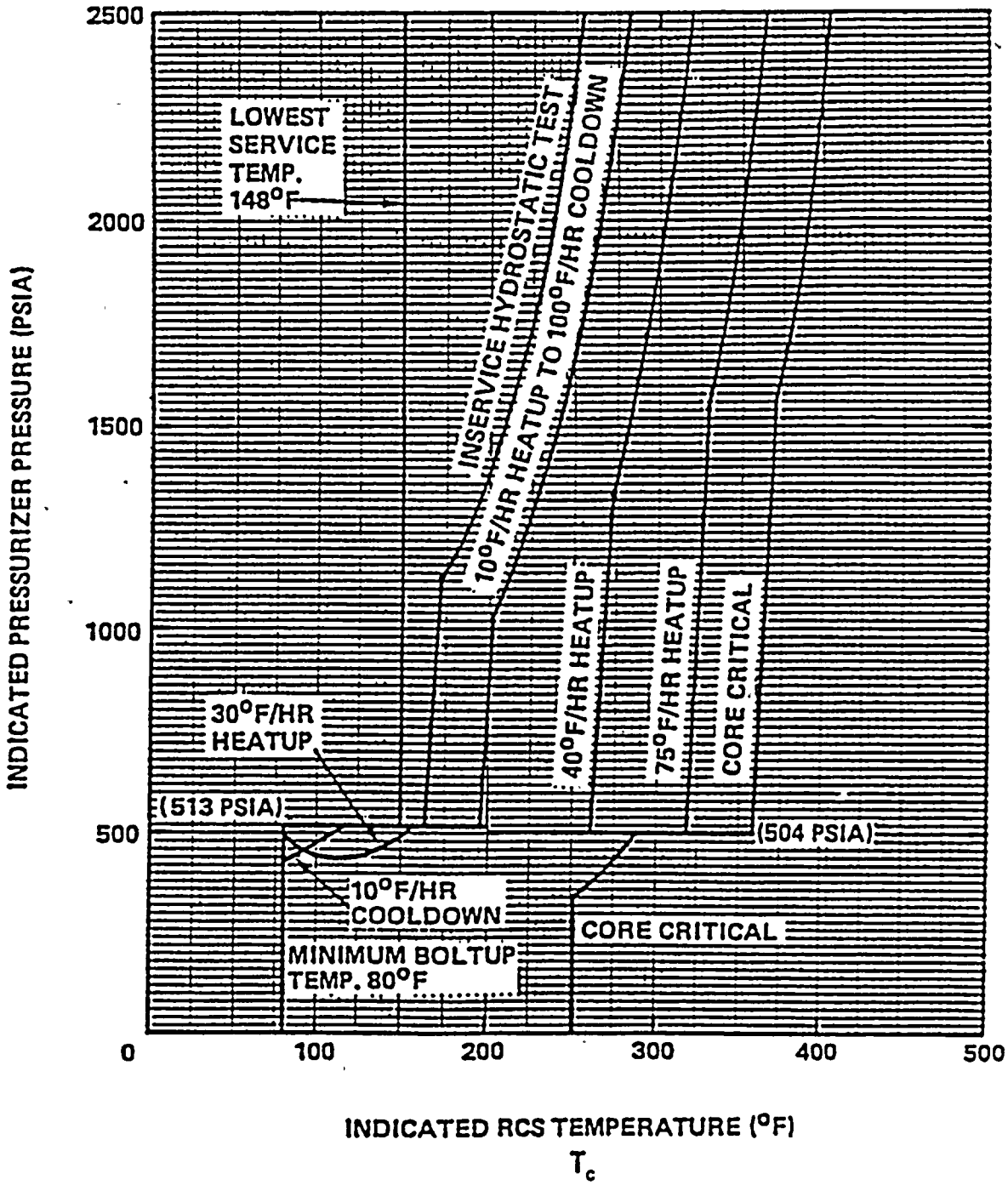


Figure 3.4.3-3
Maximum Allowable Cooldown Rates
< 8 EFPY

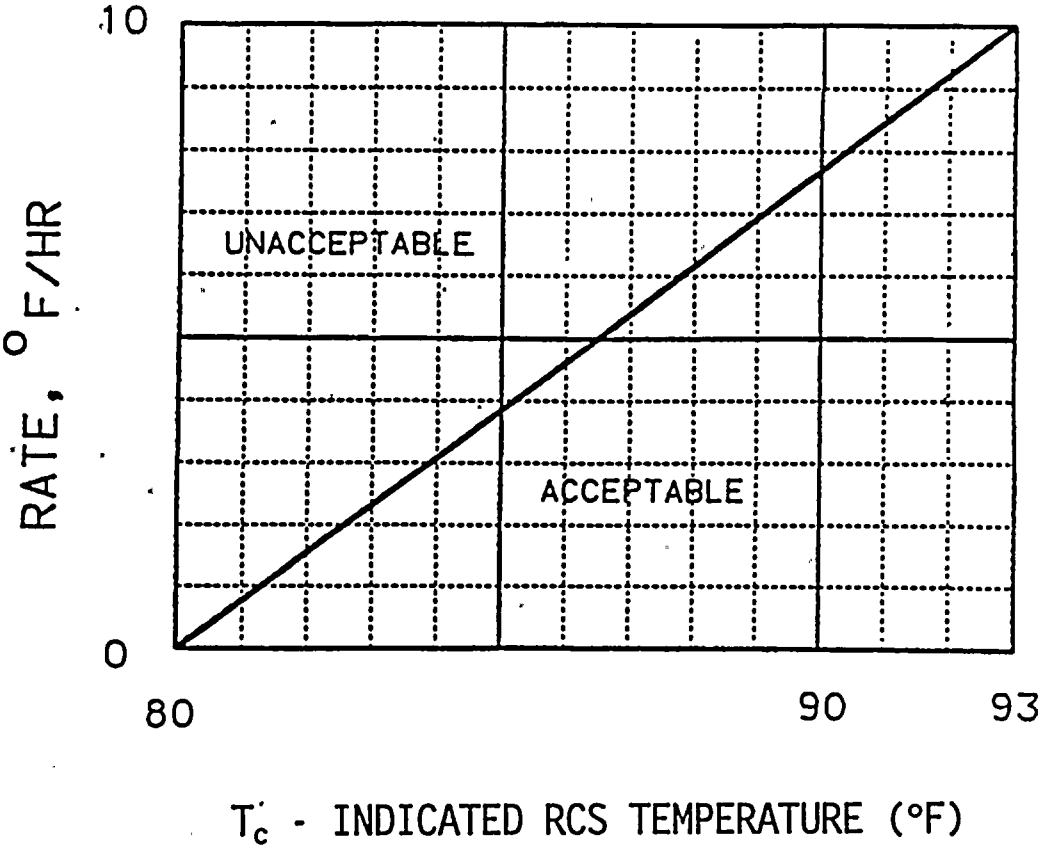
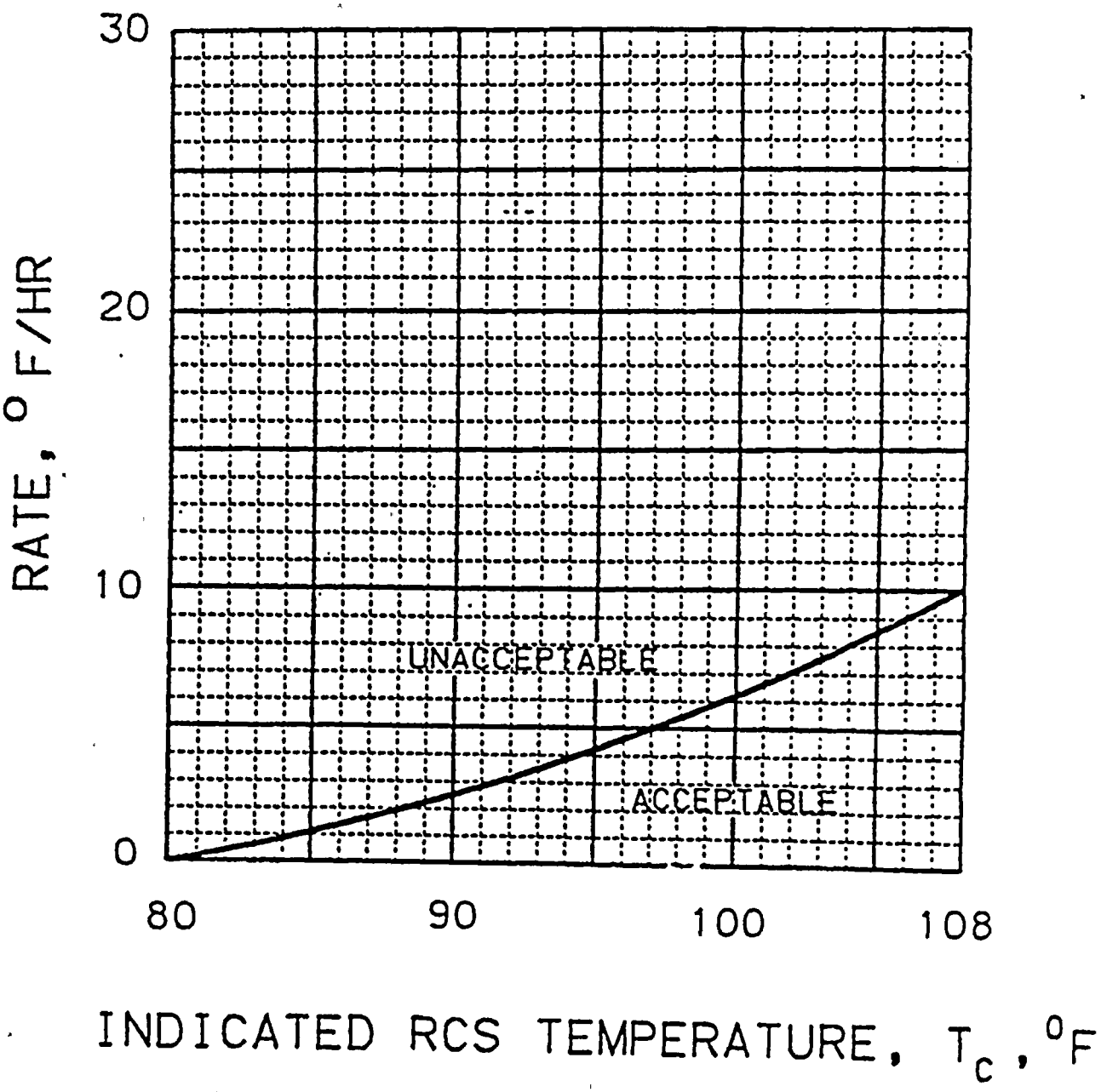


Figure 3.4.3-4
Maximum Allowable Cooldown Rates
8 - 32 EFPY



3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops – MODES 1 and 2

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

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops – MODE 3

LCO 3.4.5 Two RCS loops shall be OPERABLE and one RCS loop shall be in operation.

----------NOTE----------
All reactor coolant pumps may be de-energized for ≤ 1 hour per 8 hour period, provided:

a. No operations are permitted that would cause reduction of the RCS boron concentration; and

b. Core outlet temperature is maintained at least 10°F below saturation temperature.

APPLICABILITY: MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required RCS loop inoperable.	A.1	Restore required RCS loop to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 4.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. No RCS loop OPERABLE. OR No RCS loop in operation.	C.1 Suspend all operations involving a reduction of RCS boron concentration. AND C.2 Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Verify required RCS loop is in operation.	12 hours
SR 3.4.5.2	Verify secondary side water level in each steam generator ≥ 25%.	12 hours
SR 3.4.5.3	Verify correct breaker alignment and indicated power available to the required pump that is not in operation.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops – MODE 4

LCO 3.4.6 Two loops or trains consisting of any combination of RCS loops and shutdown cooling (SDC) trains shall be OPERABLE and at least one loop or train shall be in operation.

----------NOTES----------

1. All reactor coolant pumps (RCPs) and SDC pumps may be de-energized for ≤ 1 hour per 8 hour period, provided:

   a. No operations are permitted that would cause reduction of the RCS boron concentration; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. No RCP shall be started with any RCS cold leg temperature ≤ 214°F during cooldown, or ≤ 291°F during heatup, unless the secondary side water temperature in each Steam Generator (SG) is < 100°F above each of the RCS cold leg temperatures.

3. No more than 2 RCPs may be in operation with RCS cold leg temperature ≤ 200°F. No more than 3 RCPs may be in operation with RCS cold leg temperature > 200°F but ≤ 500°F.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RCS loop inoperable. AND Two SDC trains inoperable.	A.1 Initiate action to restore a second loop or train to OPERABLE status.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required SDC train inoperable. AND Two required RCS loops inoperable.	B.1 Be in MODE 5.	24 hours
C. No RCS loop or SDC train OPERABLE. OR No RCS loop or SDC train in operation.	C.1 Suspend all operations involving reduction of RCS boron concentration. AND C.2 Initiate action to restore one loop or train to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.6.1	Verify one RCS loop or SDC train is in operation.	12 hours
SR 3.4.6.2	Verify secondary side water level in required SG(s) is ≥ 25%.	12 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.6.3	Verify correct breaker alignment and indicated power available to the required pump that is not in operation.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops – MODE 5, Loops Filled

LCO 3.4.7 One Shutdown Cooling (SDC) train shall be OPERABLE and in operation, and either:

a. One additional SDC train shall be OPERABLE; or

b. The secondary side water level of each Steam Generator (SG) shall be ≥ 25%.

----------NOTES----------

1. The SDC pump of the train in operation may be de-energized for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause reduction of the RCS boron concentration; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. One required SDC train may be inoperable for up to 2 hours for surveillance testing provided that the other SDC train is OPERABLE and in operation.

3. No Reactor Coolant Pump (RCP) shall be started with one or more of the RCS cold leg temperatures ≤ 214°F during cooldown, or ≤ 291°F during heatup unless the secondary side water temperature in each SG is < 100°F above each of the RCS cold leg temperatures.

4. No more than 2 RCPs may be in operation with RCS cold leg temperature ≤ 200°F. No more than 3 RCPs may be in operation with RCS cold leg temperature > 200°F but ≤ 500°F.

5. All SDC trains may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One SDC train inoperable. AND Any SG with secondary side water level not within limit.	A.1	Initiate action to restore a second SDC train to OPERABLE status.	Immediately
	OR		
	A.2	Initiate action to restore SG secondary side water levels to within limits.	Immediately
B. Required SDC train inoperable. OR No SDC train in operation.	B.1	Suspend all operations involving reduction in RCS boron concentration.	Immediately
	AND		
	B.2	Initiate action to restore one SDC train to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Verify one SDC train is in operation.	12 hours
SR 3.4.7.2	Verify required SG secondary side water level is ≥ 25%.	12 hours
SR 3.4.7.3	Verify correct breaker alignment and indicated power available to the required SDC pump that is not in operation.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops – MODE 5, Loops Not Filled

LCO 3.4.8 Two Shutdown Cooling (SDC) trains shall be OPERABLE and one SDC train shall be in operation.

----------NOTES----------

1. All SDC pumps may be de-energized for ≤ 1 hour per 8 hour period:

   a. The core outlet temperature is maintained > 10°F below saturation temperature;

   b. No operations are permitted that would cause a reduction of the RCS boron concentration; and

   c. No draining operations to further reduce the RCS water volume are permitted.

2. One SDC train may be inoperable for ≤ 2 hours for surveillance testing provided the other SDC train is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SDC train inoperable.	A.1 Initiate action to restore SDC train to OPERABLE status.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required SDC trains inoperable. OR No SDC train in operation.	B.1 Suspend all operations involving reduction of RCS boron concentration. AND B.2 Initiate action to restore one SDC train to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	Verify one SDC train is in operation.	12 hours
SR 3.4.8.2	Verify correct breaker alignment and indicated power available to the required SDC pump that is not in operation.	7 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.9 The pressurizer shall be OPERABLE with:

a. Pressurizer water level ≥ 27% and ≤ 56%; and

b. Two groups of pressurizer heaters OPERABLE with the capacity of each group ≥ 125 kW and capable of being powered from an emergency power supply.

APPLICABILITY: MODES 1, 2, and 3.

----------NOTE----------
The pressurizer water level limit does not apply during:

a. THERMAL POWER ramp > 5% RTP per minute; or
b. THERMAL POWER step > 10% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Pressurizer water level not within limit.	A.1	Be in MODE 3 with reactor trip breakers open.	6 hours
	AND		
	A.2	Be in MODE 4.	12 hours
B. One required group of pressurizer heaters inoperable.	B.1	Restore required group of pressurizer heaters to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is ≥ 27% and ≤ 56%.	12 hours
SR 3.4.9.2	Verify capacity of each required group of pressurizer heaters ≥ 125 kW.	92 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Safety Valves - Modes 1, 2 and 3

LCO 3.4.10 Four pressurizer safety valves shall be OPERABLE with lift settings ≥ 2450.25 psia and ≤ 2549.25 psia.

APPLICABILITY: MODES 1, 2, and 3.

----------NOTE----------
The lift settings are not required to be within LCO limits during MODES 3 and 4 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for 72 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One pressurizer safety valve inoperable.	A.1	Restore valve to OPERABLE status.	15 minutes
B. Required Action and associated Completion Time not met. OR Two or more pressurizer safety valves inoperable.	B.1 AND B.2	Be in MODE 3. Be in MODE 4	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.10.1	Verify each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be within ± 1%.	In accordance with the Inservice Testing Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Safety Valves-MODE 4

LCO 3.4.11 One pressurizer safety valve shall be OPERABLE with a lift setting ≥ 2450.25 psia and ≤ 2549.25 psia.

APPLICABILITY: MODE 4 with all RCS cold leg temperatures > 214°F during cooldown, or

MODE 4 with all RCS cold leg temperatures > 291°F during heatup.

----------NOTE----------
The lift settings are not required to be within LCO limits during MODES 3 and 4 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for 72 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. All pressurizer safety valves inoperable.	A.1	Be in MODE 4 with one Shutdown Cooling System suction line relief valve in service.	Immediately
	AND		
	A.2	Perform SR 3.4.11.2 and SR 3.4.11.3 for the required Shutdown Cooling System suction line relief valve to comply with Action A.1.	Immediately
	AND		
	A.3	Be in MODE 4 with all RCS cold leg temperatures ≤ 214°F during cooldown or ≤ 291°F during heatup.	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.1	Verify the required pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be within ± 1%.	In accordance with the Inservice Testing Program
SR 3.4.11.2	----------NOTE---------- Only required to be performed when a Shutdown Cooling System suction line relief valve is being used for overpressure protection. ---------- Verify the required Shutdown Cooling System suction line relief valve aligned to provide overpressure protection for the RCS.	12 hours for unlocked, not sealed, or otherwise not secured open pathway vent valve(s) <u>AND</u> 31 days for locked, sealed, or otherwise secured open pathway vent valve(s)
SR 3.4.11.3	Verify the required Shutdown Cooling System suction line relief valve OPERABLE with the required setpoint.	In accordance with the Inservice Testing Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Pressurizer Vents

LCO 3.4.12 Four pressurizer vent paths shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and MODE 4 with RCS pressure ≥ 385 psia.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Two or three required pressurizer vent paths inoperable.	A.1	Restore required pressurizer vent paths to OPERABLE status.	72 hours
B. All pressurizer vent paths inoperable.	B.1	Restore one pressurizer vent path to OPERABLE status.	6 hours
C. Required Action and associated Completion Time of Condition A, or B not met.	C.1	Be in MODE 3.	6 hours
	AND		
	C.2	Be in MODE 4 with RCS pressure < 385 psia.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.12.1	Perform a complete cycle of each Pressurizer Vent Valve.	18 months
SR 3.4.12.2	Verify flow through each pressurizer vent path.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 Low Temperature Overpressure Protection (LTOP) System

LCO 3.4.13 An LTOP System shall be OPERABLE consisting of:

a. Two OPERABLE Shutdown Cooling System suction line relief valves with lift settings ≤ 467 psig aligned to provide overpressure protection for the RCS; or

b. The RCS depressurized and an RCS vent of ≥ 16 square inches.

----------NOTE----------
No RCP shall be started unless the secondary side water temperature in each steam generator (SG) is ≤ 100°F above each of the RCS cold leg temperatures.

APPLICABILITY: MODE 4 when any RCS cold leg temperature is ≤ 214°F during cooldown,
MODE 4 when any RCS cold leg temperature is ≤ 291°F during heatup,
MODE 5,
MODE 6 when the reactor vessel head is on.

----------NOTE----------
When one or more cold legs reach 214°F, this LCO remains applicable during periods of steady state temperature conditions until all RCS cold leg temperature reach 291°F. If a cooldown is terminated prior to reaching 214°F and a heatup is commenced, this LCO is applicable until all RCS cold leg temperatures reach 291°F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required Shutdown Cooling System suction line relief valve inoperable in MODE 4.	----------NOTE---------- LCO 3.0.4 is not applicable ----------	
	A.1 Restore required Shutdown Cooling System suction line relief valve to OPERABLE status.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One required Shutdown Cooling System suction line relief valve inoperable in MODE 5 or 6.	B.1 Restore required Shutdown Cooling System suction line relief valve to OPERABLE status.	24 hours
C. Two required Shutdown Cooling System suction line relief valves inoperable. OR Required Action and associated Completion Time of Condition A, or B not met.	C.1 Depressurize RCS and establish RCS vent of ≥ 16 square inches.	8 hours

SURVEILLANCE		FREQUENCY
SR 3.4.13.1	Verify RCS Vent ≥ 16 square inches is open.	12 hours for unlocked, not sealed, or otherwise not secured open vent pathway(s) AND 31 days for locked, sealed, or otherwise secured open vent pathway(s)
SR 3.4.13.2	Verify each Shutdown Cooling System suction line relief valve aligned to provide overpressure protection for the RCS.	12 hours for unlocked, not sealed, or otherwise not secured open pathway vent valve(s) AND 31 days for locked, sealed, or otherwise secured open pathway vent valve(s).
SR 3.4.13.3	Verify each Shutdown Cooling System suction line relief valve OPERABLE with the required setpoint.	In accordance with the Inservice Testing Program.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.14 RCS Operational LEAKAGE

LCO 3.4.14 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE;

b. 1 gpm unidentified LEAKAGE;

c. 10 gpm identified LEAKAGE;

d. 1 gpm total primary to secondary LEAKAGE through all steam generators (SGs); and,

e. 720 gallons per day primary to secondary LEAKAGE through any one SG.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE.	A.1 Reduce LEAKAGE to within limits.	4 hours
B. Required Action and associated Completion Time of Condition A not met. OR Pressure boundary LEAKAGE exists.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours
C. One or more SGs inoperable.	C.1 Enter 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.14.1	----------NOTE---------- Not required to be performed in MODE 3 or 4 until 12 hours of steady state operation. ---------- Perform RCS water inventory balance.	-----NOTE------ Only required to be performed during steady state operation ---------- 72 hours
SR 3.4.14.2	Verify SG tube integrity is in accordance with the Steam Generator Tube Surveillance Program.	In accordance with the Steam Generator Tube Surveillance Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Pressure Isolation Valve (PIV) Leakage

LCO 3.4.15 Leakage from each RCS PIV shall be within limits.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4, except valves in the shutdown cooling (SDC) flow path when in, or during the transition to or from, the SDC mode of operation.

ACTIONS

----------NOTES----------
1. Separate Condition entry is allowed for each flow path.
2. Enter applicable Conditions and Required Actions for systems made inoperable by an inoperable PIV.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more flow paths with leakage from one or more RCS PIVs not within limit	----------NOTE---------- Each valve used to satisfy Required Action A.1 and required Action A.2 must have been verified to meet SR 3.4.15.1 and be on the RCS pressure boundary. ----------	
	A.1 Isolate the high pressure portion of the affected system from the low pressure portion by use of one closed manual, deactivated automatic, or check valve.	4 hours
	AND	
	A.2 Restore RCS PIV to within limits	72 hours

(continued)

ACTIONS (Continued)

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.15.1	----------NOTES---------- 1. Not required to be performed in MODES 3 and 4. 2. Not required to be performed on the RCS PIVs located in the SDC flow path when in the shutdown cooling mode of operation. 3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided. ---------- Verify leakage from each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ 2230 psia and ≤ 2270 psia.	18 months AND Prior to entering MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months, except for SDC PIVs AND

(continued)

SURVEILLANCE REQUIREMENTS (Continued)

SURVEILLANCE		FREQUENCY
SR 3.4.15.1 (continued)		Within 24 hours following valve actuation due to automatic or manual action or flow through the valve, except for SDC PIVs.
SR 3.4.15.2	Verify SDC System open permissive interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ 410 psia.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Leakage Detection Instrumentation

LCO 3.4.16 Both of the following RCS leakage detection instrumentation shall be OPERABLE:

a. One containment sump monitor; and

b. One containment atmosphere radioactivity monitor (gaseous and particulate).

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required containment sump monitor inoperable.	----------NOTE---------- LCO 3.0.4 is not applicable. ----------	
	A.1 Perform SR 3.4.14.1.	Once per 24 hours
	AND	
	A.2 Restore containment sump monitor to OPERABLE status.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required containment atmosphere radioactivity monitor inoperable.	----------NOTE---------- LCO 3.0.4 is not applicable. ----------	
	B.1.1 Analyze grab samples of the containment atmosphere.	Once per 24 hours
	OR	
	B.1.2 Perform SR 3.4.14.1.	Once per 24 hours
	AND	
	B.2 Restore required containment atmosphere radioactivity monitor to OPERABLE status.	30 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours
	AND	
	C.2 Be in MODE 5.	36 hours
D. All required monitors inoperable.	D.1 Enter LCO 3.0.3	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.16.1	Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor.	12 hours
SR 3.4.16.2	Perform CHANNEL FUNCTIONAL TEST of the required containment atmosphere radioactivity monitor.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.16.3	Perform CHANNEL CALIBRATION of the required containment sump monitor.	18 months
SR 3.4.16.4	Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.	18 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.17 RCS Specific Activity

LCO 3.4.17 The specific activity of the reactor coolant shall be within limits.

APPLICABILITY: MODES 1 and 2,
MODE 3 with RCS cold leg temperature (T_{cold}) ≥ 500°F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 > 1.0 μCi/gm.	----------NOTE---------- LCO 3.0.4 is not applicable. ----------	
	A.1 Verify DOSE EQUIVALENT I-131 within the acceptable region of Figure 3.4.17-1.	Once per 4 hours
	AND	
	A.2 Restore DOSE EQUIVALENT I-131 to within limit.	48 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. OR DOSE EQUIVALENT I-131 in the unacceptable region of Figure 3.4.17-1.	B.1 Be in MODE 3 with T_{cold} < 500°F.	6 hours
C. Gross specific activity of the reactor coolant not within limit.	C.1 Perform SR 3.4.17.2. AND C.2 Be in MODE 3 with T_{cold} < 500°F.	4 hours 6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.17.1	Verify reactor coolant gross specific activity ≤ 100/$\bar{E}$ μCi/gm.	7 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.17.2	Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 1.0 μCi/gm.	-------NOTE------ Only required to be performed in MODE 1. ---------- 14 days AND Between 2 and 6 hours after THERMAL POWER change of ≥ 15% RTP within a 1 hour period
SR 3.4.17.3	----------NOTE---------- Not required to be performed until 31 days after a minimum of 2 EFPD and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours. ---------- Determine $\bar{E}$ from a sample taken in MODE 1 after a minimum of 2 EFPD and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	184 days

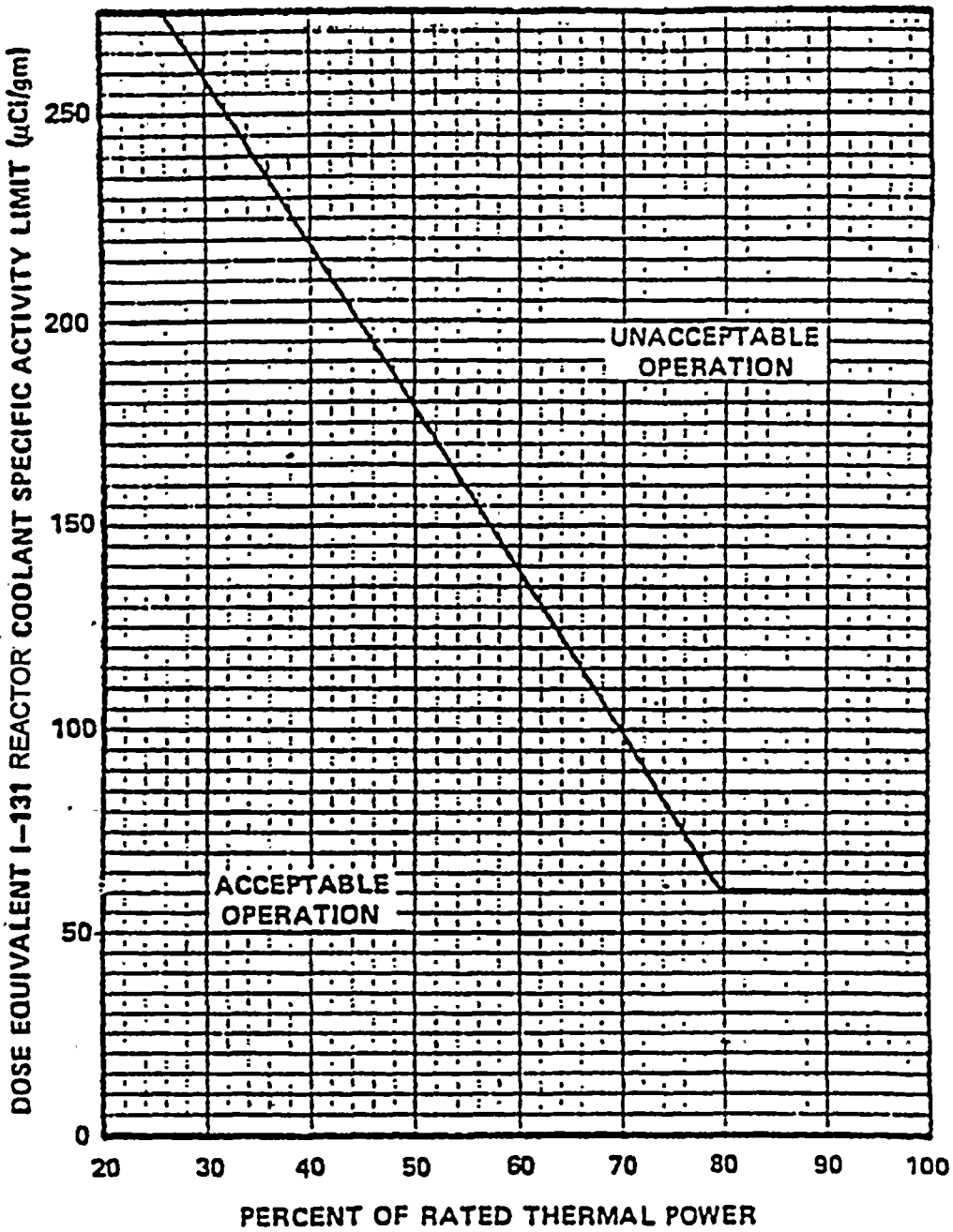


Figure 3.4.17-1 (page 1 of 1)
Reactor Coolant DOSE EQUIVALENT I-131 Specific Activity Limit Versus Percent of RATED THERMAL POWER With Reactor Coolant Specific Activity > 1.0 µCi/gm DOSE EQUIVALENT I-131

SMOOTH COPY
ITS SECTION 3.4 - BASES

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

BASES

BACKGROUND

These Bases address requirements for maintaining RCS pressure, temperature, and flow rate within limits assumed in the safety analyses. The safety analyses (Ref. 1) of normal operating conditions and anticipated operational occurrences assume initial conditions within the normal steady state envelope. The limits placed on DNB related parameters ensure that these parameters will not be less conservative than were assumed in the analyses and thereby provide assurance that the minimum Departure from Nucleate Boiling Ratio (DNBR) will meet the required criteria for each of the transients analyzed.

The LCO limits for minimum and maximum RCS pressures as measured at the pressurizer are consistent with operation within the nominal operating envelope and are bounded by those used as the initial pressures in the analyses.

The LCO limit for minimum and maximum RCS cold leg temperatures are in accordance with the area of acceptable operation shown in Figure 3.4.1-1, are consistent with operation at the indicated power level, and are bounded by those used as the initial temperatures in the analyses.

The LCO limit for minimum RCS flow rate is bounded by those used as the initial flow rates in the analyses. The RCS flow rate is not expected to vary during plant operation with all pumps running.

APPLICABLE SAFETY ANALYSES

The requirements of LCO 3.4.1 represent the initial conditions for DNB limited transients analyzed in the safety analyses (Ref. 1). The safety analyses have shown that transients initiated from the limits of this LCO will meet the DNBR criterion of ≥ 1.3. This is the acceptance limit for the RCS DNB parameters. Changes to the facility that could impact these parameters must be assessed for their impact on the DNBR criterion.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The transients analyzed for include loss of coolant flow events and dropped or stuck Control Element Assembly (CEA) events. A key assumption for the analysis of these events is that the core power distribution is within the limits of LCO 3.1.7, "Regulating CEA Insertion Limits"; LCO 3.1.8, "Part Length CEA Insertion Limits"; LCO 3.2.3, "AZIMUTHAL POWER TILT (T_q)"; and LCO 3.2.5, "AXIAL SHAPE INDEX (ASI). The safety analyses are performed over the following range of initial values: RCS pressure 2105-2320 psia, core inlet temperature 548-572°F, and reactor vessel inlet coolant flow rate > 95%.

The RCS DNB limits satisfy Criterion 2 of 10 CFR 50.56(c)(2)(ii).

LCO

This LCO specifies limits on the monitored process variables—RCS pressurizer pressure, RCS cold leg temperature, and RCS total flow rate—to ensure that the core operates within the limits assumed for the plant safety analyses. Operating within these limits will result in meeting the DNBR criterion in the event of a DNB limited transient.

The LCO numerical value for minimum flow rate is given for the measurement location but has not been adjusted for instrument error. Plant specific limits of instrument error are established by the plant staff to meet the operational requirements of minimum flow rate.

APPLICABILITY

In MODE 1 for RCS flow rate, MODES 1 and 2 for RCS pressurizer pressure, Mode 1 for RCS cold leg temperature, and MODE 2 with $K_{eff} \geq 1$ for RCS cold leg temperature, the limits must be maintained during steady state operation in order to ensure that DNBR criteria will be met in the event of an unplanned loss of forced coolant flow or other DNB limited transient. In all other MODES, the power level is low enough so that DNBR is not a concern.

(continued)

BASES

APPLICABILITY (continued)

A Note has been added to indicate the limit on pressurizer pressure may be exceeded during short term operational transients such as a THERMAL POWER ramp increase of > 5% RTP per minute or a THERMAL POWER step increase of > 10% RTP. These conditions represent short term perturbations where actions to control pressure variations might be counterproductive. Also, DNBR margin exists to offset the temporary pressure variations.

Another set of limits on DNB related parameters is provided in Safety Limit (SL) 2.1.1, "Reactor Core Safety Limits." Those limits are less restrictive than the limits of this LCO, but violation of SLs merits a stricter, more severe Required Action. Should a violation of this LCO occur, the operator should check whether or not an SL may have been exceeded.

ACTIONS

A.1

RCS flow rate is not a controllable parameter and is not expected to vary during steady state operation. If the flow rate is not within the LCO limit, then power must be reduced, as required by Required Action B.1, to restore DNB margin and eliminate the potential for violation of the accident analysis bounds.

The 2 hour Completion Time for restoration of RCS flow rate provides sufficient time to determine the cause of the off normal condition, and to restore the readings within limits. The Completion Time is based on plant operating experience.

B.1

If Required Action A.1 is not met within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 2 within 6 hours. In MODE 2, the reduced power condition eliminates the potential for violation of the accident analysis bounds.

(continued)

BASES

ACTIONS

B.1 (continued)

Six hours is a reasonable time that permits the plant power to be reduced at an orderly rate in conjunction with even control of Steam Generator (SG) heat removal.

C.1

Pressurizer pressure and cold leg temperature are controllable and measurable parameter(s). If a parameter is not within the LCO limits, action must be taken to restore the parameter.

The 2 hour Completion Time is based on plant operating experience that shows that these parameter(s) can be restored in this time period.

D.1

If Required Action C.1 is not met within the associated Completion Time, place the plant in MODE 3. In MODE 3 the potential for violation of the DNB limits is greatly reduced.

The 6 hour Completion Time is a reasonable time that permits power reduction at an orderly rate in conjunction with even control of SG heat removal.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.1.1

Since Required Action C.1 allows a Completion Time of 2 hours to restore parameters that are not within limits, the 12 hour Surveillance Frequency for pressurizer pressure is sufficient to ensure that the pressure can be restored to a normal operation, steady state condition following load changes and other expected transient operations. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess for potential degradation and verify operation is within safety analysis assumptions.

SR 3.4.1.2

Since Required Action C.1 allows a Completion Time of 2 hours to restore parameters that are not within limits, the 12 hour Surveillance Frequency for cold leg temperature is sufficient to ensure that the RCS coolant temperature can be restored to a normal operation, steady state condition following load changes and other expected transient operations. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess for potential degradation and to verify operation is within safety analysis assumptions.

SR 3.4.1.3

The 12 hour Surveillance Frequency for RCS total flow rate is performed using the installed flow instrumentation. The 12 hour Frequency has been shown by operating experience to be sufficient to assess for potential degradation and to verify operation is within safety analysis assumptions.

This SR is modified by a Note that only requires performance of this SR in MODE 1. The Note is necessary to allow measurement of RCS flow rate at normal operating conditions at power with all RCPs running.

REFERENCES

1. UFSAR, Section 15.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.2 RCS Minimum Temperature for Criticality

BASES

BACKGROUND

Establishing the value for the minimum temperature for reactor criticality is based upon considerations for:

a. Operation within the existing instrumentation ranges and accuracies;

b. Operation within the bounds of the existing accident analyses; and

c. Operation with the reactor vessel above its minimum nil ductility reference temperature when the reactor is critical.

The reactor coolant moderator temperature coefficient used in core operating and accident analysis is typically defined for the normal operating temperature range (550°F to 611°F). Nominal T_{cold} for making the reactor critical is 565°F. Safety and operating analyses for lower temperature have not been made.

APPLICABLE SAFETY ANALYSES

There are no accident analyses that dictate the minimum temperature for criticality, but all low power safety analyses assume initial temperatures near the 545°F limit (Ref. 1).

The RCS minimum temperature for criticality satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The purpose of the LCO is to prevent criticality below the minimum normal operating temperature (550°F) and to prevent operation in an unanalyzed condition.

The LCO is only applicable in MODES 1 and 2 with $K_{eff} \geq 1.0$ and provides a reasonable distance to the limit of 545°F. This allows adequate time to trend its approach and take corrective actions prior to exceeding the limit.

(continued)

BASES (continued)

APPLICABILITY

The reactor has been designed and analyzed to be critical in MODES 1 and 2 only and in accordance with this specification. Criticality is not permitted in any other MODE. Therefore, this LCO is applicable in MODE 1, and MODE 2 when $K_{eff} \geq 1.0$. Monitoring is required at or below a T_{cold} of 550°F. The no load temperature of 565°F is maintained by the Steam Bypass Control System.

ACTIONS

A.1

If T_{cold} is below 545°F, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 30 minutes. Rapid reactor shutdown can be readily and practically achieved within a 30 minute period. The allowed time reflects the ability to perform this action and to maintain the plant within the analyzed range.

SURVEILLANCE REQUIREMENTS

SR 3.4.2.1

T_{cold} is required to be verified ≥ 545°F once within 30 minutes after any RCS loop T_{cold} < 550°F and every 30 minutes thereafter. The 30 minute time period is frequent enough to prevent inadvertent violation of the LCO. A Note states the Surveillance is required whenever the reactor is critical and temperature is below 550°F. A second Frequecy requires T_{cold} to be verified within 30 minutes of reaching criticality. This will require repeated performance of SR 3.4.2.1 since a reactor startup takes longer than 30 minutes. The 30 minute time period is frequent enough to prevent inadvertent violation of the LCO.

REFERENCES

1. UFSAR, Section 15.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.3 RCS Pressure and Temperature (P/T) Limits

BASES

BACKGROUND

All components of the RCS are designed to withstand effects of cyclic loads due to system pressure and temperature changes. These loads are introduced by startup (heatup) and shutdown (cooldown) operations, power transients, and reactor trips. This LCO limits the pressure and temperature changes during RCS heatup and cooldown, within the design assumptions and the stress limits for cyclic operation.

Each P/T limit curve defines an acceptable region for normal operation. The usual use of the curves is operational guidance during heatup or cooldown maneuvering, when pressure and temperature indications are monitored and compared to the applicable curve to determine that operation is within the allowable region.

The LCO establishes operating limits that provide a margin to brittle failure of the reactor vessel and piping of the Reactor Coolant Pressure Boundary (RCPB). The vessel is the component most subject to brittle failure, and the LCO limits apply mainly to the vessel. The limits do not apply to the pressurizer, which has different design characteristics and operating functions.

10 CFR 50, Appendix G (Ref. 1), requires the establishment of P/T limits for material fracture toughness requirements of the RCPB materials. Reference 1 requires an adequate margin to brittle failure during normal operation, anticipated operational occurrences, and system hydrostatic tests. It mandates the use of the ASME Code, Section III, Appendix G (Ref. 2).

The actual shift in the RT_{NDT} of the vessel material will be established periodically by removing and evaluating the irradiated reactor vessel material specimens, in accordance with ASTM E 185 (Ref. 3) and Appendix H of 10 CFR 50 (Ref. 4). The operating P/T limit curves will be adjusted, as necessary, based on the evaluation findings and the recommendations of Reference 2.

(continued)

BASES

BACKGROUND (continued)

The P/T limit curves are composite curves established by superimposing limits derived from stress analyses of those portions of the reactor vessel and head that are the most restrictive. At any specific pressure, temperature, and temperature rate of change, one location within the reactor vessel will dictate the most restrictive limit. Across the span of the P/T limit curves, different locations are more restrictive, and, thus, the curves are composites of the most restrictive regions.

The heatup curve represents a different set of restrictions than the cooldown curve because the directions of the thermal gradients through the vessel wall are reversed. The thermal gradient reversal alters the location of the tensile stress between the outer and inner walls.

The criticality limit includes the Reference 1 requirement that the limit be no less than 40°F above the heatup curve or the cooldown curve and not less than the minimum permissible temperature for inservice leak and hydrostatic (ISLH) testing. However, the criticality limit is not operationally limiting; a more restrictive limit exists in LCO 3.4.2, "RCS Minimum Temperature for Criticality."

The consequence of violating the LCO limits is that the RCS has been operated under conditions that can result in brittle failure of the RCPB, possibly leading to a nonisolable leak or loss of coolant accident. In the event these limits are exceeded, an evaluation must be performed to determine the effect on the structural integrity of the RCPB components. The ASME Code, Section XI, Appendix E (Ref. 5), provides a recommended methodology for evaluating an operating event that causes an excursion outside the limits.

APPLICABLE SAFETY ANALYSES

The P/T limits are not derived from Design Basis Accident (DBA) Analyses. They are prescribed during normal operation to avoid encountering pressure, temperature, and temperature rate of change conditions that might cause undetected flaws to propagate and cause nonductile failure of the RCPB, an unanalyzed condition.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

Since the P/T limits are not derived from any DBA, there are no acceptance limits related to the P/T limits. Rather, the P/T limits are acceptance limits themselves since they preclude operation in an unanalyzed condition.

The RCS P/T limits satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The two elements of this LCO are:

a. The limit curves for heatup, cooldown, and ISLH testing; and

b. Limits on the rate of change of temperature.

The LCO limits apply to all components of the RCS, except the pressurizer.

These limits define allowable operating regions and permit a large number of operating cycles while providing a wide margin to nonductile failure.

The limits for the rate of change of temperature control the thermal gradient through the vessel wall and are used as inputs for calculating the heatup, cooldown, and ISLH testing P/T limit curves. Thus, the LCO for the rate of change of temperature restricts stresses caused by thermal gradients and also ensures the validity of the P/T limit curves.

Violating the LCO limits places the reactor vessel outside of the bounds of the stress analyses and can increase stresses in other RCPB components. The consequences depend on several factors, as follows:

a. The severity of the departure from the allowable operating P/T regime or the severity of the rate of change of temperature;

b. The length of time the limits were violated (longer violations allow the temperature gradient in the thick vessel walls to become more pronounced); and

(continued)

BASES

LCO (continued)

c. The existences, sizes, and orientations of flaws in the vessel material.

APPLICABILITY

The RCS P/T limits Specification provides a definition of acceptable operation for prevention of nonductile failure in accordance with 10 CFR 50, Appendix G (Ref. 2). Although the P/T limits were developed to provide guidance for operation during heatup or cooldown (MODES 3, 4, and 5) or ISLH testing, their Applicability is at all times, except when reactor vessel head is fully detensioned such that the RCS cannot be pressurized, in keeping with the concern for nonductile failure. The limits do not apply to the pressurizer.

During MODES 1 and 2, other Technical Specifications provide limits for operation that can be more restrictive than or can supplement these P/T limits. LCO 3.4.1, "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits"; LCO 3.4.2, "RCS Minimum Temperature for Criticality"; and Safety Limit 2.1, "Safety Limits," also provide operational restrictions for pressure and temperature and maximum pressure. Furthermore, MODES 1 and 2 are above the temperature range of concern for nonductile failure, and stress analyses have been performed for normal maneuvering profiles, such as power ascension or descent.

The actions of this LCO consider the premise that a violation of the limits occurred during normal plant maneuvering. Severe violations caused by abnormal transients, at times accompanied by equipment failures, may also require additional actions from emergency operating procedures.

ACTIONS

A.1 and A.2

Operation outside the P/T limits must be corrected so that the RCPB is returned to a condition that has been verified by stress analyses.

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

The 30 minute Completion Time reflects the urgency of restoring the parameters to within the analyzed range. Most violations will not be severe, and the activity can be accomplished in this time in a controlled manner.

Besides restoring operation to within limits, an evaluation is required to determine if RCS operation can continue. The evaluation must verify the RCPB integrity remains acceptable and must be completed before continuing operation. Several methods may be used, including comparison with pre-analyzed transients in the stress analyses, new analyses, or inspection of the components.

ASME Code, Section XI, Appendix E (Ref. 5), may be used to support the evaluation. However, its use is restricted to evaluation of the vessel beltline.

The 72 hour Completion Time is reasonable to accomplish the evaluation. The evaluation for a mild violation is possible within this time, but more severe violations may require special, event specific stress analyses or inspections. A favorable evaluation must be completed before continuing to operate.

Condition A is modified by a Note requiring Required Action A.2 to be completed whenever the Condition is entered. The Note emphasizes the need to perform the evaluation of the effects of the excursion outside the allowable limits. Restoration alone per Required Action A.1 is insufficient because higher than analyzed stresses may have occurred and may have affected the RCPB integrity.

B.1 and B.2

If a Required Action and associated Completion Time of Condition A are not met, the plant must be placed in a lower MODE because:

a. The RCS remained in an unacceptable P/T region for an extended period of increased stress; or

(continued)

BASES

ACTIONS

B.1 and B.2 (continued)

b. A sufficiently severe event caused entry into an unacceptable region.

Either possibility indicates a need for more careful examination of the event, best accomplished with the RCS at reduced pressure and temperature. With reduced pressure and temperature conditions, the possibility of propagation of undetected flaws is decreased.

Pressure and temperature are reduced by placing the plant in MODE 3 within 6 hours and in MODE 5 with RCS pressure < 500 psia within 36 hours.

The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

C.1 and C.2

The actions of this LCO, anytime other than in MODE 1, 2, 3, or 4, consider the premise that a violation of the limits occurred during normal plant maneuvering. Severe violations caused by abnormal transients, at times accompanied by equipment failures, may also require additional actions from emergency operating procedures. Operation outside the P/T limits must be corrected so that the RCPB is returned to a condition that has been verified by stress analyses.

The Completion Time of "immediately" reflects the urgency of restoring the parameters to within the analyzed range. Most violations will not be severe, and the activity can be accomplished in a short period of time in a controlled manner.

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

Besides restoring operation to within limits, an evaluation is required to determine if RCS operation can continue. The evaluation must verify that the RCPB integrity remains acceptable and must be completed before continuing operation. Several methods may be used, including comparison with pre-analyzed transients in the stress analyses, new analyses, or inspection of the components.

ASME Code, Section XI, Appendix E (Ref. 5), may be used to support the evaluation. However, its use is restricted to evaluation of the vessel beltline.

The Completion Time of prior to entering MODE 4 forces the evaluation prior to entering a MODE where temperature and pressure can be significantly increased. The evaluation for a mild violation is possible within several days, but more severe violations may require special, event specific stress analyses or inspections.

Condition C is modified by a Note requiring Required Action C.2 to be completed whenever the Condition is entered. The Note emphasizes the need to perform the evaluation of the effects of the excursion outside the allowable limits. Restoration alone per Required Action C.1 is insufficient because higher than analyzed stresses may have occurred and may have affected the RCPB integrity.

SURVEILLANCE REQUIREMENTS

SR 3.4.3.1

Verification that operation is within limits is required every 30 minutes when RCS pressure and temperature conditions are undergoing planned changes. This Frequency is considered reasonable in view of the control room indication available to monitor RCS status. Also, since temperature rate of change limits are specified in hourly increments, 30 minutes permits assessment and correction for minor deviations within a reasonable time.

Surveillance for heatup, cooldown, or ISLH testing may be discontinued when the definition given in the relevant plant procedure for ending the activity is satisfied.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.3.1 (continued)

This SR is modified by a Note that requires this SR be performed only during RCS system heatup, cooldown, and ISLH testing. No SR is given for criticality operations because LCO 3.4.2 contains a more restrictive requirement.

REFERENCES

1. 10 CFR 50, Appendix G.
2. ASME, Boiler and Pressure Vessel Code, Section III, Appendix G.
3. ASTM E 185-82, July 1982.
4. 10 CFR 50, Appendix H.
5. ASME, Boiler and Pressure Vessel Code, Section XI, Appendix E.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.4 RCS Loops – MODES 1 and 2

BASES

BACKGROUND

The primary function of the RCS is removal of the heat generated in the fuel due to the fission process and transfer of this heat, via the steam generators (SGs), to the secondary plant.

The secondary functions of the RCS include:

a. Moderating the neutron energy level to the thermal state, to increase the probability of fission;

b. Improving the neutron economy by acting as a reflector;

c. Carrying the soluble neutron poison, boric acid;

d. Providing a second barrier against fission product release to the environment; and

e. Removing the heat generated in the fuel due to fission product decay following a unit shutdown.

The RCS configuration for heat transport uses two RCS loops. Each RCS loop contains a SG and two Reactor Coolant Pumps (RCPs). An RCP is located in each of the two SG cold legs. The pump flow rate has been sized to provide core heat removal with appropriate margin to Departure from Nucleate Boiling (DNB) during power operation and for anticipated transients originating from power operation. This Specification requires two RCS loops with both RCPs in operation in each loop. The intent of the Specification is to require core heat removal with forced flow during power operation. Specifying two RCS loops provides the minimum necessary paths (two SGs) for heat removal.

APPLICABLE SAFETY ANALYSES

Safety analyses contain various assumptions for the Design Bases Accident (DBA) initial conditions including RCS pressure, RCS temperature, reactor power level, core parameters, and safety system setpoints. The important

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

aspect for this LCO is the reactor coolant forced flow rate, which is represented by the number of RCS loops in service.

Both transient and steady state analyses have been performed to establish the effect of flow on DNB. The transient or accident analysis for the plant has been performed assuming four RCPs are in operation. The majority of the plant safety analyses are based on initial conditions at high core power or zero power. The accident analyses that are of most importance to RCP operation are the four pump coastdown, single pump locked rotor, single pump (broken shaft or coastdown), and rod withdrawal events (Ref. 1).

Steady state DNB analysis had been performed for the four pump combination. For four pump operation, the steady state DNB analysis, which generates the pressure and temperature and Safety Limit (i.e., the departure from nucleate boiling ratio (DNBR) limit), assumes a maximum power level of 107% RTP. This is the design overpower condition for four pump operation. The 107% value is the accident analysis setpoint of the nuclear overpower (high flux) trip and is based on an analysis assumption that bounds possible instrumentation errors. The DNBR limit defines a locus of pressure and temperature points that result in a minimum DNBR greater than or equal to the critical heat flux correlation limit.

RCS Loops – MODES 1 and 2 satisfy Criteria 2 and 3 of 10 CFR 50.36 (C)(2)(ii).

LCO

The purpose of this LCO is to require adequate forced flow for core heat removal. Flow is represented by having both RCS loops with both RCPs in each loop in operation for removal of heat by the two SGs. To meet safety analysis acceptance criteria for DNB, four pumps are required at rated power.

Each OPERABLE loop consists of two RCPs providing forced flow for heat transport to an SG that is OPERABLE in accordance with the Steam Generator Tube Surveillance Program. SG, and hence RCS loop, OPERABILITY with regard to SG water level is ensured by the Reactor Protection System (RPS) in MODES 1 and 2. A reactor trip places the plant in

(continued)

BASES

LCO (continued)

MODE 3 if any SG level is ≤ 44% wide range level as sensed by the RPS. The minimum water level to declare the SG OPERABLE in MODES 1 or 2 is 44% wide range level.

APPLICABILITY

In MODES 1 and 2, the reactor is critical and thus has the potential to produce maximum THERMAL POWER. Thus, to ensure that the assumptions of the accident analyses remain valid, all RCS loops are required to be OPERABLE and in operation in these MODES to prevent DNB and core damage.

The decay heat production rate is much lower than the full power heat rate. As such, the forced circulation flow and heat sink requirements are reduced for lower, noncritical MODES as indicated by the LCOs for MODES 3, 4, 5, and 6.

Operation in other MODES is covered by:

LCO 3.4.5, "RCS Loops – MODE 3";
LCO 3.4.6, "RCS Loops – MODE 4";
LCO 3.4.7, "RCS Loops – MODE 5, Loops Filled";
LCO 3.4.8, "RCS Loops – MODE 5, Loops Not Filled";
LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation – Low Water Level" (MODE 6).

ACTIONS

A.1

If the requirements of the LCO are not met, the Required Action is to reduce power and bring the plant to MODE 3. This lowers power level and thus reduces the core heat removal needs and minimizes the possibility of violating DNB limits. It should be noted that the reactor will trip and place the plant in MODE 3 as soon as the RPS senses less than four RCPs operating.

The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging safety systems.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.4.1

This SR requires verification every 12 hours that the required number of RCS loops are in operation and circulating reactor coolant. Verification includes flow rate, temperature, or pump status monitoring, which help to ensure that forced flow is providing heat removal while maintaining the margin to DNB. The Frequency of 12 hours has been shown by operating practice to be sufficient to regularly assess degradation and verify operation within safety analyses assumptions. In addition, control room indication and alarms will normally indicate loop status.

REFERENCES

1. UFSAR, Section 15.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.5 RCS Loops – MODE 3

BASES

BACKGROUND

The primary function of the reactor coolant in MODE 3 is removal of decay heat and transfer of this heat, via the Steam Generators (SGs), to the secondary plant fluid. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

In MODE 3, Reactor Coolant Pumps (RCPs) are used to provide forced circulation heat removal during heatup and cooldown. The MODE 3 decay heat removal requirements are low enough that a single RCS loop with one RCP is sufficient to remove core decay heat. However, two RCS loops are required to be OPERABLE to provide redundant paths for decay heat removal. Only one RCP needs to be OPERABLE to declare the associated RCS loop OPERABLE.

Reactor coolant natural circulation is not normally used but is sufficient for core cooling. However, natural circulation does not provide turbulent flow conditions. Therefore, boron reduction in natural circulation is prohibited because mixing to obtain a homogeneous concentration in all portions of the RCS cannot be ensured.

APPLICABLE SAFETY ANALYSES

Analyses have shown that the rod withdrawal event from MODE 3 with one RCS loop in operation is bounded by the rod withdrawal initiated from MODE 2.

Failure to provide heat removal may result in challenges to a fission product barrier. The RCS loops are part of the primary success path that functions or actuates to prevent or mitigate a Design Basis Accident or transient that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier.

RCS Loops – MODE 3 satisfy Criterion 3 of 10 CFR 50.36 (c)(2)(ii).

(continued)

BASES

LCO

The purpose of this LCO is to require two RCS loops to be available for heat removal, thus providing redundancy. The LCO requires the two loops to be OPERABLE with the intent of requiring both SGs to be capable (≥ 25% wide range water level) of transferring heat from the reactor coolant at a controlled rate. Forced reactor coolant flow is the required way to transport heat, although natural circulation flow provides adequate removal. A minimum of one running RCP meets the LCO requirement for one loop in operation.

The Note permits a limited period of operation without RCPs. All RCPs may be de-energized for ≤ 1 hour per 8 hour period. This means that natural circulation has been established. When in natural circulation, a reduction in boron concentration is prohibited because an even concentration distribution throughout the RCS cannot be ensured. The intent is to stop any known or direct positive reactivity additions to the RCS due to dilution. Core outlet temperature is to be maintained at least 10°F below the saturation temperature so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

In MODE 3 it is sometimes necessary to stop all RCPs (e.g., to perform surveillance or startup testing, or to avoid operation below the RCP minimum net positive suction head limit). The time period is acceptable because natural circulation is adequate for heat removal, or the reactor coolant temperature can be maintained subcooled and boron stratification affecting reactivity control is not expected.

An OPERABLE RCS loop (loop 1 or loop 2) consists of at least one associated RCP providing forced flow for heat transport and an associated SG that is OPERABLE in accordance with the Steam Generator Tube Surveillance Program. An RCP is OPERABLE if it is capable of being powered and is able to provide forced flow if required.

APPLICABILITY

In MODE 3, the heat load is lower than at power; therefore, one RCS loop in operation is adequate for transport and heat removal. A second RCS loop is required to be OPERABLE but not in operation for redundant heat removal capability.

(continued)

BASES

APPLICABILITY (continued)

Operation in other MODES is covered by:

LCO 3.4.4 "RCS Loops-MODES 1 and 2";
LCO 3.4.6, "RCS Loops – MODE 4";
LCO 3.4.7, "RCS Loops – MODE 5, Loops Filled";
LCO 3.4.8, "RCS Loops – MODE 5, Loops Not Filled";
LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation – Low Water Level" (MODE 6).

ACTIONS

A.1

If one required RCS loop is inoperable, redundancy for forced flow heat removal is lost. The Required Action is restoration of the required RCS loop to OPERABLE status within a Completion Time of 72 hours. This time allowance is a justified period to be without the redundant, nonoperating loop because a single loop in operation has a heat transfer capability greater than that needed to remove the decay heat produced in the reactor core.

B.1

If restoration is not possible within 72 hours, the unit must be placed in MODE 4 within 12 hours. In MODE 4, the plant may be placed on the SDC System. The Completion Time of 12 hours is compatible with required operation to achieve cooldown and depressurization from the existing plant conditions in an orderly manner and without challenging plant systems.

(continued)

BASES

ACTIONS (continued)

C.1 and C.2

If no RCS loop is OPERABLE or in operation, all operations involving a reduction of RCS boron concentration must be immediately suspended. This is necessary because boron dilution requires forced circulation for proper homogenization. Action to restore one RCS loop to OPERABLE status and operation shall be initiated immediately and continued until one RCS loop is restored to OPERABLE status and operation. The immediate Completion Times reflect the importance of maintaining operation for decay heat removal.

SURVEILLANCE REQUIREMENTS

SR 3.4.5.1

This SR requires verification every 12 hours that the required number of RCS loops are in operation and circulating Reactor Coolant. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess degradation and verify operation within safety analyses assumptions. In addition, control room indication and alarms will normally indicate loop status.

SR 3.4.5.2

This SR requires verification every 12 hours that the secondary side water level in each SG is ≥ 25% wide range. An adequate SG water level is required in order to have a heat sink for removal of the core decay heat from the reactor coolant. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess degradation and verify operation within the safety analyses assumptions.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.5.3

Verification that the required number of RCPs are OPERABLE ensures that the single failure criterion is met and that an additional RCS loop can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power availability to the required RCPs. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

REFERENCES

None.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.6 RCS Loops – MODE 4

BASES

BACKGROUND	In MODE 4, the primary function of the reactor coolant is the removal of decay heat and transfer of this heat to the Steam Generators (SGs) or Shutdown Cooling (SDC) heat exchangers. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid. In MODE 4, either Reactor Coolant Pumps (RCPs) or SDC trains can be used for coolant circulation. The intent of this LCO is to provide forced flow from at least one RCP or one SDC train for decay heat removal and transport. The flow provided by one RCP loop or SDC train is adequate for heat removal. The other intent of this LCO is to require that two paths be available to provide redundancy for heat removal.
APPLICABLE SAFETY ANALYSES	In MODE 4, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RCS loops and SDC trains provide this circulation. RCS Loops – MODE 4 have been identified in 10 CFR. 50.36 (c)(2)(ii) as important contributors to risk reduction.
LCO	The purpose of this LCO is to require that at least two loops or trains, RCS or SDC, be OPERABLE in MODE 4 and one of these loops or trains be in operation. The LCO allows the two loops that are required to be OPERABLE to consist of any combination of RCS and SDC System loops. Any one loop or train in operation provides enough flow to remove the decay heat from the core with forced circulation. An additional loop or train is required to be OPERABLE to provide redundancy for heat removal.

(continued)

BASES

LCO (continued)

Note 1 permits all RCPs and SDC pumps to be de-energized ≤ 1 hour per 8 hour period. This means that natural circulation should be established, after the operating RCP or SDC pump is secured, using the SGs. Depending on decay heat and current RCS temperature, it may be difficult to establish verifiable natural circulation. The Note prohibits boron dilution when forced flow is stopped because an even concentration distribution cannot be ensured. The intent is to stop any known or direct positive reactivity additions to the RCS due to dilution. Core outlet temperature is to be maintained at least 10°F below saturation temperature so that no vapor bubble may form and possibly cause a natural circulation flow obstruction. The response of the RCS without the RCPs or SDC pumps depends on the core decay heat load and the length of time that the pumps are stopped. As decay heat diminishes, the effects on RCS temperature and pressure diminish. Without cooling by forced flow, higher heat loads will cause the reactor coolant temperature and pressure to increase at a rate proportional to the decay heat load. Because pressure can increase, the applicable system pressure limits (Pressure and Temperature (P/T) limits or Low Temperature Overpressure Protection (LTOP) limits) must be observed and forced SDC flow or heat removal via the SGs must be re-established prior to reaching the pressure limit. The circumstances for stopping both RCPs or SDC pumps are to be limited to situations where:

a. Pressure and temperature increases can be maintained well within the allowable pressure (P/T limits and LTOP) and 10°F subcooling limits; or

b. An alternate heat removal path through the SGs is in operation.

Note 2 requires, that before an RCP may be started with any RCS cold leg temperature ≤ 214°F during cooldown, or ≤ 291°F during heatup, that secondary side water temperature (saturation temperature corresponding to SG pressure) in each SG is < 100°F above each of the RCS cold leg temperatures.

Satisfying the above condition will preclude a large pressure surge in the RCS when the RCP is started.

(continued)

BASES

LCO (continued)

Note 3 restricts RCP operation to no more than 2 RCPs with RCS cold leg temperature ≤ 200°F, and no more than 3 RCPs with RCS cold leg temperature >200°F but ≤ 500°F. Satisfying these conditions will maintain the analysis assumptions of the flow induced presure correction factors due to RCP operation (Ref. 1)

An OPERABLE RCS loop consists of at least one OPERABLE RCP and an SG that is OPERABLE in accordance with the Steam Generator Tube Surveillance Program and has the minimum water level specified in SR 3.4.6.2.

Similarly, for the SDC System, an OPERABLE SDC train is composed of an OPERABLE SDC pump (CS or LPSI) capable of providing flow to the SDC heat exchanger for heat removal. RCPs and SDC pumps are OPERABLE if they are capable of being powered and are able to provide flow, if required.

APPLICABILITY

In MODE 4, this LCO applies because it is possible to remove core decay heat and to provide proper boron mixing with either the RCS loops and SGs or the SDC System.

Operation in other MODES is covered by:

LCO 3.4.4 "RCS Loops-MODES 1 and 2";
LCO 3.4.5, "RCS Loops – MODE 3";
LCO 3.4.7, "RCS Loops – MODE 5, Loops Filled";
LCO 3.4.8, "RCS Loops – MODE 5, Loops Not Filled";
LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation – Low Water Level" (MODE 6).

ACTIONS

A.1

If only one required RCS loop is OPERABLE and in operation, redundancy for heat removal is lost. Action must be initiated immediately to restore a second loop to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for decay heat removal.

(continued)

BASES

ACTIONS (continued)

B.1

If only one required SDC train is OPERABLE and in operation, redundancy for heat removal is lost. The plant must be placed in MODE 5 within the next 24 hours. Placing the plant in MODE 5 is a conservative action with regard to decay heat removal. With only one SDC train OPERABLE, redundancy for decay heat removal is lost and, in the event of a loss of the remaining SDC train, it would be safer to initiate that loss from MODE 5 (≤ 210°F) rather than MODE 4 (210°F to 350°F). The Completion Time of 24 hours is reasonable, based on operating experience, to reach MODE 5 from MODE 4, with only one SDC train operating, in an orderly manner and without challenging plant systems.

C.1 and C.2

If no RCS loops or SDC trains are OPERABLE, or in operation, all operations involving reduction of RCS boron concentration must be suspended and action to restore one RCS loop or SDC train to OPERABLE status and operation must be initiated. Boron dilution requires forced circulation for proper mixing, and the margin to criticality must not be reduced in this type of operation. The immediate Completion Times reflect the importance of decay heat removal. The action to restore must continue until one loop or train is restored to operation.

SURVEILLANCE REQUIREMENTS

SR 3.4.6.1

This SR requires verification every 12 hours that one required loop or train is in operation and circulating reactor coolant at a flow rate of greater than or equal to 4000 gpm. This ensures forced flow is providing heat removal. Verification includes flow rate, temperature, or pump status monitoring. The 12 hour Frequency has been shown by operating practice to be sufficient to regularly assess RCS loop status. In addition, control room indication and alarms will normally indicate loop status.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.6.2

This SR requires verification every 12 hours of secondary side water level in the required SG(s) ≥ 25% wide range. An adequate SG water level is required in order to have a heat sink for removal of the core decay heat from the reactor coolant. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess degradation and verify operation within safety analyses assumptions.

SR 3.4.6.3

Verification that the required pump is OPERABLE ensures that an additional RCS loop or SDC train can be placed in operation, if needed to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pumps. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

REFERENCES

1. PVNGS Operating License Amendments 52, 38 and 24 for Units 1, 2 and 3, respectively, and associated NRC Safety Evaluation dated July 25, 1990.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.7 RCS Loops – MODE 5, Loops Filled

BASES

BACKGROUND

In MODE 5 with the RCS loops filled, the primary function of the reactor coolant is the removal of decay heat and transfer this heat either to the Steam Generator (SG) secondary side coolant or the essential cooling water via the Shutdown Cooling (SDC) heat exchangers. While the principal means for decay heat removal is via the SDC System, the SGs are specified as a backup means for redundancy. Even though the SGs cannot produce steam in this MODE, they are capable of being a heat sink due to their large contained volume of secondary side water. As long as the SG secondary side water is at a lower temperature than the reactor coolant, heat transfer will occur. The rate of heat transfer is directly proportional to the temperature difference. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

In MODE 5 with RCS loops filled, the SDC trains are the principal means for decay heat removal. The number of trains in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one SDC train for decay heat removal and transport. The flow provided by one SDC train is adequate for decay heat removal. The other intent of this LCO is to require that a second path be available to provide redundancy for decay heat removal.

The LCO provides for redundant paths of decay heat removal capability. The first path can be an SDC train that must be OPERABLE and in operation. The second path can be another OPERABLE SDC train, or through the SGs, each having an adequate water level.

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The SDC trains provide this circulation.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

RCS Loops – MODE 5 (Loops Filled) have been identified in 10 CFR 50.36 (c)(2)(ii) as important contributors to risk reduction.

LCO

The purpose of this LCO is to require at least one of the SDC trains be OPERABLE and in operation with an additional SDC train OPERABLE or secondary side water level of each SG shall be ≥ 25% wide range level. One SDC train provides sufficient forced circulation to perform the safety functions of the reactor coolant under these conditions. The second SDC train is normally maintained OPERABLE as a backup to the operating SDC train to provide redundant paths for decay heat removal. However, if the standby SDC train is not OPERABLE, a sufficient alternate method to provide redundant paths for decay heat removal is two SGs with their secondary side water levels ≥ 25% wide range. Should the operating SDC train fail, the SGs could be used to remove the decay heat.

Note 1 permits all SDC pumps to be de-energized ≤ 1 hour per 8 hour period. The circumstances for stopping both SDC trains are to be limited to situations where pressure and temperature increases can be maintained well within the allowable pressure (pressure and temperature and low temperature overpressure protection) and 10°F subcooling limits, or an alternate heat removal path through the SG(s) is in operation.

This LCO is modified by a Note that prohibits boron dilution when SDC forced flow is stopped because an even concentration distribution cannot be ensured. The intent is to stop any known or direct positive reactivity changes to the RCS due to dilution. Core outlet temperature is to be maintained at least 10°F below saturation temperature, so that no vapor bubble would form and possibly cause a natural circulation flow obstruction. In this MODE, the SG(s) can be used as the backup for SDC heat removal. To ensure their availability, the RCS loop flow path is to be maintained with subcooled liquid.

(continued)

BASES

LCO (continued)

In MODE 5, it is sometimes necessary to stop all RCP or SDC forced circulation. This is permitted to change operation from one SDC train to the other, perform surveillance or startup testing, perform the transition to and from the SDC, or to avoid operation below the RCP minimum net positive suction head limit. The time period is acceptable because natural circulation is acceptable for decay heat removal the reactor coolant temperature can be maintained subcooled, and boron stratification affecting reactivity control is not expected.

Note 2 allows one SDC train to be inoperable for a period of up to 2 hours provided that the other SDC train is OPERABLE and in operation. This permits periodic surveillance tests to be performed on the inoperable train during the only time when such testing is safe and possible.

Note 3 requires that before an RCP may be started with any RCS cold leg temperature ≤ 214°F during a cooldown, or ≤ 291°F during a heatup, the secondary side water temperature (saturation temperature corresponding to SG pressure) in each SG must be < 100°F above each of the RCS cold leg temperatures.

Satisfying the above condition will preclude a low temperature overpressure event due to a thermal transient when the RCP is started.

Note 4 restricts RCP operation to no more than 2 RCPs with RCS cold leg temperature ≤ 200°F, and no more than 3 RCPs with RCS cold leg temperature > 200°F but ≤ 500°F. Satisfying these conditions will maintain the analysis assumptions of the flow induced pressure correction factors due to RCP operation (Ref. 3).

Note 5 provides for an orderly transition from MODE 5 to MODE 4 during a planned heatup by permitting removal of SDC trains from operation when at least one RCP is in operation. This Note provides for the transition to MODE 4 where an RCP is permitted to be in operation and replaces the RCS circulation function provided by the SDC trains.

An OPERABLE SDC train is composed of an OPERABLE SDC pump (CS or LPSI) capable of providing flow to the SDC heat exchanger for heat removal.

(continued)

BASES

LCO (continued)

SDC pumps are OPERABLE if they are capable of being powered and are able to provide flow (current Section XI), if required. An OPERABLE SG can perform as a heat sink when it is OPERABLE in accordance with the SG Tube Surveillance Program and has the minimum water level specified in SR 3.4.7.2.

When entering RCS Loops-MODE 5 Loops Filled from RCS Loops-MODE 5 Loops not Filled the additional requirement of total gas concentration must be addressed for SGs to be considered as a heat sink. A total gas concentration of < 20 cc/kg is required for MODE 5 operations. This limit ensures that gases coming out of solution in the SG U-tubes will not adversely affect natural circulation with RCS pressure at atmospheric conditions. Normal operating procedures implement the findings for determination of when RCS loops are considered filled, which in turn allows for transition from RCS Loops-MODE 5 Loops not Filled to RCS Loops-MODE 5 Loops Filled.

The ability to feed and the ability to steam SGs is not a requirement. Since RCS temperature is less than 210°F in MODE 5-Loops Filled, no boiling (i.e. loss of SG inventory) will occur, therefore, the ability to feed and the ability to steam SGs is not a requirement. However, a means to feed and steam the SGs, whenever the Unit is in MODE 5-Loops Filled, should be provided. Feed sources available are not limited only to Essential Auxiliary Feedwater Pumps and the Condensate Storage Tank. Steaming capability is usually via ADVs. Also, the RCS must be intact (ability to pressurize to at least 100 psia) for the SGs to be considered as a heat sink. With the RCS not intact a majority of heat removal, assuming a loss of SDC flow, will be out the vent (Ref. 2). Therefore, with the RCS not intact, transition to LCO 3.4.8, RCS Loops-MODE 5 Loops not Filled, is appropriate.

(continued)

BASES (continued)

APPLICABILITY

In MODE 5 with RCS loops filled, this LCO requires forced circulation to remove decay heat from the core and to provide proper boron mixing. One SDC train provides sufficient circulation for these purposes.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops-MODES 1 and 2";
LCO 3.4.5, "RCS Loops – MODE 3";
LCO 3.4.6, "RCS Loops – MODE 4";
LCO 3.4.8, "RCS Loops – MODE 5, Loops Not Filled";
LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation – Low Water Level" (MODE 6).

ACTIONS

A.1 and A.2

If a SDC train is inoperable and any SGs have secondary side water levels < 25% wide range, redundancy for heat removal is lost. Action must be initiated immediately to restore a second SDC train to OPERABLE status or to restore the water level in the required SGs. Either Required Action A.1 or Required Action A.2 will restore redundant decay heat removal paths. The immediate Completion Times reflect the importance of maintaining the availability of two paths for decay heat removal.

B.1 and B.2

If the required SDC train is not OPERABLE or no SDC train is in operation, all operations involving the reduction of RCS boron concentration must be suspended. Action to restore one SDC train to OPERABLE status and operation must be initiated. Boron dilution requires forced circulation for proper mixing and the margin to criticality must not be reduced in this type of operation. The immediate Completion Times reflect the importance of maintaining operation for decay heat removal.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This SR requires verification every 12 hours that one SDC train is in operation and circulating reactor coolant at a flow rate of greater than or equal to 3780 gpm. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing decay heat removal. The 12 hour Frequency has been shown by operating practice to be sufficient to regularly assess degradation and verify operation is within safety analyses assumptions. In addition, control room indication and alarms will normally indicate loop status.

The SDC flow is established to ensure that core outlet temperature is maintained sufficiently below saturation to allow time for swapover to the standby SDC train should the operating train be lost.

SR 3.4.7.2

Verifying the SGs are OPERABLE by ensuring their secondary side water levels are ≥ 25% wide range level ensures that redundant heat removal paths are available if the second SDC train is inoperable. The Surveillance is required to be performed when the LCO requirement is being met by use of the SGs. If both SDC trains are OPERABLE, this SR is not needed. The 12 hour Frequency has been shown by operating practice to be sufficient to regularly assess degradation and verify operation within safety analyses assumptions.

SR 3.4.7.3

Verification that the second SDC train is OPERABLE ensures that redundant paths for decay heat removal are available. The requirement also ensures that the additional train can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pumps. The Surveillance is required to be performed when the LCO requirement is being met by one of two SDC trains, e.g., both SGs have < 25% wide range water level. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

(continued)

BASES (continued)

REFERENCES

1. Not Used

2. CEN-PSD-770 Analysis for Lower Mode Functional Recovery Guidelines.

3. PVNGS Operating License Amendmants 52, 38, and 24 for Units 1, 2 and 3, respectively, and associated NRC Safety Evaluation dated July 25, 1990.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.8 RCS Loops – MODE 5, Loops Not Filled

BASES

BACKGROUND

In MODE 5 with the RCS loops not filled, the primary function of the reactor coolant is the removal of decay heat and transfer of this heat to the Shutdown Cooling (SDC) heat exchangers. The Steam Generators (SGs) are not available as a heat sink when the loops are not filled. The secondary function of the reactor coolant is to act as a carrier for the soluble neutron poison, boric acid.

In MODE 5 with loops not filled, only the SDC System can be used for coolant circulation. The number of trains in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one SDC train for decay heat removal and transport and to require that two paths be available to provide redundancy for heat removal.

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in determining the time available for mitigation of the accidental boron dilution event. The SDC trains provide this circulation. The flow provided by one SDC train is adequate for decay heat removal and for boron mixing.

RCS loops – MODE 5 (loops not filled) have been identified in 10 CFR 50.36 (c)(2)(ii) as important contributors to risk reduction.

LCO

The purpose of this LCO is to require a minimum of two SDC trains be OPERABLE and one of these trains be in operation. An OPERABLE train is one that is capable of transferring heat from the reactor coolant at a controlled rate. Heat cannot be removed via the SDC System unless forced flow is used. A minimum of one running SDC pump meets the LCO requirement for one train in operation. An additional SDC train is required to be OPERABLE to meet the single failure criterion.

(continued)

BASES

LCO (continued)

Note 1 permits all SDC pumps to be de-energized ≤ 1 hour per 8 hour period. The circumstances for stopping both SDC pumps are to be limited to situations when the outage time is short and the core outlet temperature is maintained > 10°F below saturation temperature. The Note prohibits boron dilution or draining operations when SDC forced flow is stopped.

Note 2 allows one SDC train to be inoperable for a period of 2 hours provided that the other train is OPERABLE and in operation. This permits periodic surveillance tests to be performed on the inoperable train during the only time when these tests are safe and possible.

An OPERABLE SDC train is composed of an OPERABLE SDC pump (CS or LPSI) capable of providing flow to the SDC heat exchanger for heat removal. SDC pumps are OPERABLE if they are capable of being powered and are able to provide flow (current Section XI), if required.

APPLICABILITY

In MODE 5 with loops not filled, this LCO requires core heat removal and coolant circulation by the SDC System.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops-MODES 1 and 2";
LCO 3.4.5, "RCS Loops—MODE 3";
LCO 3.4.6, "RCS Loops—MODE 4";
LCO 3.4.7, "RCS Loops—MODE 5, Loops Filled";
LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation—High Water Level" (MODE 6); and
LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation—Low Water Level" (MODE 6).

ACTIONS

A.1

If a SDC train is inoperable, redundancy for heat removal is lost. Action must be initiated immediately to restore a second train to OPERABLE status. The Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

If no SDC train is OPERABLE or in operation, except as provided in NOTE 1, all operations involving the reduction of RCS boron concentration must be suspended. Action to restore one SDC train to OPERABLE status and operation must be initiated immediately. Boron dilution requires forced circulation for proper mixing and the margin to criticality must not be reduced in this type of operation. The immediate Completion Time reflects the importance of maintaining operation for decay heat removal.

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This SR requires verification every 12 hours that one SDC train is in operation and circulating reactor coolant. Verification includes flow rate of greater than or equal to 3780 gpm, temperature, or pump status monitoring, which help ensure that forced flow is providing decay heat removal. The 12 hour Frequency has been shown by operating practice to be sufficient to regularly assess degradation and verify operation is within safety analyses assumptions.

SR 3.4.8.2

Verification that the required number of trains are OPERABLE ensures that redundant paths for heat removal are available and that an additional train can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and indicated power available to the required pumps. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

REFERENCES None.

B 3.4 REACTOR COOLANT SYSTEMS (RCS)

B 3.4.9 Pressurizer

BASES

BACKGROUND

The pressurizer provides a point in the RCS where liquid and vapor are maintained in equilibrium under saturated conditions for pressure control purposes to prevent bulk boiling in the remainder of the RCS. Key functions include maintaining required primary system pressure during steady state operation and limiting the pressure changes caused by reactor coolant thermal expansion and contraction during normal load transients.

The pressure control components addressed by this LCO include the pressurizer water level, the required heaters and their backup heater controls, and emergency power supplies. Pressurizer safety valves and pressurizer vents are addressed by LCO 3.4.10 "Pressurizer Safety Valves-MODES 1,2, and 3," LCO 3.4.11 "Pressurizer Safety Valves-MODE 4," and LCO 3.4.12 "Pressurizer Vents", respectively.

The maximum steady state water level limit has been established to ensure that a liquid to vapor interface exists to permit RCS pressure control, using the sprays and heaters during normal operation and proper pressure response for anticipated design basis transients. The maximum and minimum steady state water level limit serves two purposes:

a. Pressure control during normal operation maintains subcooled reactor coolant in the loops and thus in the preferred state for heat transport; and

b. By restricting the level to a maximum, expected transient reactor coolant volume increases (pressurizer insurge) will not cause excessive level changes that could result in degraded ability for pressure control.

The maximum steady state water level limit permits pressure control equipment to function as designed. The limit preserves the steam space during normal operation, thus, both sprays and heaters can operate to maintain the design operating pressure. The level limit also prevents filling the pressurizer (water solid) for anticipated design basis transients, thus ensuring that pressure relief devices

(continued)

BASES

BACKGROUND (continued)

(pressurizer safety valves) can control pressure by steam relief rather than water relief. If the level limits were exceeded prior to a transient that creates a large pressurizer insurge volume leading to water relief, the maximum RCS pressure might exceed the Safety Limit of 2750 psia.

The minimum steady state water level in the pressurizer assures pressurizer heaters, which are required to achieve and maintain pressure control, remain covered with water to prevent failure, which could occur if the heaters were energized uncovered.

The requirement to have two groups of pressurizer heaters ensures that RCS pressure can be maintained. The pressurizer heaters maintain RCS pressure to keep the reactor coolant subcooled. Inability to control RCS pressure during natural circulation flow could result in loss of single phase flow and decreased capability to remove core decay heat.

APPLICABLE SAFETY ANALYSES

In MODES 1, 2, and 3, the LCO requirement for a steam bubble is reflected implicitly in the accident analyses. No safety analyses are performed in lower MODES. All analyses performed from a critical reactor condition assume the existence of a steam bubble and saturated conditions in the pressurizer. In making this assumption, the analyses neglect the small fraction of noncondensable gases normally present.

Safety analyses presented in the UFSAR do not take credit for pressurizer heater operation; however, an implicit initial condition assumption of the safety analyses is that the RCS is operating at normal pressure.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

Although the heaters are not specifically used in accident analysis, the need to maintain subcooling in the long term during loss of offsite power, as indicated in NUREG-0737 (Ref. 1), is the reason for their inclusion. The requirement for emergency power supplies is based on NUREG-0737 (Ref. 1). The intent is to keep the reactor coolant in a subcooled condition with natural circulation at hot, high pressure conditions for an undefined, but extended, time period after a loss of offsite power. While loss of offsite power is a coincident occurrence assumed in the accident analyses, maintaining hot, high pressure conditions over an extended time period is not evaluated in the accident analyses. The pressurizer satisfies Criterion 2 and Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO requirement for the pressurizer to be OPERABLE with water level ≥ 27% and ≤ 56% ensures that a steam bubble exists. Limiting the maximum operating water level preserves the steam space for pressure control. The LCO has been established to minimize the consequences of potential overpressure transients. Requiring the presence of a steam bubble is also consistent with analytical assumptions.

The LCO requires two groups of OPERABLE pressurizer heaters, each with a capacity ≥ 125 kW and capable of being powered from an emergency power supply. The minimum heater capacity required is sufficient to maintain the RCS near normal operating pressure when accounting for heat losses through the pressurizer insulation. By maintaining the pressure near the operating conditions, a wide subcooling margin to saturation can be obtained in the loops.

APPLICABILITY

The need for pressure control is most pertinent when core heat can cause the greatest effect on RCS temperature resulting in the greatest effect on pressurizer level and RCS pressure control. Thus, Applicability has been designated for MODES 1 and 2. The Applicability is also provided for MODE 3. It is assumed pressurizer level is under steady state conditions. The purpose is to prevent solid water RCS operation during heatup and cooldown to avoid rapid pressure rises caused by normal operational

(continued)

BASES

APPLICABILITY (continued)

perturbation, such as reactor coolant pump startup. The LCO does not apply to MODE 5 (Loops Filled) because LCO 3.4.13, "Low Temperature Overpressure Protection (LTOP) System," applies. The LCO does not apply to MODES 5 and 6 with partial loop operation. Also, a Note has been added to indicate the limit on pressurizer level may be exceeded during short term operational transients such as a THERMAL POWER ramp increase of > 5% RTP per minute or a THERMAL POWER step increase of > 10% RTP.

In MODES 1, 2, and 3, there is the need to maintain the availability of pressurizer heaters capable of being powered from an emergency power supply. In the event of a loss of offsite power, the initial conditions of these MODES gives the greatest demand for maintaining the RCS in a hot pressurized condition with loop subcooling for an extended period. For MODES 4, 5, or 6, it is not necessary to control pressure (by heaters) to ensure loop subcooling for heat transfer when the Shutdown Cooling System is in service and therefore the LCO is not applicable.

ACTIONS

A.1 and A.2

With pressurizer water level not within the limit, action must be taken to restore the plant to operation within the bounds of the safety analyses. To achieve this status, the unit must be brought to MODE 3, with the reactor trip breakers open, within 6 hours and to MODE 4 within 12 hours. This takes the plant out of the applicable MODES and restores the plant to operation within the bounds of the safety analyses.

Six hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging plant systems. Further pressure and temperature reduction to MODE 4 brings the plant to a MODE where the LCO is not applicable. The 12 hour time to reach the nonapplicable MODE is reasonable based on operating experience for that evolution.

(continued)

BASES

ACTIONS (continued)

B.1

If one required group of pressurizer heaters is inoperable, restoration is required within 72 hours. The Completion Time of 72 hours is reasonable considering that a demand caused by loss of offsite power would be unlikely in this period. Pressure control may be maintained during this time using normal station powered heaters.

C.1 and C.2

If one required group of pressurizer heaters is inoperable and cannot be restored within the allowed Completion Time of Required Action B.1, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and to MODE 4 within 12 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging safety systems. Similarly, the Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 4 from full power in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

This Surveillance ensures that during steady state operation, pressurizer water level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The Surveillance is performed by observing the indicated level. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess the level for any deviation and verify that operation is within safety analyses assumptions. Alarms are also available for early detection of abnormal level indications.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.9.2

The Surveillance is satisfied when the power supplies are demonstrated to be capable of producing the minimum power and the associated pressurizer heaters are verified to be at their design rating. (This may be done by testing the power supply output and by performing an electrical check on heater element continuity and resistance.) The Frequency of 92 days is considered adequate to detect heater degradation and has been shown by operating experience to be acceptable.

REFERENCES

1. NUREG-0737, November 1980.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.10 Pressurizer Safety Valves

BASES

BACKGROUND

The purpose of the four spring loaded pressurizer safety valves is to provide RCS overpressure protection. Operating in conjunction with the Reactor Protection System, four valves are used to ensure that the Safety Limit (SL) of 2750 psia is not exceeded for analyzed transients during operation in MODES 1, 2 and 3. One safety valve used for MODE 4. For MODE 5, and MODE 6 with the head on, overpressure protection is provided by operating procedures and the LCO 3.4.13, "Low Temperature Overpressure Protection (LTOP) System."

The self actuated pressurizer safety valves are designed in accordance with the requirements set forth in the ASME, Boiler and Pressure Vessel Code, Section III (Ref. 1). The required lift pressure is 2475 psia +3%, -1%. The safety valves discharge steam from the pressurizer to a quench tank located in the containment. The discharge flow is indicated by an increase in temperature downstream of the safety valves and by an increase in the quench tank temperature and level.

The lift setting is for the ambient conditions associated with MODES 1, 2, and 3. This requires either that the valves be set hot or that a correlation between hot and cold settings be established.

The pressurizer safety valves are part of the primary success path and mitigate the effects of postulated accidents. OPERABILITY of the safety valves ensures that the RCS pressure will be limited to 110% of design pressure. The consequences of exceeding the ASME pressure limit (Ref. 1) could include damage to RCS components, increased leakage, or a requirement to perform additional stress analyses prior to resumption of reactor operation.

(continued)

BASES

APPLICABLE SAFETY ANALYSES

All accident analyses in the UFSAR that require safety valve actuation assume operation of four pressurizer safety valves to limit increasing reactor coolant pressure. The overpressure protection analysis is also based on operation of four safety valves and assumes that the valves open at the high range of the setting (2475 psia + 3%). These valves must accommodate pressurizer insurges that could occur during a startup, rod withdrawal, ejected rod, loss of main feedwater, or main feedwater line break accident. The Loss of Load with Delayed Reactor Trip accident establishes the minimum safety valve capacity. The Loss of Load with Delayed Reactor Trip accident is assumed to occur at 100% power. Single failure of a safety valve is neither assumed in the accident analysis nor required to be addressed by the ASME Code. Compliance with this specification is required to ensure that the accident analysis and design basis calculations remain valid.

The pressurizer safety valves satisfy Criterion 3 of 10 CFR 50.36 (c)(2)(ii).

LCO

The four pressurizer safety valves are set to open at 25 psia less than RCS design pressure (2475 psia) and within the ASME specified tolerance to avoid exceeding the maximum RCS design pressure SL, to maintain accident analysis assumptions, and to comply with ASME Code requirements. The limit protected by this specification is the Reactor Coolant Pressure Boundary (RCPB) SL of 110% of design pressure. Inoperability of one or more valves could result in exceeding the SL if a transient were to occur. The consequences of exceeding the ASME pressure limit could include damage to one or more RCS components, increased leakage, or additional stress analysis being required prior to resumption of reactor operation.

APPLICABILITY

In MODES 1, 2, and 3, OPERABILITY of four valves is required because the combined capacity is required to keep reactor coolant pressure below 110% of its design value during certain accidents. MODE 3 is conservatively included, although the listed accidents may not require four safety valves for protection.

(continued)

BASES

APPLICABILITY (continued)

The requirements for overpressure protection in other MODES are covered by LCO 3.4.11, "Pressurizer Safety Valves-MODE 4," and LCO 3.4.13, "LTOP System."

The Note allows entry into MODES 3 and 4 with the lift settings outside the LCO limits. This permits testing and examination of the safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. The cold setting gives assurance that the valves are OPERABLE near their design condition. Only one valve at a time will be removed from service for testing. The 72 hour exception is based on 18 hour outage time for each of the four valves. The 18 hour period is derived from operating experience that hot testing can be performed within this timeframe.

ACTIONS

A.1

With one pressurizer safety valve inoperable, restoration must take place within 15 minutes. The Completion Time of 15 minutes reflects the importance of maintaining the RCS overpressure protection system. An inoperable safety valve coincident with an RCS overpressure event could challenge the integrity of the RCPB.

B.1 and B.2

If the Required Action cannot be met within the required Completion Time or if two or more pressurizer safety valves are inoperable, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The 6 hours allowed is reasonable, based on operating experience, to reach MODE 3 from full power without challenging plant systems. Similarly, the 12 hours allowed is reasonable, based on operating experience, to reach MODE 4 without challenging plant systems.

(continued)

BASES

ACTIONS

B.1 and B.2 (continued)

The change from MODE 1, 2, or 3 to MODE 4 reduces the RCS energy (core power and pressure), lowers the potential for large pressurizer insurges, and thereby removes the need for overpressure protection by four pressurizer safety valves.

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1

SRs are specified in the Inservice Testing Program. Pressurizer safety valves are to be tested in accordance with the requirements of Section XI of the ASME Code (Ref. 1), which provides the activities and the Frequency necessary to satisfy the SRs. No additional requirements are specified.

The pressurizer safety valve setpoint is +3%, - 1% for OPERABILITY; however, the valves are reset to ± 1% during the Surveillance to allow for drift (Ref. 2). The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

REFERENCES

1. ASME, Boiler and Pressure Vessel Code, Section III, Section XI.

2. PVNGS Operating License Amendment Nos. 75, 61, and 47 for Units 1, 2, and 3, respectively, and associated NRC Safety Evaluation dated May 16, 1994.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.11 Pressurizer Safety Valves-MODE 4

BASES

BACKGROUND

The purpose of the four spring loaded pressurizer safety valves is to provide RCS overpressure protection. One safety valve is used for portions of MODE 4. For the remainder of MODE 4, MODE 5, and MODE 6 with the head on, overpressure protection is provided by operating procedures and the LCO 3.4.13, "Low Temperature Overpressure Protection (LTOP) System."

The self actuated pressurizer safety valves are designed in accordance with the requirements set forth in the ASME, Boiler and Pressure Vessel Code, Section III (Ref. 1). The required lift pressure is 2475 psia +3%, -1%. The safety valves discharge steam from the pressurizer to a quench tank located in the containment. The discharge flow is indicated by an increase in temperature downstream of the safety valves and by an increase in the quench tank temperature and level.

The lift setting is for the ambient conditions associated with MODES 1, 2, and 3. This requires either that the valves be set hot or that a correlation between hot and cold settings be established.

The pressurizer safety valves are part of the primary success path and mitigate the effects of postulated accidents. OPERABILITY of the safety valves ensures that the RCS pressure will be limited to 110% of design pressure. The consequences of exceeding the ASME pressure limit (Ref. 1) could include damage to RCS components, increased leakage, or a requirement to perform additional stress analyses prior to resumption of reactor operation.

(continued)

BASES

BACKGROUND (continued)

Pressurizer Safety Valve Requirements

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit (SL) of 2750 psia. Each safety valve is designed to relieve a minimum of 460,000 lb per hour of saturated steam at valve setpoint. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown above L-Top System temperatures.

Shutdown Cooling System Suction Line Relief Valve Requirements

A single Shutdown Cooling System suction line relief valve provides overpressure relief capability and will prevent RCS overpressurization in the event that no pressurizer safety valves are OPERABLE.

APPLICABLE SAFETY ANALYSES

All accident analyses in the UFSAR that require safety valve actuation assume operation of four pressurizer safety valves to limit increasing reactor coolant pressure. The overpressure protection analysis is also based on operation of four safety valves and assumes that the valves open at the high range of the setting (2475 psia + 3%). These valves must accommodate pressurizer insurges that could occur during a startup, rod withdrawal, ejected rod, loss of main feedwater, or main feedwater line break accident. The Loss of Load with Delayed Reactor Trip accident establishes the minimum safety valve capacity. The Loss of Load with Delayed Reactor Trip accident is assumed to occur at 100% power. Single failure of a safety valve is neither assumed in the accident analysis nor required to be addressed by the ASME Code. Compliance with this specification is required to ensure that the accident analysis and design basis calculations remain valid.

The pressurizer safety valves satisfy Criterion 3 of 10 CFR 50.36 (c)(2)(ii).

(continued)

BASES (continued)

LCO

One pressurizer safety valve is required to be OPERABLE in MODE 4 with no Shutdown Cooling System suction line relief valves in service. The four pressurizer safety valves are set to open 25 psia less than RCS design pressure (2475 psia) and within the ASME specified tolerance to avoid exceeding the maximum RCS design pressure SL to maintain accident analysis assumptions, and to comply with ASME Code requirements. The limit protected by this specification is the Reactor Coolant Pressure Boundary (RCPB) SL of 110% of design pressure. Inoperability of all valves could result in exceeding the SL if a transient were to occur. The consequences of exceeding the ASME pressure limit could include damage to one or more RCS components, increased leakage, or additional stress analysis being required prior to resumption of reactor operation.

APPLICABILITY

In MODE 4 above the LTOP System temperatures OPERABILITY of one valve is required. MODE 4 is conservatively included, although the listed accidents may not require a safety valve for protection.

The requirements for overpressure protection in other MODES and in MODE 4 at or below the LTOP System temperatures are covered by LCO 3.4.10, "Pressurizer Safety Valves - MODES 1, 2 and 3," and LCO 3.4.13, "LTOP System."

The Note allows entry into MODES 3 and 4 with the lift settings outside the LCO limits. This permits testing and examination of the safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. The cold setting gives assurance that the valves are OPERABLE near their design condition. Only one valve at a time will be removed from service for testing. The 72 hour exception is based on 18 hour outage time for each of the four valves. The 18 hour period is derived from operating experience that hot testing can be performed within this timeframe.

(continued)

BASES (continued)

ACTIONS

A.1, A.2, and A.3

If all pressurizer safety valves are inoperable, the plant must be brought to a condition where overpressure protection is provided, then to a MODE in which the requirement does not apply. To achieve this status, one Shutdown Cooling System suction line relief must be placed in service immediately, then the plant must be brought to at least MODE 4 with all RCS cold leg temperatures ≤ 214°F during cooldown or ≤ 291°F during heatup within 8 hours, so that LCO 3.4.12 (LTOP System) would apply. It is reasonable to pursue the ACTION to place a shutdown cooling system suction relief valve in service immediately (without delay) because the plant is already within the shutdown cooling system entry temperature of less than 350°F. The Completion Time of immediately requires that the required action be pursued without delay and in a controlled manner, and reflects the importance of maintaining the RCS overprotection system. The 8 hours allowed to be in MODE 4 with all RCS temperatures ≤ 214°F during cooldown or ≤ 291°F during heatup is reasonable, based on operating experience, to reach this condition without challenging plant systems.

For the Shutdown Cooling System suction line relief valve that is required to be in service in accordance with Required Action A.1, SR 3.4.11.2 and SR 3.4.11.3 must be performed or verified performed within 12 hours. This ensures that the required Shutdown Cooling System suction line relief valve is OPERABLE. A Shutdown Cooling System suction line relief valve is OPERABLE when its isolation valves are open, its lift setpoint is set at 467 psig or less, and testing has proven its ability to open at that setpoint.

If the Required Actions and associated Completion Times are not met, overpressurization is possible.

The 8 hours Completion Time to be in MODE 4 with all RCS cold leg temperatures ≤214°F during cooldown or ≤291°F during heatup places the unit in a condition where the LCO does not apply.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.11.1

SRs are specified in the Inservice Testing Program. Pressurizer safety valves are to be tested in accordance with the requirements of Section XI of the ASME Code (Ref. 1), which provides the activities and the Frequency necessary to satisfy the SRs. No additional requirements are specified.

The pressurizer safety valve setpoint is +3%, -1% for OPERABILITY; however, the valves are reset to ± 1% during the Surveillance to allow for drift (Ref. 3). The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

SR 3.4.11.2

SR 3.4.11.2 requires that the required Shutdown Cooling System suction line relief valve is OPERABLE by verifying its open pathway condition either:

a. Once every 12 hours for a valve that is unlocked, not sealed, or otherwise not secured open in the vent pathway, or

b. Once every 31 days for a valve that is locked, sealed or otherwise secured open in the vent pathway.

The SR has been modified by a Note that requires performance only if a Shutdown Cooling System suction line relief valve is being used for overpressure protection. The Frequencies consider operating experience with mispositioning of unlocked and locked pathway vent valves.

SR 3.4.11.3

SRs are specified in the Inservice Testing Program. Shutdown Cooling System suction line relief valves are to be tested in accordance with the requirements of Section XI of the ASME Code (Ref. 2), which provides the activities and the Frequency necessary to satisfy the SRs. The Shutdown Cooling System suction line relief valve setpoint is 467 psig.

(continued)

BASES (continued)

REFERENCES

1. ASME, Boiler and Pressure Vessel Code, Section III, Section XI.

2. ASME, Boiler and Pressure Vessel Code, Section XI.

3. PVNGS Operating License Amendment Nos. 75, 61, and 47 for Units 1, 2, and 3 respectively, and associated NRC Safety Evaluation dated May 16, 1994.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.12 Pressurizer Vents

BASES

BACKGROUND

The pressurizer vent is part of the reactor coolant gas vent system (RCGVS) as described in UFSAR 18.II.B.1 (Ref.1). The pressurizer can be vented remotely from the control room through the following four paths (see UFSAR Figure 18.II.B-1):

1. From the pressurizer vent through SOV HV-103, then through SOV HV-105 to the reactor drain tank (RTD).

2. From the pressurizer vent through SOV HV-103, then through SOV HV-106 directly to the containment atmosphere.

3. From the pressurizer vent through SOVs HV-108 and HV-109, then through SOV HV-105 to the reactor drain tank (RTD).

4. From the pressurizer vent through SOVs HV-108 and HV-109, then through SOV HV-106 directly to the containment atmosphere.

The RCGVS also includes the reactor head vent, which can be used along with the pressurizer vent to remotely vent gases that could inhibit natural circulation core cooling during post accident situations. However, this function does not meet the criteria of 10 CFR 50.36(c)(2)(ii) to require a Technical Specification LCO, and therefore the reactor head vent is not included in these Technical Specifications.

(continued)

BASES

APPLICABLE SAFETY ANALYSES

The requirement for pressurizer path vent path to be OPERABLE is based on the steam generator tube rupture (SGTR) with loss of offsite power (LOP) and a single failure safety analysis, as described in UFSAR 15.6.3 (Ref. 4). It is assumed that the auxiliary pressurizer spray system (APSS) is not available for this event. Instead, RCS depressurization is performed, 2 hours after the initial SGTR, by venting the RCS via a pressurizer vent path and throttling HPSI flow. The analysis also incorporates an additional failure by assuming that only the smallest of the four available pressurizer vent paths is used. This is identified as the orificed flow path to the RDT.

The results of the analysis for steam generator tube rupture with a loss of offsite power and a fully stuck open ADV using the pressurizer vent system, forwarded to the NRC in Reference 3, states that the analysis assumes that the APSS is inoperable and the pressurizer gas vent system performs the functions of RCS depressurization. The staff has reviewed and accepted the results of the analysis and the design of the pressurizer gas vent system. The staff's detailed evaluation has been reported in Supplement No. 9 to PVNGS SER (Ref. 2).

The pressurizer vent paths satisfy Criterion 3 of 10 CFR 50.36 (c)(2)(ii).

LCO

The LCO requires four pressurizer vent paths be OPERABLE. The four vent paths are:

1. From the pressurizer vent through SOV HV-103, then through SOV HV-105 to the reactor drain tank (RTD).
2. From the pressurizer vent through SOV HV-103, then through SOV HV-106 directly to the containment atmosphere.
3. From the pressurizer vent through SOVs HV-108 and HV-109, then through SOV HV-105 to the reactor drain tank (RTD).
4. From the pressurizer vent through SOVs HV-108 and HV-109, then through SOV HV-106 directly to the containment atmosphere.

(continued)

BASES

LCO (continued

A vent path is flow capability from the pressurizer to the RDT or from the pressurizer to containment atmosphere. Loss of any single valve in the pressurizer vent system will cause two flow paths to become inoperable. A pressurizer vent path is required to depressurize the RCS in a SGTR design basis event which assumes LOP and APPS unavailable.

APPLICABILITY

In MODES 1, 2, 3, and MODE 4 with RCS pressure ≥ 385 psia the four pressurizer vent paths are required to be OPERABLE. The safety analysis for the SGTR with LOP and a Single Failure (loss of APSS) credits a pressurizer vent path to reduce RCS pressure.

In MODES 1, 2, 3, and MODE 4 with RCS pressure ≥ 385 psia the SGs are the primary means of heat removal in the RCS, until shutdown cooling can be initiated. In MODES 1, 2, 3, and MODE 4 with RCS pressure ≥ 385 psia, assuming the APSS is not available, the pressurizer vent paths are the credited means to depressurize the RCS to Shutdown Cooling System entry conditions. Further depressurization into MODE 5 requires use of the pressurizer vent paths. In MODE 5 with the reactor vessel head in place, temperature requirements of MODE 5 (< 210°F) ensure the RCS remains depressurized. In MODE 6 the RCS is depressurized.

ACTIONS

A.1

If two or three pressurizer vent paths are inoperable, they must be restored to OPERABLE status. Loss of any single valve in the pressurizer vent system will cause two flow paths to become inoperable. Any vent path that provides flow capability from the pressurizer to the RDT or to the containment atmosphere, independent of which train is powering the valves in the flow path, can be considered an operable vent path. The Completion Time of 72 hours is reasonable because there is at least one pressurizer vent path that remains OPERABLE.

(continued)

BASES

B.1

If all pressurizer vent paths are inoperable, then restore at least one pressurizer vent path to OPERABLE status. The Completion Time of 6 hours is reasonable to allow time to correct the situation, yet emphasize the importance of restoring at least one pressurizer vent path. If at least one pressurizer vent path is not restored to OPERABLE within the Completion Time, then Action C is entered.

C.1

If the required Actions, A and B, cannot be met within the associated Completion Times, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours, and to MODE 4 with RCS pressure < 385 psia within 24 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.12.1

SR 3.4.12.1 requires complete cycling of each pressurizer vent path valve. The vent valves must be cycled from the control room to demonstrate their operability. Pressurizer vent path valve cycling demonstrates its function. The frequency of 18 months is based on a typical refueling cycle and industry accepted practice. This surveillance test must be performed in Mode 5 or Mode 6.

SR 3.4.12.2

SR 3.4.12.2 requires verification of flow through each pressurizer vent path. Verification of pressurizer vent path flow demonstrates its function. The frequency of 18 months is based on a typical refueling cycle and industry accepted practice. This surveillance test must be performed in Mode 5 or Mode 6.

(continued)

BASES

REFERENCES

1. UFSAR, Section 18.

2. NUREG-0857, initial issue, November 1981, through Supplement 12, November 1987.

3 Letter from Arizona Nuclear Power Project to NRC (ANPP-33905) dated November 4, 1985, "Information Concerning the PVNGS Auxiliary Pressurizer Spray."

4. UFSAR, Section 15.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.13 Low Temperature Overpressure Protection (LTOP) System

BASES

BACKGROUND

The LTOP System controls RCS pressure at low temperatures so the integrity of the Reactor Coolant Pressure Boundary (RCPB) is not compromised by violating the Pressure and Temperature (P/T) limits of 10 CFR 50, Appendix G (Ref. 1). The reactor vessel is the limiting RCPB component for demonstrating such protection. LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," provides the allowable combinations for operational pressure and temperature during cooldown, shutdown, and heatup to keep from violating the Reference 1 requirements during the LTOP MODES.

The reactor vessel material is less tough at low temperatures than at normal operating temperatures. As the vessel neutron exposure accumulates, the material toughness decreases and becomes less resistant to pressure stress at low temperatures (Ref. 2). RCS pressure, therefore, is maintained low at low temperatures and is increased only as temperature is increased.

The potential for vessel overpressurization is most acute when the RCS is water solid, occurring only while shutdown; a pressure fluctuation can occur more quickly than an operator can react to relieve the condition. Exceeding the RCS P/T limits by a significant amount could cause brittle cracking of the reactor vessel. LCO 3.4.3 requires administrative control of RCS pressure and temperature during heatup and cooldown to prevent exceeding the P/T limits.

This LCO provides RCS overpressure protection by having adequate pressure relief capacity. The pressure relief capacity requires either two OPERABLE redundant Shutdown Cooling System suction line relief valves or the RCS depressurized and an RCS vent of sufficient size. One Shutdown Cooling System suction line relief valve or the RCS vent is the overpressure protection device that acts to terminate an increasing pressure event.

(continued)

BACKGROUND (continued)

The LTOP System for pressure relief consists of two Shutdown Cooling System suction line relief valves or an RCS vent of sufficient size. Two relief valves are required for redundancy. One Shutdown Cooling System suction line relief valve has adequate relieving capability to prevent overpressurization for the required coolant input capability.

Shutdown Cooling System Suction Line Relief Valve Requirements

As designed for the LTOP System, each Shutdown Cooling System suction line relief valve is designed to lift and relieve RCS pressure if RCS pressure approaches the Shutdown Cooling System suction line relief valve lift setpoint.

Each Shutdown Cooling System suction line relief valve is designed to protect the reactor vessel given a single failure in addition to a failure that initiated the pressure transient. No single failure of a Shutdown Cooling System suction line relief valve isolation valve (SI-651, 652, 653, or 654) will prevent one Shutdown Cooling System suction line relief valve from performing its intended function (Ref. 7).

The OPERABILITY of two Shutdown Cooling System suction line relief valves, while maintaining the limits imposed on the RCS heatup and cooldown rates, ensures that the RCS will be protected from analyzed pressure transients. Either Shutdown Cooling System suction line relief valve provides overpressure protection for the RCS due to the most limiting transients initiated by a single operator or equipment failure.

a. The start of an idle RCP with secondary water temperature of the SG ≤ 100°F above RCS cold leg temperatures

b. An inadvertent SIAS with two HPSI pumps injecting into a water solid RCS, three charging pumps injecting, and letdown isolated.

These events are the most limiting energy and mass addition transients, respectively, when the RCS is at low temperatures (Refs. 7, 8 and 9).

(continued)

BACKGROUND (continued)

Shutdown Cooling System Suction Line Relief Valve Requirements. (continued)

When a Shutdown Cooling System suction line relief valve lifts due to an increasing pressure transient, the release of coolant causes the pressure increase to slow and reverse. As the Shutdown Cooling System suction line relief valve releases coolant, the system pressure decreases until valve reseat pressure is reached and the Shutdown Cooling system suction line relief valve closes.

At low temperatures with the Shutdown Cooling System suction line relief valves aligned to the RCS, it is necessary to restrict heatup and cooldown rates to assure that P-T limits are not exceeded. These P-T limits are usually applicable to a finite time period such a one cycle, 5 EFPY, etc. and are based upon irradiation damage prediction by the end of the period. Accordingly, each time P-T limits change, the LTOP System needs to be reanalyzed and modified, if necessary, to continue its function.

Once the RCS is depressurized, a vent exposed to the containment atmosphere will maintain the RCS at containment ambient pressure in an RCS overpressure transient, if the relieving requirements of the transient do not exceed the capabilities of the vent. Thus, the vent path must be capable of relieving the flow resulting from the limiting LTOP mass or heat input transient and maintaining pressure below the P/T limits. The required vent capacity may be provided by one or more vent paths.

For an RCS vent to meet the specified flow capacity, it requires removing all pressurizer safety valves, or similarly establishing a vent by opening the pressurizer manway (Ref. 11). The vent path(s) must be above the level of reactor coolant, so as not to drain the RCS when open.

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

Safety analyses (Ref. 3) demonstrate that the reactor vessel is adequately protected against exceeding the Reference 1 P/T limits during shutdown. In MODES 1, 2, and 3, and in MODE 4 with any RCS cold leg temperature exceeding 214°F during cooldown or 291°F during heatup, the pressurizer safety valves prevent RCS pressure from exceeding the Reference 1 limits. At about 214°F and below, during cooldown or 291°F and below during heatup, overpressure prevention falls to the OPERABLE Shutdown Cooling System suction line relief valves or to a depressurized RCS and a sufficient sized RCS vent. Each of these means has a limited overpressure relief capability.

The actual temperature at which the pressure in the P/T limit curve falls below the pressurizer safety valve setpoint increases as the reactor vessel material toughness decreases due to neutron embrittlement. Each time the P/T limit curves are revised, the LTOP System will be re-evaluated to ensure its functional requirements can still be satisfied using the Shutdown Cooling System suction line relief valve method or the depressurized and vented RCS condition.

Reference 3 contains the acceptance limits that satisfy the LTOP requirements. Any change to the RCS must be evaluated against these analyses to determine the impact of the change on the LTOP acceptance limits.

Transients that are capable of overpressurizing the RCS are categorized as either mass or heat input transients, examples of which follow:

Mass Input Type Transients

a. Inadvertent safety injection; or

b. Charging/letdown flow mismatch.

Heat Input Type Transients

a. Inadvertent actuation of pressurizer heaters;

b. Loss of shutdown cooling (SDC); or

c. Reactor coolant pump (RCP) startup with temperature asymmetry within the RCS or between the RCS and steam generators.

(continued)

APPLICABLE SAFETY ANALYSES (continued)

References 3, 7, 8 and 9 analyses demonstrate that either one Shutdown Cooling System suction line relief valve or the RCS vent can maintain RCS pressure below limits for the two most limiting analyzed events:

a. The start of an idle RCP with secondary water temperature of the SG ≤ 100°F above RCS cold leg temperatures.

b. An inadvertent SIAS with two HPSI pumps injecting into a water solid RCS, three charging pumps injecting, and letdown isolated.

Fracture mechanics analyses established the temperature of LTOP Applicability at 214°F and below during cooldown and 291°F and below during heatup. Above these temperatures, the pressurizer safety valves provide the reactor vessel pressure protection. The vessel materials were assumed to have a neutron irradiation accumulation equal to 32 effective full power years of operation.

The consequences of a small break Loss Of Coolant Accident (LOCA) in LTOP MODE 4 conform to 10 CFR 50.46 and 10 CFR 50, Appendix K (Refs. 4 and 5).

The fracture mechanics analyses show that the vessel is protected when the Shutdown Cooling System suction line relief valves are set to open at or below 467 psig. The setpoint is derived by modeling the performance of the LTOP System, assuming the limiting allowed LTOP transient. The Shutdown Cooling System suction line relief valves setpoints at or below the derived limit ensure the Reference 1 limits will be met.

The Shutdown Cooling System suction line relief valves setpoints will be re-evaluated for compliance when the revised P/T limits conflict with the LTOP analysis limits. The P/T limits are periodically modified as the reactor vessel material toughness decreases due to embrittlement caused by neutron irradiation. Revised P/T limits are determined using neutron fluence projections and the results of examinations of the reactor vessel material irradiation surveillance specimens. The Bases for LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," discuss these examinations.

(continued)

APPLICABLE SAFETY ANALYSES (continued)

The Shutdown Cooling System suction line relief valves are considered active components. Thus, the failure of one Shutdown Cooling System suction line relief valve represents the worst case, single active failure.

RCS Vent Performance

With the RCS depressurized, analyses show a vent size of 16 square inches is capable of mitigating the limiting allowed LTOP overpressure transient. In that event, this size vent maintains RCS pressure less than the maximum RCS pressure on the P/T limit curve.

The RCS vent size will also be re-evaluated for compliance each time the P/T limit curves are revised based on the results of the vessel material surveillance.

The RCS vent is passive and is not subject to active failure.

LTOP System satisfies Criterion 2 of 10 CFR 50.36 (c)(2)(ii).

LCO

This LCO is required to ensure that the LTOP System is OPERABLE. The LTOP System is OPERABLE when the pressure relief capabilities are OPERABLE. Violation of this LCO could lead to the loss of low temperature overpressure mitigation and violation of the Reference 1 limits as a result of an operational transient.

The elements of the LCO that provide overpressure mitigation through pressure relief are:

a. Two OPERABLE Shutdown Cooling System suction line relief valves; or

b. The depressurized RCS and an RCS vent.

A Shutdown Cooling System suction line relief valve is OPERABLE for LTOP when its isolation valves are open, its lift setpoint is set at 467 psig or less and testing has proven its ability to open at that setpoint.

An RCS vent is OPERABLE when open with an area ≥ 16 square inches. For an RCS vent to meet the specified flow capacity, it requires removing all pressurizer safety valves, or similarly establishing a vent by opening the pressurizer manway (Ref. 11). The vent path(s) must be above the level of reactor coolant, so as not to drain the RCS when open.

(continued)

LCO (continued)

Each of these methods of overpressure prevention is capable of mitigating the limiting LTOP transient.

The Note requires that, before an RCP may be started, the secondary side water temperature (saturation temperature corresponding to SG pressure) in each SG is ≤ 100°F above each of the RCS cold leg temperatures. Satisfying this condition will preclude a large pressure surge in the RCS when the RCP is started.

APPLICABILITY

This LCO is applicable in MODE 4 when the temperature of any RCS cold leg is ≤ 214°F during cooldown or ≤ 291°F during heatup, in MODE 5, and in MODE 6 when the reactor vessel head is on. The pressurizer safety valves provide overpressure protection that meets the Reference 1 P/T limits above 214°F during cooldown and 291°F during heatup. The requirements for overpressure protection in MODES 1, 2 and 3, and in MODE 4 above the LTOP System temperatures are covered by LCO 3.4.10, "Pressurizer Safety Valves - MODES 1, 2, and 3," and LCO 3.4.11, "Pressurizer Safety Valves - MODE 4." When the reactor vessel head is off overpressurization cannot occur.

LCO 3.4.3 provides the operational P/T limits for all MODES.

Low temperature overpressure prevention is most critical during shutdown when the RCS is water solid, and a mass or heat input transient can cause a very rapid increase in RCS pressure when little or no time allows operator action to mitigate the event.

The Applicability is modified by a Note stating when one or more cold legs reach 214°F, this LCO remains applicable during periods of steady state temperature conditions until all RCS cold leg temperatures reach 291°F. Also, if a cooldown is terminated prior to reaching 214°F and a heatup is commenced, this LCO is applicable until all RCS cold leg temperatures reach 291°F. This Note provides clarification about Applicability intent. Since PVNGS uses two different temperatures at which the Shutdown Cooling System suction line relief valves must be placed in service there is some possibility of confusion. This Note clarifies those circumstances where the Shutdown Cooling System suction line relief valves must be placed in service.

(continued)

BASES (continued)

ACTIONS

A.1

The Required Action is modified by a Note stating that LCO 3.0.4 is not applicable.

In MODE 4 when any RCS cold leg temperature is ≤ 214°F during cooldown or ≤ 291°F during heatup with one Shutdown Cooling System suction line relief valve inoperable, two Shutdown Cooling System suction line relief valves must be restored to OPERABLE status within a Completion Time of 7 days. Two valves are required to meet the LCO requirement and to provide low temperature overpressure mitigation while withstanding a single failure of an active component.

The Completion Time is based on the facts that only one Shutdown Cooling System suction line relief valve is required to mitigate an overpressure transient and that the likelihood of an active failure of the remaining valve path during this time period is very low.

B.1

The consequences of operational events that will overpressure the RCS are more severe at lower temperature (Ref. 6). Thus, one required Shutdown Cooling System suction line relief valve inoperable in MODE 5 or in MODE 6 with the head on, the Completion Time to restore inoperable valve to OPERABLE status is 24 hours.

The 24 hour Completion Time to restore two Shutdown Cooling System suction line relief valves OPERABLE in MODE 5 or in MODE 6 when the vessel head is on is a reasonable amount of time to investigate and repair several types of Shutdown Cooling System suction line relief valve failures without exposure to a lengthy period with only one Shutdown Cooling System suction line relief valve OPERABLE to protect against overpressure events.

(continued)

ACTIONS (continued)

C.1

If two required Shutdown Cooling System suction line relief valves are inoperable, or if a Required Action and the associated Completion Time of Condition A or B are not met, the RCS must be depressurized and a vent established within 8 hours. The vent must be sized at least 16 square inches to ensure the flow capacity is greater than that required for the worst case mass input transient reasonable during the applicable MODES. This action protects the RCPB from a low temperature overpressure event and a possible brittle failure of the reactor vessel. For personnel safety considerations, the RCS cold leg temperature must be reduced to less than 200°F prior to venting.

The Completion Time of 8 hours to depressurize and vent the RCS is based on the time required to place the plant in this condition and the relatively low probability of an overpressure event during this time period due to increased operator awareness of administrative control requirements.

SURVEILLANCE REQUIREMENTS

SR 3.4.13.1 and 3.4.13.2

SR 3.4.13.1 and SR 3.4.13.2 require verifying that the RCS vent is open ≥ 16 square inches or that the Shutdown Cooling System suction line relief valves be aligned to provide overpressure protection for the RCS is proven OPERABLE by verifying its open pathway condition either:

Shutdown Cooling System suction/line relief valves

a. Once every 12 hours for a valve that is unlocked, not sealed, or otherwise not secured open in the vent pathway, or

b. Once every 31 days for a valve that is locked, sealed, or otherwise secured open in the vent pathway.

RCS Vent

a. Once every 12 hours for a vent pathway that is unlocked, not sealed, or otherwise not secured open

b. Once every 31 days for a vent pathway that is locked, sealed, or otherwise secured open.

For an RCS vent to meet the specified flow capacity, it requires removing all pressurizer safety valves, or similarly establishing a vent by opening the pressurizer manway (Ref. 11). The vent path(s) must be above the level of reactor coolant, so as not to drain the RCS when open.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.13.1 and 3.4.13.2 (continued)

The passive vent arrangement must only be open (vent pathway exists) to be OPERABLE. These Surveillances need only be performed if the vent or the Shutdown Cooling System suction line relief valves are being used to satisfy the requirements of this LCO. The Frequencies consider operating experience with mispositioning of unlocked and locked pathway vent valves, and passive pathway obstructions.

SR 3.4.13.3

SRs are specified in the Inservice Testing Program. Shutdown Cooling System suction line relief valves are to be tested in accordance with the requirements of Section XI of the ASME Code (Ref. 10), which provides the activities and the Frequency necessary to satisfy the SRs. The Shutdown Cooling System suction line relief valve set point is 467 psig.

REFERENCES

1. 10 CFR 50, Appendix G.
2. Generic Letter 88-11.
3. UFSAR, Section 15.
4. 10 CFR 50.46.
5. 10 CFR 50, Appendix K.
6. Generic Letter 90-06.
7. UFSAR, Section 5.2.
8. V-PSAC-009, Pressure Transient Analysis.
9. V-PSAC-010, Mass Input Pressure Transient in Water Solid RCS.
10. ASME, Boiler and Pressure Vessel Code, Section XI.
11. 13-COO-93-016, Sensitivity Study on Pressurizer Vent Paths vs. Days Post Shutdown.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.14 RCS Operational LEAKAGE

BASES

BACKGROUND

Components that contain or transport the coolant to or from the reactor core make up the RCS. Component joints are made by welding, bolting, rolling, or pressure loading, and valves isolate connecting systems from the RCS.

During plant life, the joint and valve interfaces can produce varying amounts of reactor coolant LEAKAGE, through either normal operational wear or mechanical deterioration. The purpose of the RCS Operational LEAKAGE LCO is to limit system operation in the presence of LEAKAGE from these sources to amounts that do not compromise safety. This LCO specifies the types and amounts of LEAKAGE.

10 CFR 50, Appendix A, GDC 30 (Ref. 1), requires means for detecting and, to the extent practical, identifying the source of reactor coolant LEAKAGE. Regulatory Guide 1.45 (Ref. 2) describes acceptable methods for selecting leakage detection systems.

The safety significance of RCS LEAKAGE varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring reactor coolant LEAKAGE into the containment area is necessary. Quickly separating the identified LEAKAGE from the unidentified LEAKAGE is necessary to provide quantitative information to the operators, allowing them to take corrective action should a leak occur detrimental to the safety of the facility and the public.

A limited amount of leakage inside containment is expected from auxiliary systems that cannot be made 100% leaktight. Leakage from these systems should be detected, located, and isolated from the containment atmosphere, if possible, to not interfere with RCS LEAKAGE detection.

This LCO deals with protection of the Reactor Coolant Pressure Boundary (RCPB) from degradation and the core from inadequate cooling, in addition to preventing the accident analysis radiation release assumptions from being exceeded. The consequences of violating this LCO include the possibility of a Loss Of Coolant Accident (LOCA).

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

Except for primary to secondary LEAKAGE, the safety analyses do not address operational LEAKAGE. However, other operational LEAKAGE is related to the safety analyses for LOCA; the amount of leakage can affect the probability of such an event. The safety analysis for an event resulting in steam discharge to the atmosphere assumes a 1 gpm primary to secondary LEAKAGE as the initial condition.

Primary to secondary LEAKAGE is a factor in the dose releases outside containment resulting from a Steam Line Break (SLB) accident. To a lesser extent, other accidents or transients involve secondary steam release to the atmosphere, such as a Steam Generator Tube Rupture (SGTR). The leakage contaminates the secondary fluid.

The UFSAR (Ref. 3) analysis for SGTR assumes the contaminated secondary fluid is only briefly released via safety valves and the majority is steamed to the condenser. The 1 gpm primary to secondary LEAKAGE is relatively inconsequential.

The SLB is more limiting for site radiation releases. The safety analysis for the SLB accident assumes 1 gpm primary to secondary LEAKAGE in one generator as an initial condition. The dose consequences resulting from the SLB accident are well within the limits defined in 10 CFR 50 or the staff approved licensing basis (i.e., a small fraction of these limits).

RCS operational LEAKAGE satisfies Criterion 2 of 10 CFR 50.36 (C)(2)(ii).

LCO

RCS operational LEAKAGE shall be limited to:

a. Pressure Boundary LEAKAGE

No pressure boundary LEAKAGE is allowed, being indicative of material deterioration. LEAKAGE of this type is unacceptable as the leak itself could cause further deterioration, resulting in higher LEAKAGE. Violation of this LCO could result in continued degradation of the RCPB. LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.

(continued)

BASES

LCO (continued)

b. Unidentified LEAKAGE

One gallon per minute (gpm) of unidentified LEAKAGE is allowed as a reasonable minimum detectable amount that the containment air monitoring and containment sump level monitoring equipment can detect within a reasonable time period. Violation of this LCO could result in continued degradation of the RCPB, if the LEAKAGE is from the pressure boundary.

c. Identified LEAKAGE

Up to 10 gpm of identified LEAKAGE is considered allowable because LEAKAGE is from known sources that do not interfere with detection of identified LEAKAGE and is well within the capability of the RCS makeup system. Identified LEAKAGE includes LEAKAGE to the containment from specifically known and located sources, but does not include pressure boundary LEAKAGE or controlled Reactor Coolant Pump (RCP) seal leakoff (a normal function not considered LEAKAGE). Violation of this LCO could result in continued degradation of a component or system.

LCO 3.4.14, "RCS Pressure Isolation Valve (PIV) Leakage," measures leakage through each individual PIV and can impact this LCO. Of the two PIVs in series in each isolated line, leakage measured through one PIV does not result in RCS LEAKAGE when the other is leaktight. If both valves leak and result in a loss of mass from the RCS, the loss must be included in the allowable identified LEAKAGE.

d. Primary to Secondary LEAKAGE through All Steam Generators (SGs)

Total primary to secondary LEAKAGE amounting to 1 gpm through all SGs produces acceptable offsite doses in the SLB accident analysis. Violation of this LCO could exceed the offsite dose limits for this accident analysis. Primary to secondary LEAKAGE must be included in the total allowable limit for identified LEAKAGE.

(continued)

BASES

LCO (continued)

e. Primary to Secondary LEAKAGE through Any One SG

The 720 gallon per day limit on primary to secondary LEAKAGE through any one SG allocates the total 1 gpm allowed primary to secondary LEAKAGE equally between the two generators.

APPLICABILITY

In MODES 1, 2, 3, and 4, the potential for RCPB LEAKAGE is greatest when the RCS is pressurized.

In MODES 5 and 6, LEAKAGE limits are not required because the reactor coolant pressure is far lower, resulting in lower stresses and reduced potentials for LEAKAGE.

ACTIONS

A.1

Unidentified LEAKAGE, identified LEAKAGE, or primary to secondary LEAKAGE in excess of the LCO limits must be reduced to within limits within 4 hours. This Completion Time allows time to verify leakage rates and either identify unidentified LEAKAGE or reduce LEAKAGE to within limits before the reactor must be shut down. This action is necessary to prevent further deterioration of the RCPB.

B.1 and B.2

If any pressure boundary LEAKAGE exists or if unidentified, identified, or primary to secondary LEAKAGE cannot be reduced to within limits within 4 hours, the reactor must be brought to lower pressure conditions to reduce the severity of the LEAKAGE and its potential consequences. The reactor must be brought to MODE 3 within 6 hours and to MODE 5 within 36 hours. This action reduces the LEAKAGE and also reduces the factors that tend to degrade the pressure boundary.

(continued)

BASES

ACTIONS

B.1 and B.2 (continued)

The allowed Completion Times are reasonable, based on operating experience, to reach the required conditions from full power conditions in an orderly manner and without challenging plant systems. In MODE 5, the pressure stresses acting on the RCPB are much lower, and further deterioration is much less likely.

C.1

If one or more SGs are inoperable, due to SR 3.4.14.2, the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.4.14.1

Verifying RCS LEAKAGE to be within the LCO limits ensures the integrity of the RCPB is maintained. Pressure boundary LEAKAGE would at first appear as unidentified LEAKAGE and can only be positively identified by inspection. Unidentified LEAKAGE and identified LEAKAGE are determined by performance of an RCS water inventory balance. Primary to secondary LEAKAGE is also measured by performance of an RCS water inventory balance in conjunction with effluent monitoring within the secondary steam and feedwater systems.

The RCS water inventory balance must be performed with the reactor at steady state operating conditions and near operating pressure. Therefore, this SR is not required to be performed in MODES 3 and 4, until 12 hours of steady state operation near operating pressure have elapsed. This means that once steady state operating conditions are established, 12 hours is allowed for completing the Surveillance if the Surveillance Frequency interval was exceeded in MODE 5 or 6. Further discussion of SR note format is found in Section 1.4, Frequency.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.14.1 (continued)

The Note in the Frequency column allows for SR 3.4.14.1 nonperformance due to planned or unplanned power manipulations. This Note is not intended to allow power manipulations solely for the purpose of avoiding SR 3.4.14.1 performance. Steady state operation is required to perform a proper water inventory balance; calculations during maneuvering are not useful and a Note requires the Surveillance to be met when steady state is established. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

An early warning of pressure boundary LEAKAGE or unidentified LEAKAGE is provided by the automatic systems that monitor the containment atmosphere radioactivity and the containment sump level. These leakage detection systems are specified in LCO 3.4.16, "RCS Leakage Detection Instrumentation."

The 72 hour Frequency is a reasonable interval to trend LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents. A Note under the Frequency column states that this SR is required to be performed during steady state operation.

SR 3.4.14.2

This SR provides the means necessary to determine SG OPERABILITY in an operational MODE. The requirement to demonstrate SG tube integrity in accordance with the Steam Generator Tube Surveillance Program emphasizes the importance of SG tube integrity, even though this Surveillance cannot be performed at normal operating conditions.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 30.
2. Regulatory Guide 1.45, May 1973.
3. UFSAR, Section 15.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.15 RCS Pressure Isolation Valve (PIV) Leakage

BASES

BACKGROUND

10 CFR 50.2, 10 CFR 50.55a(c), and GDC 55 of 10 CFR 50, Appendix A (Refs. 1, 2, and 3), define RCS PIVs as any two normally closed valves in series within the RCS pressure boundary that separate the high pressure RCS from an attached low pressure system. During their lives, these valves can produce varying amounts of reactor coolant leakage through either normal operational wear or mechanical deterioration. The RCS PIV LCO allows RCS high pressure operation when leakage through these valves exists in amounts that do not compromise safety.

The PIV leakage limit applies to each individual valve. Leakage through both PIVs in series in a line must be included as part of the identified LEAKAGE, governed by LCO 3.4.14, "RCS Operational LEAKAGE." This is true during operation only when the loss of RCS mass through two valves in series is determined by a water inventory balance (SR 3.4.14.1). A known component of the identified LEAKAGE before operation begins is the least of the two individual leakage rates determined for leaking series PIVs during the required surveillance testing; leakage measured through one PIV in a line is not RCS operational LEAKAGE if the other is leaktight.

Although this specification provides a limit on allowable PIV leakage rate, its main purpose is to prevent overpressure failure of the low pressure portions of connecting systems. The leakage limit is an indication that the PIVs between the RCS and the connecting systems are degraded or degrading. PIV leakage could lead to overpressure of the low pressure piping or components. Failure consequences could be a Loss of Coolant Accident (LOCA) outside of containment, an unanalyzed condition that could degrade the ability for low pressure injection.

The basis for this LCO is the 1975 NRC "Reactor Safety Study" (Ref. 4) that identified potential intersystem LOCAs as a significant contributor to the risk of core melt. A subsequent study (Ref. 5) evaluated various PIV configurations to determine the probability of intersystem LOCAs.

(continued)

BASES

BACKGROUND (continued)

PIVs are provided to isolate the RCS from the following typically connected systems:

a. Shutdown Cooling (SDC) System; and

b. Safety Injection System;

The PIVs are listed in UFSAR section (Ref. 6).

Violation of this LCO could result in continued degradation of a PIV, which could lead to overpressurization of a low pressure system and the loss of the integrity of a fission product barrier.

APPLICABLE SAFETY ANALYSES

Reference 4 identified potential intersystem LOCAs as a significant contributor to the risk of core melt. The dominant accident sequence in the intersystem LOCA category is the failure of the low pressure portion of the SDC System outside of containment. The accident is the result of a postulated failure of the PIVs, which are part of the Reactor Coolant Pressure Boundary (RCPB), and the subsequent pressurization of the SDC System downstream of the PIVs from the RCS. Because the low pressure portion of the SDC System is typically designed for 485 psig, overpressurization failure of the SDC low pressure line would result in a LOCA outside containment and subsequent risk of core melt.

Reference 5 evaluated various PIV configurations, leakage testing of the valves, and operational changes to determine the effect on the probability of intersystem LOCAs. This study concluded that periodic leakage testing of the PIVs can substantially reduce the probability of an intersystem LOCA.

RCS PIV leakage satisfies Criterion 2 of 10 CFR 50.36 (C)(2)(ii).

LCO

RCS PIV leakage is identified LEAKAGE into closed systems connected to the RCS. Isolation valve leakage is usually on the order of drops per minute. Leakage that increases

(continued)

BASES

LCO (continued)

significantly suggests that something is operationally wrong and corrective action must be taken.

The LCO PIV leakage limit is 0.5 gpm per nominal inch of valve size, with a maximum limit of 5 gpm. The previous criterion of 1 gpm for all valve sizes imposed an unjustified penalty on the larger valves without providing information on potential valve degradation and resulted in higher personnel radiation exposures. A study concluded a leakage rate limit based on valve size was superior to a single allowable value.

Reference 7 permits leakage testing at a lower pressure differential than between the specified maximum RCS pressure and the normal pressure of the connected system during RCS operation (the maximum pressure differential) in those types of valves in which the higher service pressure will tend to diminish the overall leakage channel opening. In such cases, the observed rate may be adjusted to the maximum pressure differential by assuming leakage is directly proportional to the pressure differential to the one half power.

APPLICABILITY

In MODES 1, 2, 3, and 4, this LCO applies because the PIV leakage potential is greatest when the RCS is pressurized. In MODE 4, valves in the SDC flow path are not required to meet the requirements of this LCO when in, or during the transition to or from, the SDC mode of operation.

In MODES 5 and 6, leakage limits are not provided because the lower reactor coolant pressure results in a reduced potential for leakage and for a LOCA outside the containment.

ACTIONS

The Actions are modified by two Notes. Note 1 is added to provide clarification that each flow path allows separate entry into a Condition. This is allowed based on the functional independence of the flow path. Note 2 requires an evaluation of affected systems if a PIV is inoperable. The leakage may have affected system operability or isolation of a leaking flow path with an alternate valve may

(continued)

BASES

ACTIONS (continued)

have degraded the ability of the interconnected system to perform its safety function.

A.1 and A.2

The flowpath must be isolated by two valves. Required Actions A.1 and A.2 are modified by a Note stating that the valves used for isolation must meet the same leakage requirements as PIVs and must be in the RCPB.

Required Action A.1 requires that the isolation with one valve must be performed within 4 hours. Four hours provides time to reduce leakage in excess of the allowable limit and to isolate if leakage cannot be reduced. The 4 hours allows the actions and restricts the operation with leaking isolation valves.

The 72 hour Completion Time after exceeding the limit allows for the restoration of the leaking PIV to OPERABLE status. This timeframe considers the time required to complete this Action and the low probability of a second valve failing during this period.

B.1 and B.2

If leakage cannot be reduced the system isolated or other Required Actions accomplished, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and to MODE 5 within 36 hours. This Action reduces the leakage and also reduces the potential for a LOCA outside the containment. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.15.1

Performance of leakage testing on each RCS PIV or isolation valve used to satisfy Required Action A.1 or A.2 is required to verify that leakage is below the specified limit and to identify each leaking valve. The leakage limit of 0.5 gpm per inch of nominal valve diameter up to 5 gpm maximum applies to each valve. Leakage testing requires a stable pressure condition.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.15.1 (continued)

For the two PIVs in series, the leakage requirement applies to each valve individually and not to the combined leakage across both valves. If the PIVs are not individually leakage tested, one valve may have failed completely and not be detected if the other valve in series meets the leakage requirement. In this situation, the protection provided by redundant valves would be lost.

Testing is to be performed every 9 months, but may be extended up to 18 months, a typical refueling cycle, if the plant does not go into MODE 5 for at least 7 days. The 18 month Frequency is consistent with 10 CFR 50.55a(g) (Ref. 8), is within frequency allowed by the American Society of Mechanical Engineers (ASME) Code, Section XI (Ref. 7), and is based on the need to perform the Surveillance under conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.

In addition, testing must be performed once after the valve has been opened by flow or exercised to ensure tight reseating. PIVs disturbed in the performance of this Surveillance should also be tested unless documentation shows that an infinite testing loop cannot practically be avoided. Testing must be performed within 24 hours after the valve has been reseated. Within 24 hours is a reasonable and practical time limit for performing this test after opening or reseating a valve.

The SDC PIVs excepted in two of the three FREQUENCIES are UV-651, UV-652, UV-653, and UV-654, due to position indication of the valves in the control room.

Although not explicitly required by SR 3.4.15.1, performance of leakage testing to verify leakage is below the specified limit must be performed prior to returning a valve to service following maintenance, repair or replacement work on the valve in order to demonstrate operability.

The leakage limit is to be met at the RCS pressure associated with MODES 1 and 2. This permits leakage testing at high differential pressures with stable conditions not possible in the MODES with lower pressures.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.15.1 (continued)

Entry into MODES 3 and 4 is allowed to establish the necessary differential pressures and stable conditions to allow for performance of this Surveillance. The Note that allows this provision is complimentary to the Frequency of prior to entry into MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months. In addition, this Surveillance is not required to be performed on the SDC System when the SDC System is aligned to the RCS in the shutdown cooling mode of operation. PIVs contained in the SDC shutdown cooling flow path must be leakage rate tested after SDC is secured and stable unit conditions and the necessary differential pressures are established.

SR 3.4.15.2

Verifying that the SDC open permissive interlocks are OPERABLE ensures that RCS pressure will not pressurize the SDC system beyond 125% of its design pressure of 485 psig. The interlock setpoint that prevents the valves from being opened is set so the actual RCS pressure must be 410 psia to open the valves. This setpoint ensures the SDC design pressure will not be exceeded and the SDC relief valves will not lift. The 18 month Frequency is based on the need to perform this Surveillance under conditions that apply during a plant outage. The 18 month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.

(continued)

BASES (continued)

REFERENCES

1. 10 CFR 50.2.
2. 10 CFR 50.55a(c).
3. 10 CFR 50, Appendix A, Section V, GDC 55.
4. WASH-1400 (NUREG-75/014), Appendix V, October 1975.
5. NUREG-0677, May 1980.
6. UFSAR, Section 3.9.6.2
7. ASME, Boiler and Pressure Vessel Code, Section XI.
8. 10 CFR 50.55a(g).

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.16 RCS Leakage Detection Instrumentation

BASES

BACKGROUND

GDC 30 of Appendix A to 10 CFR 50 (Ref. 1) requires means for detecting and, to the extent practical, identifying the location of the source of RCS LEAKAGE. Regulatory Guide 1.45 (Ref. 2) describes acceptable methods for selecting leakage detection systems.

Leakage detection systems must have the capability to detect significant Reactor Coolant Pressure Boundary (RCPB) degradation as soon after occurrence as practical to minimize the potential for propagation to a gross failure. Thus, an early indication or warning signal is necessary to permit proper evaluation of all unidentified LEAKAGE.

Industry practice has shown that water flow changes of 0.5 gpm to 1.0 gpm can readily be detected in contained volumes by monitoring changes in water level, in flow rate, or in the operating frequency of a pump. The containment sump monitor consists of instrumentation used to monitor containment sump level and flow (pump run time). The containment sump used to collect unidentified LEAKAGE is instrumented to alarm at 1.0 gpm above normal flow for 1 hour (Ref. 3). This sensitivity is acceptable for detecting increases in unidentified LEAKAGE.

The reactor coolant contains radioactivity that, when released to the containment, can be detected by radiation monitoring instrumentation. Reactor coolant radioactivity levels will be low during initial reactor startup and for a few weeks thereafter until activated corrosion products have been formed and fission products appear from fuel element cladding contamination or cladding defects. Instrument sensitivities of 10^{-9} μCi/cc radioactivity for particulate monitoring and of 10^{-6} μCi/cc radioactivity for gaseous monitoring are practical for these leakage detection systems. Radioactivity detection systems are included for monitoring both particulate and gaseous activities, because of their sensitivities and responses to RCS LEAKAGE.

(continued)

BASES

BACKGROUND (continued)

An increase in humidity of the containment atmosphere would indicate release of water vapor to the containment. Dew point temperature measurements can thus be used to monitor humidity levels of the containment atmosphere as an indicator of potential RCS LEAKAGE. A 1°F increase in dew point is well within the sensitivity range of available instruments.

Since the humidity level is influenced by several factors, a quantitative evaluation of an indicated leakage rate by this means may be questionable and should be compared to observed increases in liquid flow into or from the containment sump. Humidity level monitoring is considered most useful as an indirect alarm or indication to alert the operator to a potential problem. Humidity monitors are not required by this LCO.

Air temperature and pressure monitoring methods may also be used to infer unidentified LEAKAGE to the containment. Containment temperature and pressure fluctuate slightly during plant operation, but a rise above the normally indicated range of values may indicate RCS LEAKAGE into the containment. The relevance of temperature and pressure measurements are affected by containment free volume and, for temperature, detector location. Alarm signals from these instruments can be valuable in recognizing a sizable leakage to the containment. Temperature and pressure monitors are not required by this LCO.

APPLICABLE SAFETY ANALYSES

The need to evaluate the severity of an alarm or an indication is important to the operators, and the ability to compare and verify with indications from other systems is necessary. The RCS leakage detection instrumentation is described in the UFSAR (Ref. 3). Multiple instrument locations are utilized, if needed, to help identify the location of the LEAKAGE source.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The safety significance of RCS LEAKAGE varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring RCS LEAKAGE into the containment area are necessary. Quickly separating the identified LEAKAGE from the unidentified LEAKAGE provides quantitative information to the operators, allowing them to take corrective action should leakage occur detrimental to the safety of the facility and the public.

RCS leakage detection instrumentation satisfies Criterion 1 of 10 CFR (C)(2)(ii).

LCO

One method of protecting against large RCS LEAKAGE derives from the ability of instruments to detect extremely small leaks. This LCO requires instruments of diverse monitoring principles to be OPERABLE to provide a high degree of confidence that extremely small leaks are detected in time to allow actions to place the plant in a safe condition when RCS LEAKAGE indicates possible RCPB degradation.

The LCO is satisfied when monitors of diverse measurement means are available. Thus, the containment sump monitor in combination with a particulate and gaseous radioactivity monitor (RU-1) provides an acceptable minimum. It has been determined that it is acceptable to continue to call the containment sump OPERABLE with one containment sump pump out of service.

APPLICABILITY

Because of elevated RCS temperature and pressure in MODES 1, 2, 3, and 4, RCS leakage detection instrumentation is required to be OPERABLE.

In MODE 5 or 6, the temperature is ≤ 210°F and pressure is maintained low or at atmospheric pressure. Since the temperatures and pressures are far lower than those for MODES 1, 2, 3, and 4, the likelihood of leakage and crack propagation is much smaller. Therefore, the requirements of this LCO are not applicable in MODES 5 and 6.

(continued)

BASES (continued)

ACTIONS

The Actions are modified by a Note that indicates the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when the containment sump and required containment atmosphere radioactivity monitor channels are inoperable. This allowance is provided because other means are available to monitor for RCS LEAKAGE.

A.1 and A.2

If the containment sump monitor is inoperable, no other form of sampling can provide the equivalent information.

However, the containment atmosphere radioactivity monitor will provide indications of changes in leakage. Together with the atmosphere monitor, the periodic surveillance for RCS water inventory balance, SR 3.4.14.1, must be performed at an increased frequency of 24 hours to provide information that is adequate to detect leakage.

Restoration of the sump monitor to OPERABLE status is required to regain the function in a Completion Time of 30 days after the monitor's failure. This time is acceptable considering the frequency and adequacy of the RCS water inventory balance required by Required Action A.1.

B.1.1, B.1.2, and B.2

With either the gaseous or particulate containment atmosphere radioactivity monitoring instrumentation channels inoperable, alternative action is required. Either grab samples of the containment atmosphere must be taken and analyzed, or water inventory balances, in accordance with SR 3.4.14.1, must be performed to provide alternate periodic information. With a sample obtained and analyzed or an inventory balance performed every 24 hours, the reactor may be operated for up to 30 days to allow restoration of both of the radioactivity monitors.

The 24 hour interval provides periodic information that is adequate to detect leakage. The 30 day Completion Time recognizes at least one other form of leakage detection is available.

(continued)

BASES (continued)

ACTIONS (continued)

C.1

If any Required Action of Condition A or B cannot be met within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

D.1

If all required monitors are inoperable, no automatic means of monitoring leakage are available and immediate plant shutdown in accordance with LCO 3.0.3 is required.

SURVEILLANCE REQUIREMENTS

SR 3.4.16.1

SR 3.4.16.1 requires the performance of a CHANNEL CHECK of the required containment atmosphere radioactivity monitors. The check gives reasonable confidence the channel is operating properly. The Frequency of 12 hours is based on instrument reliability and is reasonable for detecting off normal conditions.

SR 3.4.16.2

SR 3.4.16.2 requires the performance of a CHANNEL FUNCTIONAL TEST of the required containment atmosphere radioactivity monitors. The test ensures that the monitor can perform its function in the desired manner. The test verifies the alarm setpoint and relative accuracy of the instrument string. The Frequency of 92 days considers instrument reliability, and operating experience has shown it proper for detecting degradation.

The alarm setpoints for the containment building atmosphere monitor (RU-1) are:

particulate	$\leq 2.3 \times 10^{-6}$ μCi/cc CS-137
gaseous	$\leq 6.6 \times 10^{-2}$ μCi/cc Xe-133

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.16.3, SR 3.4.16.4

These SRs require the performance of a CHANNEL CALIBRATION for each of the RCS leakage detection instrumentation channels. The calibration verifies the accuracy of the instrument string, including the instruments located inside containment. The Frequency of 18 months is a typical refueling cycle and considers channel reliability. Operating experience has shown this Frequency is acceptable.

REFERENCES

1. 10 CFR 50, Appendix A, Section IV, GDC 30.
2. Regulatory Guide 1.45.
3. UFSAR, Section 5.2.5.

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.17 RCS Specific Activity

BASES

BACKGROUND

The Code of Federal Regulations, 10 CFR 100 (Ref. 1) specifies the maximum dose to the whole body and the thyroid an individual at the site boundary can receive for 2 hours during an accident. The limits on specific activity ensure that the doses are held to a small fraction of the 10 CFR 100 limits during analyzed transients and accidents.

The RCS specific activity LCO limits the allowable concentration level of radionuclides in the reactor coolant. The LCO limits are established to minimize the offsite radioactivity dose consequences in the event of a steam generator tube rupture (SGTR) accident.

The LCO contains specific activity limits for both DOSE EQUIVALENT I-131 and gross specific activity. The allowable levels are intended to limit the 2 hour dose at the site boundary to a small fraction of the 10 CFR 100 dose guideline limits. The limits in the LCO are standardized based on parametric evaluations of offsite radioactivity dose consequences for typical site locations.

The parametric evaluations showed the potential offsite dose levels for an SGTR accident were an appropriately small fraction of the 10 CFR 100 dose guideline limits. Each evaluation assumes a broad range of site applicable atmospheric dispersion factors in a parametric evaluation.

APPLICABLE SAFETY ANALYSES

The LCO limits on the specific activity of the reactor coolant ensure that the resulting 2 hour doses at the site boundary will not exceed a small fraction of the 10 CFR 100 dose guideline limits following an SGTR accident. The SGTR safety analysis (Ref. 2) assumes the specific activity of the reactor coolant at the LCO limits and an existing reactor coolant steam generator (SG) tube leakage rate of 1 gpm.

The analysis for the SGTR accident establishes the acceptance limits for RCS specific activity. Reference to

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

this analysis is used to assess changes to the facility that could affect RCS specific activity as they relate to the acceptance limits.

The rise in pressure in the ruptured SG causes radioactively contaminated steam to discharge to the atmosphere through the atmospheric dump valves or the main steam safety valves. The atmospheric discharge stops when the turbine bypass to the condenser removes the excess energy to rapidly reduce the RCS pressure and close the valves. The unaffected SG removes core decay heat by venting steam until the cooldown ends.

The safety analysis shows the radiological consequences of an SGTR accident are within a small fraction of the Reference 1 dose guideline limits.

Operation with iodine specific activity levels greater than the LCO limit is permissible if the activity levels do not exceed the limits shown in Figure 3.4.17-1 for more than 48 hours. The above-limit permissible iodine levels shown in Figure 3.4.17-1 are acceptable because of the low probability of an SGTR accident occurring during the established 48 hour time limit. The allowable limits shown on Figure 3.4.17-1 accomodate possible iodine spiking phenomenon which may occur following changes in thermal power.

RCS specific activity satisfies Criterion 2 of 10 CFR 50.36 (c)(2)(ii).

LCO

The specific iodine activity is limited to 1.0 μCi/gm DOSE EQUIVALENT I-131, and the gross specific activity in the primary coolant is limited to the number of μCi/gm equal to 100 divided by $\bar{E}$ (average disintegration energy of the sum of the average beta and gamma energies of the coolant nuclides). The limit on DOSE EQUIVALENT I-131 ensures the 2 hour thyroid dose to an individual at the site boundary during the Design Basis Accident (DBA) will be a small fraction of the allowed thyroid dose. The limit on gross specific activity ensures the 2 hour whole body dose to an individual at the site boundary during the DBA will be a small fraction of the allowed whole body dose.

(continued)

BASES

LCO (continued)

The SGTR accident analysis (Ref. 2) shows that the 2 hour site boundary dose levels are within acceptable limits. Violation of the LCO may result in reactor coolant radioactivity levels that could, in the event of an SGTR, lead to site boundary doses that exceed the 10 CFR 100 dose guideline limits.

APPLICABILITY

In MODES 1 and 2, and in MODE 3 with RCS cold leg temperature ≥ 500°F, operation within the LCO limits for DOSE EQUIVALENT I-131 and gross specific activity is necessary to contain the potential consequences of an SGTR to within the acceptable site boundary dose values.

For operation in MODE 3 with RCS cold leg temperature < 500°F, and in MODES 4 and 5, the release of radioactivity in the event of an SGTR is unlikely since the saturation pressure of the reactor coolant is below the lift pressure settings of the atmospheric dump valves and main steam safety valves.

ACTIONS

A.1 and A.2

With the DOSE EQUIVALENT I-131 greater than the LCO limit, samples at intervals of 4 hours must be taken to demonstrate the limits of Figure 3.4.17-1 are not exceeded. The Completion Time of 4 hours is required to obtain and analyze a sample.

Sampling must continue for trending. The DOSE EQUIVALENT I-131 must be restored to within limits within 48 hours.

The Completion Time of 48 hours is required if the limit violation resulted from normal iodine spiking.

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

A Note to the Required Actions of Condition A excludes the MODE change restriction of LCO 3.0.4. This exception allows entry into the applicable MODE(S) while relying on the ACTIONS even though the ACTIONS may eventually require plant shutdown. This exception is acceptable due to the significant conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient specific activity excursions while the plant remains at, or proceeds to power operation.

B.1

If a Required Action and associated Completion Time of Condition A is not met or if the DOSE EQUIVALENT I-131 is in the unacceptable region of Figure 3.4.17-1, the reactor must be brought to MODE 3 with RCS cold leg temperature < 500°F within 6 hours. The allowed Completion Time of 6 hours is required to reach MODE 3 below 500°F without challenging plant systems.

C.1 and C.2

With the gross specific activity in excess of the allowed limit, an analysis must be performed within 4 hours to determine DOSE EQUIVALENT I-131. The Completion Time of 4 hours is required to obtain and analyze a sample.

The change within 6 hours to MODE 3 and RCS cold leg temperature < 500°F lowers the saturation pressure of the reactor coolant below the setpoints of the main steam safety valves and minimizes the potential for venting the SG to the environment in an SGTR event. The allowed Completion Time of 6 hours is required to reach MODE 3 below 500°F from full power conditions and without challenging plant systems.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.17.1

The Surveillance requires performing a gamma isotopic analysis as a measure of the gross specific activity of the reactor coolant at least once per 7 days. While basically a quantitative measure of radionuclides with half lives longer than 15 minutes, excluding iodines, this measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in gross specific activity. Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. The Surveillance is applicable in MODES 1 and 2, and in MODE 3 with RCS cold leg temperature at least 500°F. The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time.

SR 3.4.17.2

This Surveillance is performed to ensure iodine remains within limit during normal operation and following fast power changes when fuel failure is more apt to occur. During normal operation, the 14 day Frequency is adequate to trend changes in the iodine activity level considering gross activity is monitored every 7 days. The 14 day surveillance frequency is modified by the Note "Only required to be performed in MODE 1." This is acceptable because the level of fission products generated in MODES 2 and 3 is much less than in MODE 1. The Frequency, between 2 hours and 6 hours after a power change of ≥ 15% RTP within a 1 hour period, is established because the iodine levels peak during this time following fuel failure; samples at other times would provide inaccurate results. One sample is sufficient if the plant has gone through a shutdown or if the transient is complete in 6 hours.

SR 3.4.17.2 14 day Frequency is modified by a Note which requires the Surveillance to only be performed in MODE 1. This is required because the level of fission products generated in other MODES is much less. Also, fuel failures associated with fast power changes is more apt to occur in MODE 1 than in MODES 2 or 3.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.17.3

A radiochemical analysis for $\bar{E}$ determination is required every 184 days (6 months) with the plant operating in MODE 1 equilibrium conditions. The $\bar{E}$ determination directly relates to the LCO and is required to verify plant operation within the specified gross activity LCO limit. The analysis for $\bar{E}$ is a measurement of the average energies per disintegration for isotopes with half lives longer than 15 minutes, excluding iodines. The Frequency of 184 days recognizes $\bar{E}$ does not change rapidly.

This SR has been modified by a Note that indicates sampling is required to be performed within 31 days after 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours should the 184 day Frequency interval be exceeded. Further discussion of SR Note format is found in Section 1.4, Frequency. This ensures the radioactive materials are at equilibrium so the analysis for $\bar{E}$ is representative and not skewed by a crud burst or other similar abnormal event.

REFERENCES

1. 10 CFR 100.11, 1973.
2. UFSAR, Section 15.6.3.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.1
MARK UP

<DOC>
<CTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 RCS Pressure, Temperature, and Flow ~~(~~Departure from Nucleate Boiling (DNB)~~)~~ Limits

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, cold leg temperature, and RCS total flow rate shall be within the limits specified below:

<LCO 3.2.8> a. Pressurizer pressure ≥ ~~[2028]~~ 2130 psia and ≤ ~~[2275]~~ 2295 psia; and

<LCO 3.2.6> b. RCS cold leg temperature (T_c) ~~≥ [535]°F and ≤ [558]°F for < [70]% RTP, or ≥ [544]°F and ≤ [589]°F for ≥ [70]% RTP; and~~ shall be within the Area of Acceptable Operation shown in Figure 3.4.1-1

<LCO 3.2.5> c. RCS total flow rate ≥ ~~[148 E6] lb/hour and ≤ [177.6 E6] lb/hour~~ 155.8 lbm/hour.

APPLICABILITY: MODE 1 for RCS total flow rate, MODES 1 and 2 for pressurizer pressure.

<DOC L.1>

NOTE

Pressurizer pressure limit does not apply during:

a. THERMAL POWER ramp > 5% RTP per minute; or

b. THERMAL POWER step > 10% RTP.

ACTIONS

MODE 1 for RCS cold leg temperature (T_c)
MODE 2 with K_{eff} ≥ 1 for RCS cold leg temperature (T_c)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.2.5 ACT> A. ~~Pressurizer pressure or~~ RCS flow rate not within limit~~s~~.	A.1 Restore ~~parameter(s)~~ RCS flow rate to within limit.	2 hours
<3.2.5 ACT> B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 2.	6 hours

(continued)

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.2.6 ACT> <3.2.8 ACT>	C. Pressurizer pressure or RCS cold leg temperature not within limits.	C.1 Restore parameter(s) cold leg temperature to within limits.	2 hours
<3.2.6 ACT> <3.2.8 ACT>	D. Required Action and associated Completion Time of Condition C not met.	D.1 Reduce THERMAL POWER to ≤ [30]% RTP. Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
<4.2.8>	SR 3.4.1.1	Verify pressurizer pressure ≥ 2130 ~~[2025]~~ psia and ≤ 2295 ~~[2275]~~ psia.	12 hours
<4.2.6>	SR 3.4.1.2	Verify RCS cold leg temperature ~~≥ [535]°F and ≤ [558]°F for < [70]% RTP or ≥ [544]°F and ≤ [558]°F for ≥ [70]% RTP~~ within limits as shown in Figure 3.4.1-1.	12 hours
<4.2.5>	SR 3.4.1.3	----------NOTE---------- Required to be met in MODE 1 with all RCPs running. ---------- Verify RCS total flow rate ≥ ~~[148 E6] lb/hour and ≤ [177 E6] lb/hour.~~ ≥ 155.8 E6 lbm	12 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
~~SR 3.4.1.4~~ ~~----------NOTE----------~~ ~~Not required to be performed until [24] hours after ≥ [90]% RTP.~~ ~~----------~~ ~~Verify by precision heat balance that RCS total flow rate within limits specified in the COLR.~~	~~[18] months~~

3

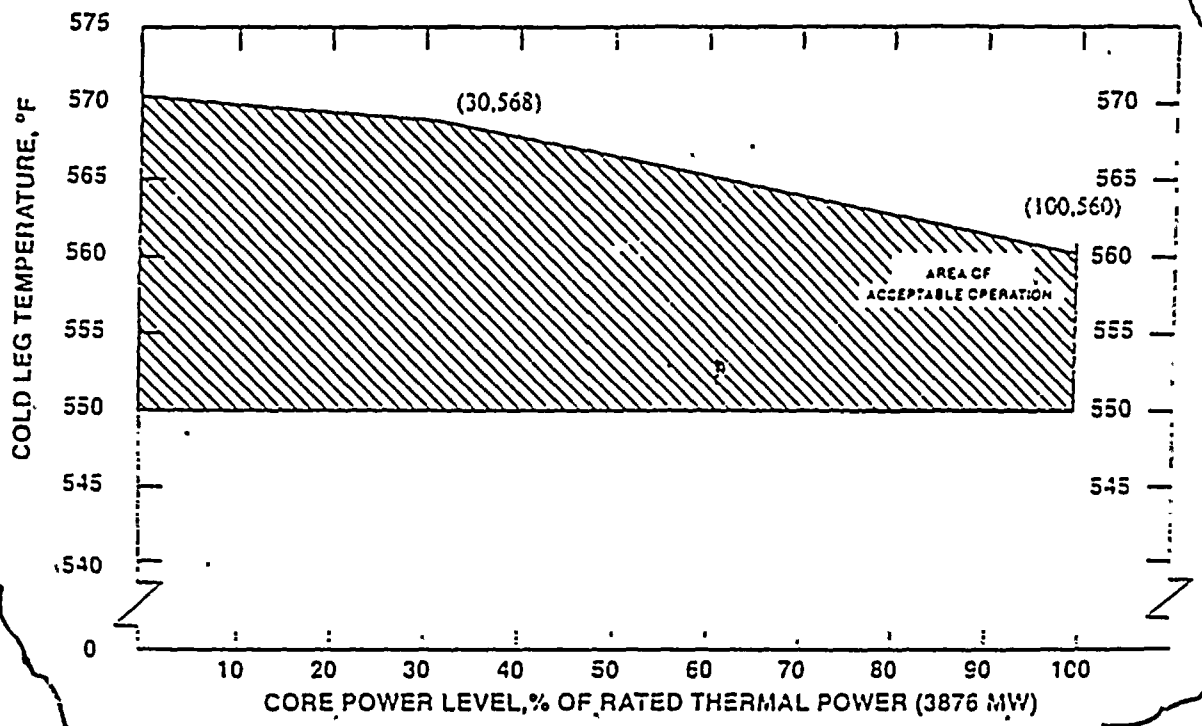
Insert CTS Reactor Coolant Cold Leg Temperature vs. Core Power level, figure 3.2-1

1

Palo Verde - Units 1,2,3

FIGURE ~~3.2-1 (INSERT)~~ 3.4.1-1

REACTOR COOLANT COLD LEG TEMPERATURE VS. CORE POWER LEVEL



REACTOR COOLANT COLD LEG TEMPERATURE vs. CORE POWER LEVEL

Move CTS Figure 3.2-1 / ITS Figure 3.4.1-1 from CTS Page 3/4 2-8 to here

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.1
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.1 RCS Pressure, Temperature, and Flow (Departure from Nucleate Boiling (DNB)) Limits

BASES

BACKGROUND

These Bases address requirements for maintaining RCS pressure, temperature, and flow rate within limits assumed in the safety analyses. The safety analyses (Ref. 1) of normal operating conditions and anticipated operational occurrences assume initial conditions within the normal steady state envelope. The limits placed on DNB related parameters ensure that these parameters will not be less conservative than were assumed in the analyses and thereby provide assurance that the minimum departure from nucleate boiling ratio (DNBR) will meet the required criteria for each of the transients analyzed.

The LCO limits for minimum and maximum RCS pressures as measured at the pressurizer are consistent with operation within the nominal operating envelope and are bounded by those used as the initial pressures in the analyses.

The LCO limits for minimum and maximum RCS cold leg temperatures are consistent with operation at the indicated power level and are bounded by those used as the initial temperatures in the analyses.

are in accordance with the Area of Acceptable Operation shown in Figure 3.4.1-1,

The LCO limit for minimum ~~and maximum~~ RCS flow rate ~~are~~ bounded by those used as the initial flow rates in the analyses. The RCS flow rate is not expected to vary during plant operation with all pumps running.

APPLICABLE SAFETY ANALYSES

The requirements of LCO 3.4.1 represent the initial conditions for DNB limited transients analyzed in the safety analyses (Ref. 1). The safety analyses have shown that transients initiated from the limits of this LCO will meet the DNBR criterion of ≥ 1.3. This is the acceptance limit for the RCS DNB parameters. Changes to the facility that could impact these parameters must be assessed for their impact on the DNBR criterion. The transients analyzed for include loss of coolant flow events and dropped or stuck control element assembly (CEA) events. A key assumption for the analysis of these events is that the core power

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

distribution is within the limits of LCO 3.1.7, "Regulating CEA Insertion Limits"; LCO 3.1.8, "Part Length CEA Insertion Limits"; LCO 3.2.3, "AZIMUTHAL POWER TILT (T_q)"; and LCO 3.2.5, "AXIAL SHAPE INDEX (ASI) [Analog]"; [LCO 3.1.7, "Regulating Rod Insertion Limits"; LCO 3.2.4, "AZIMUTHAL POWER TILT (T_q)"; and LCO 3.2.5, "AXIAL SHAPE INDEX (Analog)"]. The safety analyses are performed over the following range of initial values: RCS pressure [1705-2400] psia, core inlet temperature [500-580] °F, and reactor vessel inlet coolant flow rate [95-125%].

The RCS DNB limits satisfy Criterion 2 of the NRC Policy Statement.

LCO

This LCO specifies limits on the monitored process variables—RCS pressurizer pressure, RCS cold leg temperature, and RCS total flow rate—to ensure that the core operates within the limits assumed for the plant safety analyses. Operating within these limits will result in meeting the DNBR criterion in the event of a DNB limited transient.

The LCO numerical values for pressure, temperature, and flow rate are given for the measurement location but have not been adjusted for instrument error. Plant specific limits of instrument error are established by the plant staff to meet the operational requirements of this LCO.

APPLICABILITY

In MODE 1, the limits on RCS pressurizer pressure, RCS cold leg temperature, and RCS flow rate must be maintained during steady state operation in order to ensure that DNBR criteria will be met in the event of an unplanned loss of forced coolant flow or other DNB limited transient. In all other MODES, the power level is low enough so that DNBR is not a concern.

A Note has been added to indicate the limit on pressurizer pressure may be exceeded during short term operational transients such as a THERMAL POWER ramp increase of > 5% RTP per minute or a THERMAL POWER step increase of > 10% RTP. These conditions represent short term perturbations where actions to control pressure variations might be

(continued)

INSERT FOR ITS BASES 3.4.1
APPLICABILITY BASES
(Units 1, 2, and 3)

INSERT 1

APPLICABILITY	for RCS flow rate, MODES 1 and 2 for RCS pressurizer pressure, MODE 1 for RCS cold leg temperature, and MODE 2 with $K_{eff} \geq 1$ for RCS cold leg temperature, the limits

BASES

APPLICABILITY (continued)

counterproductive. Also, since they represent transients initiated from power levels < 100% RTP, an increased DNBR margin exists to offset the temporary pressure variations. (7)

Another set of limits on DNB related parameters is provided in Safety Limit (SL) 2.1.1, "Reactor Core Safety Limits." Those limits are less restrictive than the limits of this LCO, but violation of SLs merits a stricter, more severe Required Action. Should a violation of this LCO occur, the operator should check whether or not an SL may have been exceeded.

ACTIONS

A.1

(4)

Pressurizer pressure is a controllable and measurable parameter. With this parameter not within the LCO limits, action must be taken to restore the parameter.

The 2 hour Completion Time is based on plant operating experience that shows the parameter can be restored in this time period.

RCS flow rate is not a controllable parameter and is not expected to vary during steady state operation. If the flow rate is not within the LCO limit, then power must be reduced, as required by Required Action B.1, to restore DNB margin and eliminate the potential for violation of the accident analysis bounds. (10)

The 2 hour Completion Time for restoration of ~~the parameters~~ RCS flowrate provides sufficient time ~~to adjust plant parameters~~ to determine the cause of the off normal condition, and to restore the readings within limits. The Completion Time is based on plant operating experience. (8)

B.1

If Required Action A.1 is not met within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 2 within 6 hours. In MODE 2, the reduced power condition eliminates the potential for violation of the accident analysis bounds.

(continued)

BASES

ACTIONS

B.1 (continued)

Six hours is a reasonable time that permits the plant power to be reduced at an orderly rate in conjunction with even control of Steam Generator (SG) heat removal.

C.1

Pressurizer pressure and Cold leg temperature are controllable and measurable parameters. If these parameters are not within the LCO limits, action must be taken to restore the parameter.

The 2 hour Completion Time is based on plant operating experience that shows that these parameters can be restored in this time period.

D.1

If Required Action C.1 is not met within the associated Completion Time, THERMAL POWER must be reduced to ≤ [30%] RTP. Plant operation may continue for an indefinite period of time in this condition. At the reduced power level, the potential for violation of the DNB limits is greatly reduced.

place the plant in MODE 3.

in MODE 3

The 6 hour Completion Time is a reasonable time that permits power reduction at an orderly rate in conjunction with even control of SG heat removal.

SURVEILLANCE REQUIREMENTS

SR 3.4.1.1

Since Required Action C.1 allows a Completion Time of 2 hours to restore parameters that are not within limits, the 12 hour Surveillance Frequency for pressurizer pressure is sufficient to ensure that the pressure can be restored to a normal operation, steady state condition following load changes and other expected transient operations. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess for potential degradation and verify operation is within safety analysis assumptions.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.1.2

Since Required Action A.1 allows a Completion Time of 2 hours to restore parameters that are not within limits, the 12 hour Surveillance Frequency for cold leg temperature is sufficient to ensure that the RCS coolant temperature can be restored to a normal operation, steady state condition following load changes and other expected transient operations. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess for potential degradation and to verify operation is within safety analysis assumptions.

SR 3.4.1.3

The 12 hour Surveillance Frequency for RCS total flow rate is performed using the installed flow instrumentation. The 12 hour Frequency has been shown by operating experience to be sufficient to assess for potential degradation and to verify operation is within safety analysis assumptions.

This SR is modified by a Note that only requires performance of this SR in MODE 1. The Note is necessary to allow measurement of RCS flow rate at normal operating conditions at power with all RCPs running.

SR 3.4.1.4

Measurement of RCS total flow rate by performance of a precision calorimetric heat balance once every [18] months. This allows the installed RCS flow instrumentation to be calibrated and verifies that the actual RCS flow rate is within the bounds of the analyses.

The Frequency of [18] months reflects the importance of verifying flow after a refueling outage where the core has been altered, which may have caused an alteration of flow resistance.

The SR is modified by a Note that states the SR is only required to be performed [24] hours after ≥ [90]% RTP. The Note is necessary to allow measurement of the flow rate at normal operating conditions at power in MODE 1. The

(continued)

Palo Verde · Units 1,2,3

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.1.4 (continued)

~~Surveillance cannot be performed in MODE 2 or below, and will not yield accurate results if performed below 90% RTP.~~ 3

REFERENCES 2 1. FSAR, Section ~~X~~15~~X~~.

Palo Verde - Units 1, 2, 3

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.1

1. ITS 3.4.1 uses a figure to stipulate area of acceptable operation for RCS cold leg temperature. NUREG-1432, 3.4.1, uses textual description to describe the area of acceptable operation for RCS cold leg temperature. Because PVNGS plant specific data concerning RCS cold leg temperature is not conducive to textual format, PVNGS will continue to apply the current licensing basis and use Figure 3.4.1-1 in ITS for RCS cold leg temperature. The Bases has also been revised to be consistent with the LCO.

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). Plant specific parameter/values are directly transferred from the CTS to the ITS.

3. ITS eliminates the NUREG-1432, SR 3.4.1.4, requirement to perform a precision heat balance every 18 months to ensure total RCS flow rate is within limits specified in the COLR. ITS 3.3.1, Reactor Protective Instrumentation - Operating, allows the use of either calorimetric or RCP differential pressure instrumentation with ultrasonic flow meter adjusted RCP curves for flow verification. PVNGS uses the RCP differential pressure instrumentation with ultrasonic flow meter adjusted RCP curves option and will continue its use due do the additional margin it provides in the safety analyses. Use of the calorimetric method penalizes PVNGS safety analyses with less margin. RCS flow rate verification, by use of RCP differential pressure instrumentation with ultrasonic flow meter adjusted RCP curves, ensures that the actual flow rate is within the bounds of the safety analysis and the PVNGS Cycle Independent Data Assumption List. Also, ITS SRs 3.3.1.2 and 3.3.1.5 satisfy NUREG-1432 SR 3.4.1.4 on a 12 hour and 31 day Frequency, respectively, rather than an 18 month Frequency. Performing NUREG-1432 SR 3.4.1.4 precision heat balance every 18 months is not needed when CTS licensing bases allows use of the RCP differential pressure instrumentation with ultrasonic flow meter adjusted RCP curves method on a 12 hour and 31 day Frequency. This is consistent with PVNGS licensing basis.

4. NUREG-1432, 3.4.1, requires that the Unit enter MODE 2 if pressurizer pressure is not within limits for > 2 hours. Also, NUREG-1432, 3.4.1, allows a power reduction to approximately 30% when RCS cold leg temperature is not within limits for > 2 hours. ITS 3.4.1 requires that the Unit enter MODE 3 under the same circumstances for pressurizer pressure and RCS cold leg temperature. This is based on the fact that there exists safety analysis for Heat Removal Accidents, CEA Ejection, and Steam Line Break in MODES 1 and 2 that assume pressurizer pressure and RCS cold leg temperature are within expected values for initial conditions. These expected values are derived from the pressurizer pressure and RCS cold leg temperature parameter values stated in the ITS. Therefore, PVNGS will continue to use MODE 1 and 2 Applicability for pressurizer pressure and RCS cold leg temperature, and require Unit entry into MODE 3 if corrective Actions can not restore, within 2 hours, the parameter(s) to within limits. Also, pressurizer pressure is moved from Action A to Action C since RCS cold leg temperature and pressurizer pressure have the same Actions. This is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

5. NUREG-1432, 3.4.1 LCO Bases, makes a statement that the numerical values for pressure, temperature, and flow rate are given for the measurement location but have not been adjusted for instrument error. ITS 3.4.1 does not include this statement, as it pertains to pressurizer pressure and cold leg temperature, as part of the LCO Bases. The values for pressurizer pressure, and cold leg temperature used in ITS 3.4.1 are already compensated for instrument error. This is consistent with PVNGS licensing basis.

6. NUREG-1432, LCO 3.4.1, includes a maximum RCS flow rate value. ITS LCO 3.4.1 does not use a maximum RCS flow rate value. Maximum RCS flow rate is not a parameter considered to be limiting by PVNGS safety analysis. PVNGS UFSAR clearly implies that the minimum RCS flow rate will be used for thermal margin analysis. It also clearly states that design maximum flow rate is used in the determination of design hydraulic loads, without mentioning thermal analysis. This is logical as design maximum flow rate is not a concern for thermal margin analyses, higher flow rates will only produce better (larger) margins to DNB. Since RCS flow rate is not a controllable parameter, is not expected to vary during steady state operation, and maximum flow rate is not used in thermal margin analysis, there is no reason to include RCS maximum flow rate as part of LCO 3.4.1. The removal of RCS maximum flow rate is a deviation from NUREG-1432 but is consistent with PVNGS Licensing basis. The Bases has also been revised to be consistent with the LCO.

7. NUREG-1432, 3.4.1 Applicability Bases states that since transients are initiated from power levels < 100%, an increased DNBR margin exists to offset any temporary pressure variations. This implies that the pressurizer pressure exclusion does not apply ≥ 100% RTP. This is not correct. PVNGS is digital plant with CPCs that dynamically monitor pressure, flow rate, and power to calculate DNBR. If the condition arises where high power, low flow, and low pressure cause DNBR to approach its safety limit, a reactor trip will occur. Sufficient DNBR is maintained at any power level since CPCs dynamically monitors DNBR and trips the reactor prior to challenging the DNBR safety limit. The bases has been modified so that it does not infer this exclusion only applies < 100% RTP. The bases states, "Also, DNBR margin exists to offset the temporary pressure variations." This is consistent with PVNGS licensing basis.

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

9. PVNGS is not an analog plant therefore, any references to analog TSs or SRs have been deleted.

10. Bases section deleted/revised because the associated Specification/Surveillance was deleted/revised.

PVNGS CTS
SPECIFICATION 3.4.1
MARK UP

A.1

3.4 Reactor Coolant System (RCS)

POWER DISTRIBUTION LIMITS

3.4.1 ~~3/4.2.5~~ RCS ~~FLOW RATE~~ PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS

LIMITING CONDITION FOR OPERATION

LCO 3.4.1.c. ~~3.2.5~~ The actual Reactor Coolant System total flow rate shall be greater than or equal to 155.8 x 10^6 lbm/hr.

APPLICABILITY: MODE 1.

ACTION:

restore RCS flow rate to within limits in 2 hours or — L.2

ACT A — With the actual Reactor Coolant System total flow rate ~~determined to be~~ less than the above limit,

ACT B — reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next ~~4 hours~~ 6 hours — L.2

SURVEILLANCE REQUIREMENTS

SR 3.4.1.3 ~~4.2.5~~ The actual Reactor Coolant System total flow rate shall be determined to be greater than or equal to its limit at least once per 12 hours.

SR 3.4.1.3 Note

NOTE
Required to be met in MODE 1 with all RCPs running.

M.1

Move CTS 3/4.2.5 from CTS page 3/4 2-6 to here.

A.1

3.4 Reactor Coolant System (RCS)

~~POWER DISTRIBUTION LIMITS~~

3.4.1 ~~3/4.2.6 REACTOR COOLANT COLD LEG~~ RCS PRESSURE, TEMPERATURE, AND FLOW DEPARTURE FROM NUCLEATE BOILING (DNB) LIMITS

~~LIMITING CONDITION FOR OPERATION~~

LCO 3.4.1.b

~~3.2.6~~ The reactor coolant cold leg temperature (T_c) shall be within the Area of Acceptable Operation shown in Figure ~~3.2-1.~~ 3.4.1-1

APPLICABILITY: MODE 1* and 2*#.

ACTION:

ACT C

ACT D

With the reactor coolant cold leg temperature exceeding its limit, restore the temperature to within its limit within 2 hours or be in HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

SR 3.4.1.2

~~4.2.6~~ The reactor coolant cold leg temperature shall be determined to be within its limit at least once per 12 hours.

(Move CTS 3/4.2.6 from CTS page 3/4 2-7 to here)

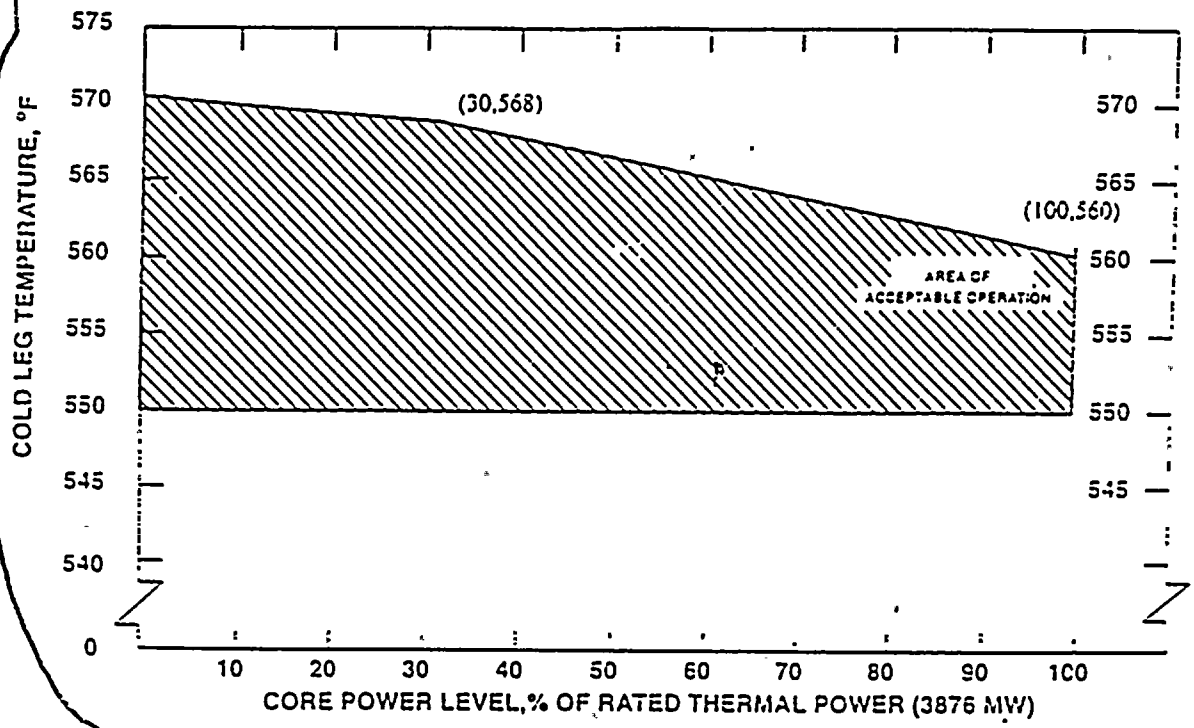
A.2

~~*See Special Test Exception 3.10.4.~~
#With K_{eff} greater than or equal to 1

Specification 3.4.1

FIGURE ~~3.2-1 (INSERT)~~ 3.4.1-1

REACTOR COOLANT COLD LEG TEMPERATURE VS. CORE POWER LEVEL



REACTOR COOLANT COLD LEG TEMPERATURE vs. CORE POWER LEVEL

LTS Figure 3.2-1 has been moved to ITS 3.4.1-1. Reference ITS 3.4.1 DOC. A.1 for discussion

Palo Verde - Units 1,2,3

Specification 3.4.1

A.1

3.4 REACTOR COOLANT SYSTEM
~~POWER DISTRIBUTION LIMITS~~

3.4.1 ~~3/4.2.8 PRESSURIZER PRESSURE~~, TEMPERATURE, AND FLOW DEPARTING FROM NUCLEATE BOILING (DNB) LIMITS
RCS

~~LIMITING CONDITION FOR OPERATION~~

LCO 3.4.1a ~~3.2.8~~ The pressurizer pressure shall be maintained between ~~2025~~ 2130 psia and ~~2300~~ 2293 psia.

A.4

APPLICABILITY: MODES 1 and 2*.

Insert 1

L.1

ACTION:

ACT C With the pressurizer pressure outside its above limits, restore the pressure to within its limit within 2 hours

ACT D or be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

SR 3.4.1.1 ~~4.2.8~~ The pressurizer pressure shall be determined to be within its limit at least once per 12 hours.

(Move CTS 3/4.2.5 from CTS page 3/4 2-10 to here.)

UNIT 2 only ~~*See Special Test Exception 3.10.8~~

A.2

INSERT FOR CTS 3.2.8
APPLICABILITY NOTE A AND B
(Units 1, 2, and 3)
INSERT 1

----------NOTE----------

Pressurizer pressure limit does not apply during:

a. THERMAL POWER ramp > 5% per minute; or.

b. THERMAL POWER step > 10% RTP.

DISCUSSION OF CHANGES
SPECIFICATION 3.4.1

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 CTS 3.2.6 Footnote references "See Special Test Exception 3.10.4" and CTS 3.2.8 Footnote (Unit 2 only) references "See Special Test Exception 3.10.5." Cross references are not used in the ITS or NUREG-1432. Removing cross references does not alter the requirements of the referenced Specification. Therefore, this is an administrative change with no impact on safety. This change is consistent with NUREG-1432.

A.3 NOT USED

A.4 CTS LCO 3.2.8, Pressurizer Pressure, is being modified to reflect the more restrictive limits specified in the proposed PVNGS license amendment submitted to the NRC in letter No. 102-03713 dated June 17, 1996.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 CTS 3.2.5 places no requirement for the performance of SR 4.2.5. ITS SR 3.4.1.3, CTS SR 4.2.5 equivalent, requires that the Surveillance be perform in Mode 1. The addition of this requirement constitutes a more restrictive change to PVNGS operating practice. This is acceptable because this allows measurement of RCS flow rate at normal operating conditions at power with all RCPs running. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS

None

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 ITS LCO 3.4.1 introduces a note that gives two specific instances when the pressurizer pressure LCO does not apply.

- THERMAL POWER ramp > 5% RTP per minute; or
- THERMAL POWER step > 10% RTP.

CTS makes no such allowance for pressurizer pressure. ITS is less restrictive since it explicitly states conditions when the Pressurizer Pressure LCO does not apply. This is acceptable because the Note represents short term perturbations where actions to control pressure variations may be counterproductive. Also, since they represent transients initiated from power levels < 100% RTP, an increased DNBR margin exists to offset the temporary pressure variations. Therefore, this change does not detrimentally affect plant safety. This change clarifies the question of applicability so that this LCO is applied as intended. This change is consistent with NUREG-1432.

L.2 CTS 3.2.5 Action Statement requires that thermal power be reduced to less than 5% within 4 hours when actual RCS flow rate is determined to be less than the limit (155.8×10^6 lbm/hr). ITS relaxes the Action requirement by allowing 2 hours to restore RCS flow plus allowing 6 hours to reach Mode 2 (which is defined as < 5% power) if flow is not restored to within limits in 2 hours. Allowing more time, an additional 4 hours, for the Completion Time is less restrictive. This is acceptable because an 8 hour Completion Time for these Actions is a reasonable time that permits plant power to be reduced at an orderly rate. This change is consistent with NUREG-1432.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.1

ADMINISTRATIVE CHANGES
(ITS 3.4.1 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 Section/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 Section/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 3.4.1 Discussion of Changes Labeled (A.1, A.2, A.3 and A.4) (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, 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 - MORE RESTRICTIVE
(ITS 3.4.1 Discussion of Changes Labeled M.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. 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 in the specific Discussion of Changes listed 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 3.4.1 Discussion of Changes Labeled M.1) (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 - LESS RESTRICTIVE
(ITS 3.4.1 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 LCO 3.4.1 introduces a note that gives two specific instances when the pressurizer pressure LCO does not apply.

- THERMAL POWER ramp > 5% RTP per minute; or
- THERMAL POWER step > 10% RTP.

CTS makes no such allowance for pressurizer pressure. ITS is less restrictive since it explicitly states conditions when the Pressurizer Pressure LCO does not apply. This is acceptable because the Note represents short term perturbations where actions to control pressure variations may be counterproductive. Also, since they represent transients initiated from power levels < 100% RTP , an increased DNBR margin exists to offset the temporary pressure variations. Therefore, this change does not detrimentally affect plant safety. This change clarifies the question of applicability so that this LCO is applied as intended. 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 3.4.1 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 proposed change adds a Note to indicate the limit on pressurizer pressure may be exceeded during short term operational transients such as a THERMAL POWER ramp increase of > 5% per minute or a THERMAL POWER step increase of > 10%. These conditions represent short term perturbations where actions to control pressure variations might be counterproductive. In addition, since they represent transients initiated from power levels < 100% RTP, an increased DNBR margin exists to offset the temporary pressure variations. These changes will not result in operation that will increase the probability of initiating an analyzed event. These changes will not alter assumptions relative to mitigation of an accident or transient event. The proposed 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 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 adds a Note to indicate the limit on pressurizer pressure may be exceeded for a short period of time. The CTS does not provide this guidance. This change 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 relax CTS requirements, however they are consistent with the assumptions made in the safety analyses, NUREG-1432, and licensing basis. Therefore, they will not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.1 Discussion of Changes Labeled L.1) (continued)

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

The proposed changes provide additional guidance and flexibility indicating that the limit on pressurizer pressure may be exceeded during short term operational transients. An evaluation of these changes concluded that relaxing these requirements has no impact on the margin of safety. The changes maintain requirements of the safety analysis, consistent with NUREG-1432, and licensing basis. As such, no question of safety is involved. Therefore, these changes will not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.1 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 CTS 3.2.5 Action Statement requires that thermal power be reduced to less than 5% within 4 hours when actual RCS flow rate is determined to be less than the limit (155.8×10^6 lbm/hr). ITS relaxes the Action requirement by allowing 2 hours to restore RCS flow rate plus allowing 6 hours to reach Mode 2 (which is defined as < 5% power) if flow is not restored to within limits in 2 hours. Allowing more time, an additional 4 hours, for the Completion Time is less restrictive. This is acceptable because an 8 hour Completion Time for these Actions is a reasonable time that permits plant power to be reduced at an orderly rate. 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 3.4.1 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 increases the time from 4 hours to 8 hours to reduce reactor power to less that 5% (Mode 2) in the event that RCS flow rate is below LCO limits. The plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least Mode 2 within 8 hours. In Mode 2, the reduced power condition eliminates the potential for violation of the accident analysis bounds. The 8 hours is a reasonable time that permits the plant power to be reduced at an orderly rate. This change will not result in operation that will increase the probability of initiating an analyzed event. These changes will not alter assumptions relative to mitigation of an accident or transient event. The proposed 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 previously evaluated.

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

Relaxing the total Completion Time to reach Mode 2 from 4 hours to 8 hours does not introduce any new mode of plant operation, does not alter the plant configuration (no new or different equipment will be installed) or change the method governing normal plant operation. These changes do relax requirements in the CTS, however, they are consistent with the assumptions made in the safety analyses, licensing basis, and consistent with NUREG-1432. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.1 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 relaxes the total Completion Time for placing the reactor in Mode 2 in the event that RCS flow rate is below LCO limits. An evaluation of the change concluded that this change has no impact on the margin of safety. The change maintains requirements of the safety analysis, licensing basis, and is consistent with NUREG-1432. As such, no question of safety is involved. Therefore, these changes will not involve a significant reduction in a margin of safety.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.2
MARK UP

<LTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 RCS Minimum Temperature for Criticality

<LCO 3.1.1.4> LCO 3.4.2 Each RCS loop ~~average~~ cold leg temperature ~~(T_{avg})~~ T_{cold} shall be ≥ ~~[520]~~ 545°F.

APPLICABILITY: MODE 1 ~~with T_{avg} in one or more RCS loops < [535]°F,~~
MODE 2 ~~with T_{avg} in one or more RCS loops < [535]°F and~~
K_{eff} ≥ 1.0.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.1.1.4 ACT> A. ~~T_{avg}~~ T_{cold} in one or more RCS loops not within limit.	A.1 Be in MODE 3.	30 minutes

SURVEILLANCE REQUIREMENTS

NOTE
Only required if any RCS loop T_{cold} < 550°F.

SURVEILLANCE	FREQUENCY
<4.1.1.4> SR 3.4.2.1 Verify RCS ~~T_{avg}~~ T_{cold} in each loop ≥ ~~[520]~~ 545°F.	30 minutes ~~thereafter~~

AND
Once within 30 minutes prior to reaching criticality

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.2
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.2 RCS Minimum Temperature for Criticality

BASES

BACKGROUND

Establishing the value for the minimum temperature for reactor criticality is based upon considerations for:

a. Operation within the existing instrumentation ranges and accuracies;

b. Operation within the bounds of the existing accident analyses; and

c. Operation with the reactor vessel above its minimum nil ductility reference temperature when the reactor is critical.

The reactor coolant moderator temperature coefficient used in core operating and accident analysis is typically defined for the normal operating temperature range ~~(532°F to 578°F)~~ (550°F to 611°F) (2). ~~The Reactor Protection System receives inputs from the narrow range hot leg temperature detectors, which have a range of 520°F to 620°F. The RCS loop average temperature (T_{avg}) is controlled using inputs of the same range. Nominal T_{avg} for making the reactor critical is ~~532°F~~ (565) (2). Safety and operating analyses for lower temperature have not been made.~~ (3) Tcold (2)

APPLICABLE SAFETY ANALYSES

There are no accident analyses that dictate the minimum temperature for criticality, but all low power safety analyses assume initial temperatures near the ~~[520]°F~~ (515) (2) limit (Ref. 1).

The RCS minimum temperature for criticality satisfies Criterion 2 of ~~the NRC Policy Statement.~~ 10 CFR 50.36(c)(2)(ii). (1)

LCO

The purpose of the LCO is to prevent criticality ~~outside~~ below the minimum normal operating ~~regime (532°F to 578°F)~~ temperature (550°F to 611°F) (2) and to prevent operation in an unanalyzed condition. (1)

(continued)

BASES

LCO (continued)

The LCO is only applicable ~~below [535]~~ in MODE 1 and 2 with $K_{eff} \geq 1.0$ °F and provides a reasonable distance to the limit of ~~[520]~~ 545 °F. This allows adequate time to trend its approach and take corrective actions prior to exceeding the limit.

APPLICABILITY

The reactor has been designed and analyzed to be critical in MODES 1 and 2 only and in accordance with this specification. Criticality is not permitted in any other MODE. Therefore, this LCO is applicable in MODE 1, and MODE 2 when $K_{eff} > 1.0$. ~~Coupled with the applicability definition for criticality is a temperature limit.~~ Monitoring is required at or below a ~~T_{avg}~~ T_{cold} of ~~[535]~~ 550 °F. The no load temperature of ~~547~~ 565 °F is maintained by the Steam ~~Dump~~ Bypass Control System.

ACTIONS

A.1

If ~~T_{avg}~~ T_{cold} is below ~~[520]~~ 545 °F, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 30 minutes. Rapid reactor shutdown can be readily and practically achieved within a 30 minute period. The allowed time reflects the ability to perform this action and to maintain the plant within the analyzed range.

SURVEILLANCE REQUIREMENTS

SR 3.4.2.1

A Note states Once within 30 minutes after any RCS loop T_{cold} < 550°F and thereafter

~~T_{avg}~~ T_{cold} is required to be verified ≥ ~~[520]~~ 545 °F every 30 minutes. The 30 minute time period is frequent enough to prevent inadvertent violation of the LCO. ~~While~~ the Surveillance is required whenever the reactor is critical and temperature is below ~~[535]~~ 550 °F. ~~in practice the Surveillance is most appropriate during the period when the reactor is brought critical.~~

Insert 1

REFERENCES

1. ~~[5]~~ 15 FSAR, Section ~~[15]~~.

INSERT FOR ITS BASES 3.4.2
SR 3.4.2.2
(Units 1, 2, and 3)
INSERT 1

BASES	
SURVEILLANCE REQUIREMENTS	A second Frequency requires T_{cold} to be verified within 30 minutes of reaching criticality. This will require repeated performance of SR 3.4.2.1 since a reactor startup takes longer than 30 minutes. The 30 minute time period is frequent enough to prevent inadvertent violation of the LCO.

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.2

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

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). Plant specific parameters/values are directly transferred from the CTS to the ITS.

3. NUREG-1432 uses T_{avg} in 3.4.2, RCS Minimum Temperature for Criticality. ITS 3.4.2, RCS Minimum Temperature for Criticality, uses T_{cold}. Palo Verde presently uses and will continue to use T_{cold} rather than T_{avg}. All PVNGS safety analysis that specifies an initial RCS temperature expresses this in terms of cold leg temperature. Also, 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. The continued use of T_{cold} is a deviation from NUREG-1432 but is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

4. ITS SR 3.4.2.1, 2nd Frequency, is created to ensure LCO compliance. NUREG-1432 requires performance of SR 3.4.2.1 prior to achieving criticality. This is achieved by approaching criticality at a temperature below NUREG-1432, 3.4.2 Applicability. Because RCS temperature is below NUREG-1432, 3.4.2 Applicability, SR 3.4.2.1 is performed on a 30 minute Frequency. This ensures RCS temperature is monitored 30 minutes prior to reaching criticality. This is not the case with PVNGS. PVNGS achieves criticality at a temperature (565°F) greater than required for ITS SR 3.4.2.1 performance (550°F). It is necessary to create a second Surveillance Frequency that verifies T_{cold}. >545°F 30 minutes prior to reaching criticality. This also requires an associated change to the LCO Applicability. The temperature requirement now exists in SR 3.4.2.1, first Frequency Note. This ensures compliance with NUREG-1432, LCO 3.4.2, intent. This change is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the Surveillance.

PVNGS CTS
SPECIFICATION 3.4.2
MARK UP

Specification 3.4.2

A.1

3.4 REACTOR COOLANT SYSTEM (RCS)

REACTIVITY CONTROL SYSTEMS

3.4.2 RCS MINIMUM TEMPERATURE FOR CRITICALITY

LIMITING CONDITION FOR OPERATION

LCO 3.4.2 3.1.1.4 The Each Reactor Coolant System lowest operating loop temperature (T_{cold}) shall be greater than or equal to 545°F.

APPLICABILITY: MODES 1 and 2#.

ACTION:

ACT A With a Reactor Coolant System operating loop temperature (T_{cold}) less than 545°F, restore T_{cold} to within its limit within 15 minutes or be in HOT STANDBY MODE 3 within the next 18 30 minutes.

A.2

SURVEILLANCE REQUIREMENTS

SR 3.4.2.1 4.1.1.4 The Reactor Coolant System temperature (T_{cold}) shall be determined to be greater than or equal to 545°F:

30 L.1

SR 3.4.2.1

a. Within 15 minutes prior to achieving reactor criticality, and

b. At least once per 30 minutes when the reactor is critical and the Reactor Coolant System T_{cold} is less than 550°F.

Applicability #With K_{eff} greater than or equal to 1.0.

DISCUSSION OF CHANGES
SPECIFICATION 3.4.2

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 CTS 3.1.1.4 Action allows 15 minutes to return RCS Cold Leg Temperature to ≥ 545°F and then take action to reduce power to enter Mode 3 within the following 15 minutes. This results in a 30 minute allowance prior to required Mode 3 entry. ITS only requires that Mode 3 be achieved within 30 minutes after RCS Cold Leg Temperature drops below 545°F. ITS does not split the allowance into a 15 minute interval to correct RCS Cold Leg Temperature and a 15 minute interval to shutdown. However, CTS and ITS both allow temperature to be returned within limits within the initial 30 minutes which terminates the requirement for Mode 3 entry. Therefore, this change is considered administrative and does not detrimentally affect plant safety. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

None

TECHNICAL CHANGES - RELOCATIONS

None

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 CTS SR 4.1.1.4 requires that RCS cold leg temperature be determined to be ≥ 545°F within 15 minutes prior to achieving criticality. ITS relaxes this requirement to 30 minute intervals. The 30 minute time period is frequent enough to prevent inadvertent violation of the LCO. Therefore, this change does not detrimentally affect plant safety. This change is consistent with NUREG-1432.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.2

ADMINISTRATIVE CHANGES
(ITS 3.4.2 Discussion of Changes Labeled A.1 and A.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, "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 Section/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 Section/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 3.4.2 Discussion of Changes Labeled (A.1 and A.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 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 - LESS RESTRICTIVE
(ITS 3.4.2 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 CTS SR 4.1.1.4 requires that RCS cold leg temperature be determined to be ≥ 545°F within 15 minutes prior to achieving criticality. ITS relaxes this requirement to 30 minute intervals. The 30 minute time period is frequent enough to prevent inadvertent violation of the LCO. 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 3.4.2 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 proposed change relaxes the frequency for performing the surveillance to verifying RCS T_{avg} in each loop > 545°F prior to achieving criticality from 15 minutes to 30 minutes. The 30 minute time interval is frequent enough to prevent inadvertent violation of the LCO. Therefore, this change will not result in operation that will increase the probability of initiating an analyzed event. This change does not alter any assumptions relative to mitigation of an accident or transient event. This change has been reviewed to ensure that no previously evaluated accident has been adversely affected. 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?

Relaxing the frequency for performing the SR from 15 minutes to 30 minutes does 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 relax the performance of the SR by 15 minutes however, it is consistent with the assumptions made in the safety analysis, licensing basis, and consistent with NUREG-1432. Therefore, this change 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 change provides a relaxation for performing the associated SR. An evaluation of this change concluded that this reduction has no impact on the margin of safety. The change maintains requirements of the safety analysis, licensing basis, and is consistent with NUREG-1432. As such, no question of safety is involved. Therefore, this change will not involve a significant reduction in a margin of safety.

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SPECIFICATION 3.4.3
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limited in accordance with the limits shown in figures 3.4.3-1 or 3.4.3-2 during heatup, cooldown criticality, and inservice leak and hydrostatic testing with:

a. Maximum heatup and cooldown rates specified in Table 3.4.3-1.

b. A maximum temperature change of 10°F in any 1-hour period during inservice hydrostatic testing operations.

<DOC>
<CTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 RCS Pressure and Temperature (P/T) Limits

<LCO 3.4.8.1> LCO 3.4.3 RCS pressure, RCS temperature, and RCS heatup and cooldown rates shall be maintained within the limits specified in the P/TLR. (2)

APPLICABILITY: At all times, except when reactor vessel head is fully detensioned such that the RCS cannot be pressurized. (1)

ACTIONS.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.4.8.1 ACT> A. ----------NOTE---------- Required Action A.2 shall be completed whenever this Condition is entered. ---------- <DOC A.3> Requirements of LCO not met in MODE 1, 2, 3, or 4.	A.1 Restore parameter(s) to within limits.	30 minutes
	AND	
	A.2 Determine RCS is acceptable for continued operation.	72 hours
<3.4.8.1 ACT> B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Be in MODE 5 with RCS pressure < ~~500~~ 400 psig. (a) (4)	36 hours

(continued)

PVNGS 1, 2 and 3

(A)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ---------NOTE--------- Required Action C.2 shall be completed whenever this Condition is entered. ---------- <DOC A.3>	C.1 Initiate action to restore parameter(s) to within limits.	Immediately
	AND	
Requirements of LCO not met any time in other than MODE 1, 2, 3, or 4. <DOC M.1>	C.2 Determine RCS is acceptable for continued operation.	Prior to entering MODE 4

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
<4.4.8 1.1> SR 3.4.3.1	----------NOTE---------- Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. ----------	
	Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates within limits specified in ~~the PTLR~~. Table 3.4.3-1, and Figures 3.4.3-1 and 3.4.3-2. (2)	30 minutes

Insert Table 3.4.3-1 and Figures 3.4.3-1, 2, 3 and 4. (2)

Specification 3.4.3

TABLE ~~3.4-3~~ 3.4.3-1

Maximum Allowable Heatup and Cooldown Rates

<8 Effective Full Power Years

Heatup

T_c* (°F)	Rate (°F/HR)
< 128°F	20°F/HR
128° - 180°F	30°F/HR
181° - 230°F	50°F/HR
> 230°F	75°F/HR

Cooldown

T_c* (°F)	Rate (°F/HR)
≤ 93°F	See Figure 3.4-2c
94° - 114°F	10°F/HR
115°F - 148°F	20°F/HR
> 148°F	100°F/HR

8-32 Effective Full Power Years

Heatup

T_c* (°F)	Rate (°F/HR)
< 116°F	10°F/HR
117° - 150°F	20°F/HR
151° - 199°F	30°F/HR
200°F - 246°F	50°F/HR
> 246°F	75°F/HR

Cooldown

T_c* (°F)	Rate (°F/HR)
≤ 108°F	See Figure 3.4-2d
109° - 126°F	10°F/HR
127°F - 147°F	20°F/HR
148°F - 162°F	40°F/HR
> 162°F	100°F/HR

Move CTS Table 3.4-3 / ITS 3.4.3-1 from CTS PG 3/4 4-28a to here

*Indicated Cold Leg Temperature

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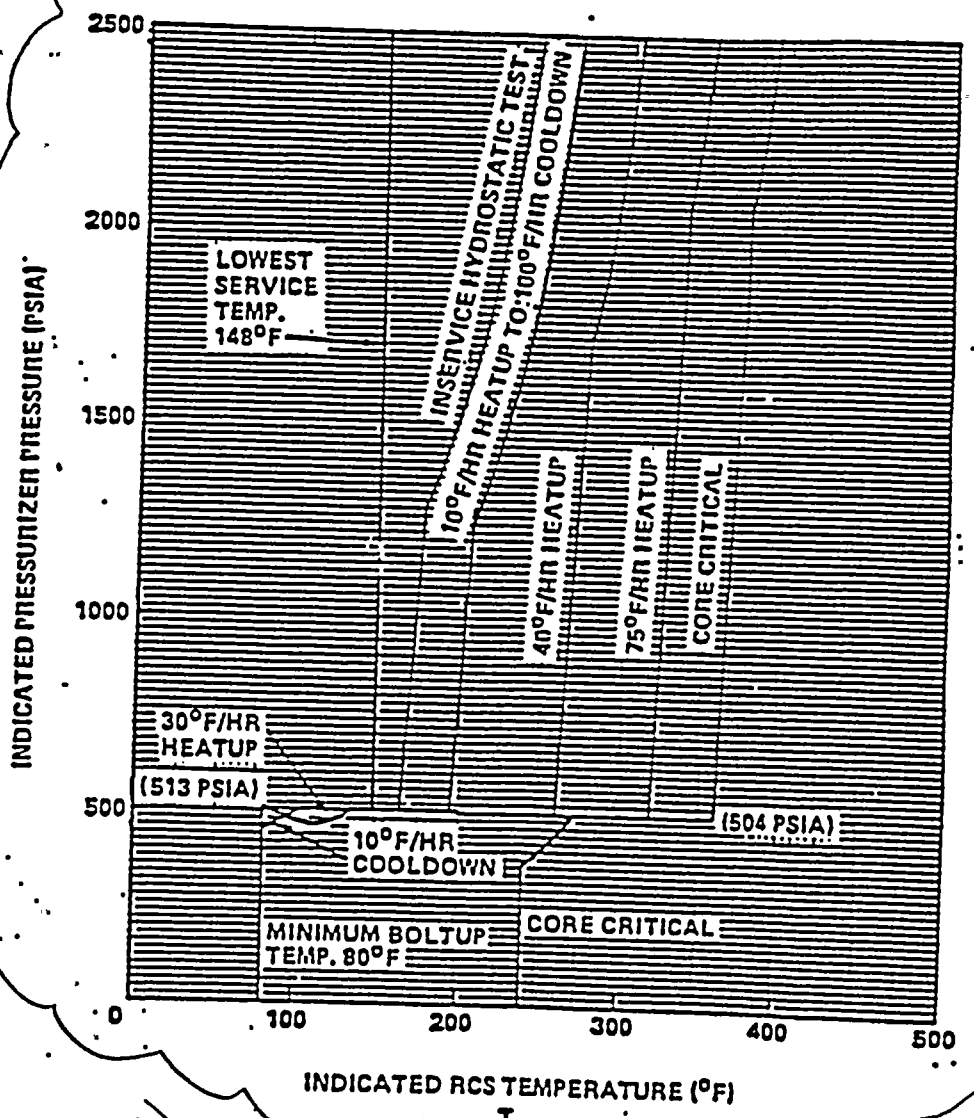
Specification 3.4.3

FIGURE ~~3.4-2a~~ 3.4.3-1
REACTOR COOLANT SYSTEM PRESSURE/TEMPERATURE LIMITATIONS FOR LESS THAN 8 EFFECTIVE FULL POWER YEARS OF OPERATION



Move CTS Figure 3.4-2a/ ITS 3.4.3-1 from CTS PG 3/4 4-29 to here

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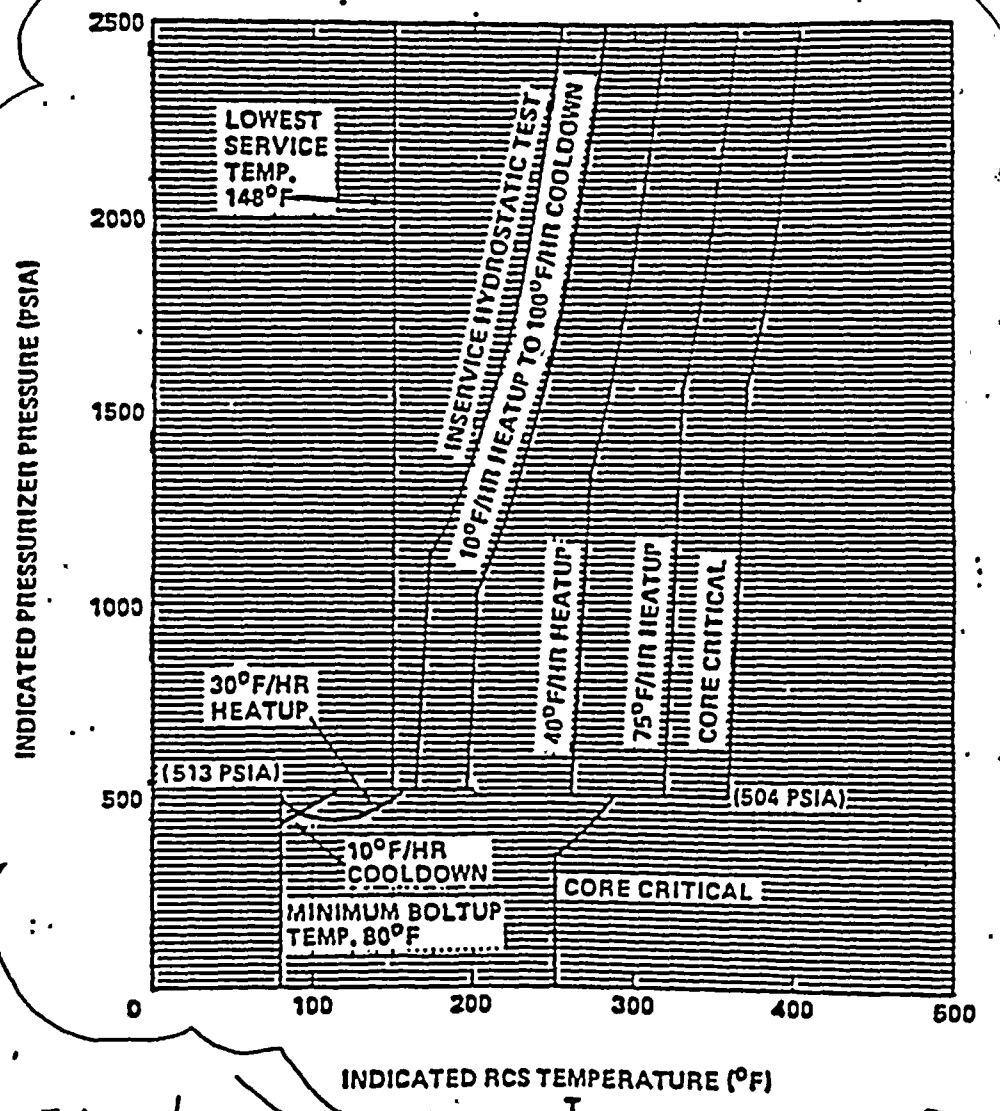
Rev A

Specification 3.4.3

FIGURE ~~3.4-2B~~ 3.4.3-2
REACTOR COOLANT SYSTEM PRESSURE/TEMPERATURE LIMITATIONS FOR 8 TO 32 EFFECTIVE FULL POWER YEARS OF OPERATION



Move CTS Figure 3.4-2B / ITS 3.4.3-2 From Pg. 3/4 4-29a to here

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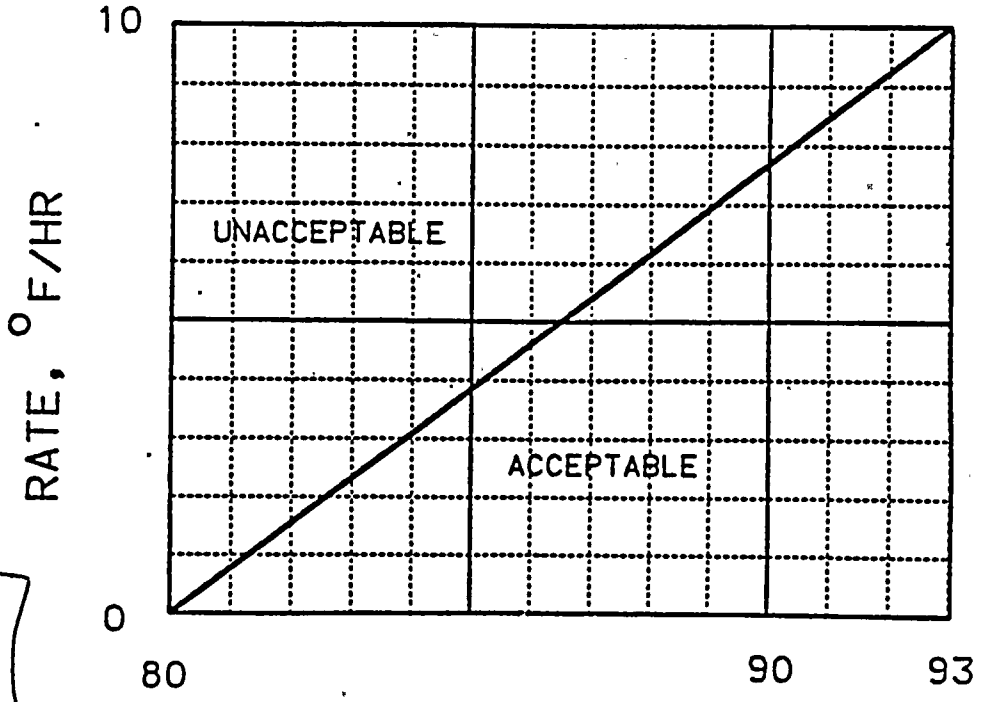
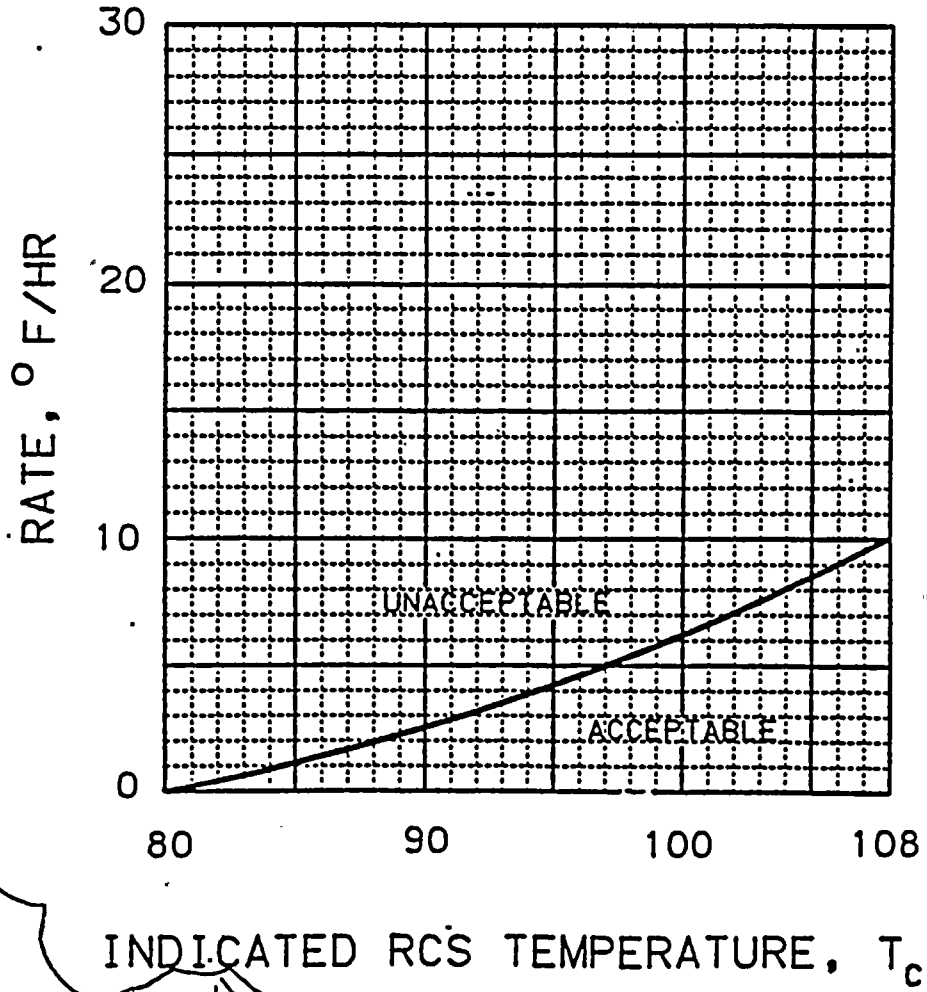
FIGURE ~~3.4-2c~~ 3.4.3-3
MAXIMUM ALLOWABLE COOLDOWN RATES
< 8 EFPY



T_c - INDICATED REACTOR COOLANT TEMPERATURE, °F

<Move CTS Figure 3.4-2c / ITS 3.4.3-3 from Pg 3/4 4-29b to here>

FIGURE ~~3.4-2d~~ 3.4.3-4
MAXIMUM ALLOWABLE COOLDOWN RATES,
8-32 EFPY



Move CTS Figure 3.4-2d / ITS 3.4.3-4 from Pb 3/4 4-29c to here

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SPECIFICATION 3.4.3
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.3 RCS Pressure and Temperature (P/T) Limits

BASES

BACKGROUND

All components of the RCS are designed to withstand effects of cyclic loads due to system pressure and temperature changes. These loads are introduced by startup (heatup) and shutdown (cooldown) operations, power transients, and reactor trips. This LCO limits the pressure and temperature changes during RCS heatup and cooldown, within the design assumptions and the stress limits for cyclic operation.

The PTLR contains P/T limit curves for heatup, cooldown, and inservice leak and hydrostatic (ISLH) testing, and data for the maximum rate of change of reactor coolant temperature (Ref. 1).

Each P/T limit curve defines an acceptable region for normal operation. The usual use of the curves is operational guidance during heatup or cooldown maneuvering, when pressure and temperature indications are monitored and compared to the applicable curve to determine that operation is within the allowable region.

The LCO establishes operating limits that provide a margin to brittle failure of the reactor vessel and piping of the reactor coolant pressure boundary (RCPB). The vessel is the component most subject to brittle failure, and the LCO limits apply mainly to the vessel. The limits do not apply to the pressurizer, which has different design characteristics and operating functions.

10 CFR 50, Appendix G (Ref. 2), requires the establishment of P/T limits for material fracture toughness requirements of the RCPB materials. Reference 2 requires an adequate margin to brittle failure during normal operation, anticipated operational occurrences, and system hydrostatic tests. It mandates the use of the ASME Code, Section III, Appendix G (Ref. 3).

The actual shift in the RT_{NDT} of the vessel material will be established periodically by removing and evaluating the irradiated reactor vessel material specimens, in accordance with ASTM E 185 (Ref. 4) and Appendix H of 10 CFR 50 (Ref. 5). The operating P/T limit curves will be adjusted,

(continued)

BASES

BACKGROUND (continued)

as necessary, based on the evaluation findings and the recommendations of Reference ~~2~~ 4.

The P/T limit curves are composite curves established by superimposing limits derived from stress analyses of those portions of the reactor vessel and head that are the most restrictive. At any specific pressure, temperature, and temperature rate of change, one location within the reactor vessel will dictate the most restrictive limit. Across the span of the P/T limit curves, different locations are more restrictive, and, thus, the curves are composites of the most restrictive regions.

The heatup curve represents a different set of restrictions than the cooldown curve because the directions of the thermal gradients through the vessel wall are reversed. The thermal gradient reversal alters the location of the tensile stress between the outer and inner walls.

The criticality limit includes the Reference ~~2~~ 4 requirement that the limit be no less than 40°F above the heatup curve or the cooldown curve and not less than the minimum permissible temperature for ~~core ISI~~ inservice leak and hydrostatic (ISLH) testing. However, the criticality limit is not operationally limiting; a more restrictive limit exists in LCO 3.4.2, "RCS Minimum Temperature for Criticality."

The consequence of violating the LCO limits is that the RCS has been operated under conditions that can result in brittle failure of the RCPB, possibly leading to a nonisolable leak or loss of coolant accident. In the event these limits are exceeded, an evaluation must be performed to determine the effect on the structural integrity of the RCPB components. The ASME Code, Section XI, Appendix E (Ref. ~~5~~ 3), provides a recommended methodology for evaluating an operating event that causes an excursion outside the limits.

APPLICABLE SAFETY ANALYSES

The P/T limits are not derived from Design Basis Accident (DBA) Analyses. They are prescribed during normal operation to avoid encountering pressure, temperature, and temperature rate of change conditions that might cause undetected flaws to propagate and cause nonductile failure of the RCPB, an unanalyzed condition. ~~Reference 1 establishes the~~

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

methodology for determining the P/T limits. Since the P/T limits are not derived from any DBA, there are no acceptance limits related to the P/T limits. Rather, the P/T limits are acceptance limits themselves since they preclude operation in an unanalyzed condition. 2

The RCS P/T limits satisfy Criterion 2 of the NRC Policy Statement. 10CFR 50.36(c)(2)(ii). 3

LCO

The two elements of this LCO are:

a. The limit curves for heatup, cooldown, and ISLH testing; and

b. Limits on the rate of change of temperature.

The LCO limits apply to all components of the RCS, except the pressurizer.

These limits define allowable operating regions and permit a large number of operating cycles while providing a wide margin to nonductile failure.

The limits for the rate of change of temperature control the thermal gradient through the vessel wall and are used as inputs for calculating the heatup, cooldown, and ISLH testing P/T limit curves. Thus, the LCO for the rate of change of temperature restricts stresses caused by thermal gradients and also ensures the validity of the P/T limit curves.

Violating the LCO limits places the reactor vessel outside of the bounds of the stress analyses and can increase stresses in other RCPB components. The consequences depend on several factors, as follows:

a. The severity of the departure from the allowable operating P/T regime or the severity of the rate of change of temperature;

b. The length of time the limits were violated (longer violations allow the temperature gradient in the thick vessel walls to become more pronounced); and

(continued)

BASES

LCO (continued)

c. The existences, sizes, and orientations of flaws in the vessel material.

APPLICABILITY

The RCS P/T limits Specification provides a definition of acceptable operation for prevention of nonductile failure in accordance with 10 CFR 50, Appendix G (Ref. 2). Although the P/T limits were developed to provide guidance for operation during heatup or cooldown (MODES 3, 4, and 5) or ISLH testing, their Applicability is at all times in keeping with the concern for nonductile failure. The limits do not apply to the pressurizer.

1

except when reactor vessel head is fully detensioned such that the RCS cannot be pressurized

During MODES 1 and 2, other Technical Specifications provide limits for operation that can be more restrictive than or can supplement these P/T limits. LCO 3.4.1, "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits"; LCO 3.4.2, "RCS Minimum Temperature for Criticality"; and Safety Limit 2.1, "Safety Limits," also provide operational restrictions for pressure and temperature and maximum pressure. Furthermore, MODES 1 and 2 are above the temperature range of concern for nonductile failure, and stress analyses have been performed for normal maneuvering profiles, such as power ascension or descent.

The actions of this LCO consider the premise that a violation of the limits occurred during normal plant maneuvering. Severe violations caused by abnormal transients, at times accompanied by equipment failures, may also require additional actions from emergency operating procedures.

ACTIONS

A.1 and A.2

Operation outside the P/T limits must be corrected so that the RCPB is returned to a condition that has been verified by stress analyses.

The 30 minute Completion Time reflects the urgency of restoring the parameters to within the analyzed range. Most violations will not be severe, and the activity can be accomplished in this time in a controlled manner.

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

Besides restoring operation to within limits, an evaluation is required to determine if RCS operation can continue. The evaluation must verify the RCPB integrity remains acceptable and must be completed before continuing operation. Several methods may be used, including comparison with pre-analyzed transients in the stress analyses, new analyses, or inspection of the components.

ASME Code, Section XI, Appendix E (Ref. ~~6~~ 5 4), may be used to support the evaluation. However, its use is restricted to evaluation of the vessel beltline.

The 72 hour Completion Time is reasonable to accomplish the evaluation. The evaluation for a mild violation is possible within this time, but more severe violations may require special, event specific stress analyses or inspections. A favorable evaluation must be completed before continuing to operate.

Condition A is modified by a Note requiring Required Action A.2 to be completed whenever the Condition is entered. The Note emphasizes the need to perform the evaluation of the effects of the excursion outside the allowable limits. Restoration alone per Required Action A.1 is insufficient because higher than analyzed stresses may have occurred and may have affected the RCPB integrity.

B.1 and B.2

If a Required Action and associated Completion Time of Condition A are not met, the plant must be placed in a lower MODE because:

a. The RCS remained in an unacceptable P/T region for an extended period of increased stress; or

b. A sufficiently severe event caused entry into an unacceptable region.

Either possibility indicates a need for more careful examination of the event, best accomplished with the RCS at

(continued)

BASES

ACTIONS

B.1 and B.2 (continued)

reduced pressure and temperature. With reduced pressure and temperature conditions, the possibility of propagation of undetected flaws is decreased.

Pressure and temperature are reduced by placing the plant in MODE 3 within 6 hours and in MODE 5 with RCS pressure < ~~1500~~ 500 psig within 36 hours. 4

The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

C.1 and C.2

The actions of this LCO, anytime other than in MODE 1, 2, 3, or 4, consider the premise that a violation of the limits occurred during normal plant maneuvering. Severe violations caused by abnormal transients, at times accompanied by equipment failures, may also require additional actions from emergency operating procedures. Operation outside the P/T limits must be corrected so that the RCPB is returned to a condition that has been verified by stress analyses.

The Completion Time of "immediately" reflects the urgency of restoring the parameters to within the analyzed range. Most violations will not be severe, and the activity can be accomplished in a short period of time in a controlled manner.

Besides restoring operation to within limits, an evaluation is required to determine if RCS operation can continue. The evaluation must verify that the RCPB integrity remains acceptable and must be completed before continuing operation. Several methods may be used, including comparison with pre-analyzed transients in the stress analyses, new analyses, or inspection of the components. 4

ASHE Code, Section XI, Appendix E (Ref. ~~6~~ 5), may be used to support the evaluation. However, its use is restricted to evaluation of the vessel beltline.

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

The Completion Time of prior to entering MODE 4 forces the evaluation prior to entering a MODE where temperature and pressure can be significantly increased. The evaluation for a mild violation is possible within several days, but more severe violations may require special, event specific stress analyses or inspections.

Condition C is modified by a Note requiring Required Action C.2 to be completed whenever the Condition is entered. The Note emphasizes the need to perform the evaluation of the effects of the excursion outside the allowable limits. Restoration alone per Required Action C.1 is insufficient because higher than analyzed stresses may have occurred and may have affected the RCPB integrity.

SURVEILLANCE REQUIREMENTS

SR 3.4.3.1

Verification that operation is within ~~the P/T~~ limits is required every 30 minutes when RCS pressure and temperature conditions are undergoing planned changes. This Frequency is considered reasonable in view of the control room indication available to monitor RCS status. Also, since temperature rate of change limits are specified in hourly increments, 30 minutes permits assessment and correction for minor deviations within a reasonable time.

Surveillance for heatup, cooldown, or ISLH testing may be discontinued when the definition given in the relevant plant procedure for ending the activity is satisfied.

This SR is modified by a Note that requires this SR be performed only during RCS system heatup, cooldown, and ISLH testing. No SR is given for criticality operations because LCO 3.4.2 contains a more restrictive requirement.

REFERENCES

1. ~~[NRC approved topical report that defines the methodology for determining the P/T limits].~~

4 ~~2~~. 10 CFR 50, Appendix G.

(continued)

BASES

REFERENCES (continued)

2 ~~3~~. ASME, Boiler and Pressure Vessel Code, Section III, Appendix G.

3 ~~4~~. ASTM E 185-82, July 1982.

4 ~~5~~. 10 CFR 50, Appendix H.

5 ~~6~~. ASME, Boiler and Pressure Vessel Code, Section XI, Appendix E.

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.3

1. NUREG-1432, 3.4.3, Applicability is at all times. ITS, 3.4.3, Applicability is at all times, except when the vessel head is fully detensioned such that the RCS cannot be pressurized. The purpose of the maximum cooldown rates is to prevent the RCS pressure from exceeding the corresponding normal operation P-T limit, assuming a concurrent overpressurization due to the limiting low temperature overpressurization transient. Consequently, the cooldown rate and P/T limits are only valid if the RCS is capable of being pressurized. Therefore, with the vessel head fully detensioned, the Technical Specification cooldown limits are not applicable. This specification does not apply for the period of time the vessel head is fully detensioned because the RCS cannot be pressurized above the static head of water over the vessel in the refueling pit which is negligible compared to the ASME Code Appendix G, P-T limit. PVNGS will continue to use the Applicability as it exists in the ITS. The continued use of ITS, 3.4.3, Applicability is a deviation from NUREG-1432 but is consistent with Palo Verde licensing basis. The Bases has also been revised to be consistent with the LCO.

2. NUREG-1432, 3.4.3, locates all plant specific pressure and temperature limits in the PTLR. The PTLR is generated with an NRC approved topical report that defines the methodology for determining the P/T limits. No such approved topical report exists for CE plants. ITS will continue to contain such plant specific P/T limits within the LCO. The continued practice of locating such information with the LCO is a deviation from NUREG-1432 but is consistent with Palo Verde licensing basis. The Bases has also been revised to be consistent with the LCO.

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

4. 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 are directly transferred from the CTS to the ITS.

PVNGS CTS
SPECIFICATION 3.4.3
MARK UP

3.4

3.4.3

A.1

REACTOR COOLANT SYSTEM (RCS)

~~3/4.4.8 PRESSURE/TEMPERATURE LIMITS~~ RCS Pressure and Temperature (P/T) Limits

~~REACTOR COOLANT SYSTEM~~

~~LIMITING CONDITION FOR OPERATION~~

LCO 3.4.3

and RCS heatup & cooldown rates

~~3.4.8.1~~ The Reactor Coolant System ~~(except the pressurizer)~~ temperature and pressure shall be limited in accordance with the limit lines shown on Figures ~~3.4-2a or 3.4-2b~~ 3.4.3-1 or 3.4.3-2 during heatup, cooldown, criticality, and inservice leak and hydrostatic testing with:

a. Maximum heatup and cooldown rates as specified in Table ~~3.4-3~~ 3.4.3-1

b. A maximum temperature change of 10°F in any 1-hour period during inservice hydrostatic testing operations.

APPLICABILITY: At all times*, except when the reactor vessel head is fully detensioned such that the Reactor Coolant System cannot be pressurized.

ACTION: INSERT 1 A.3

ACT A

ACT B

With any of the above limits exceeded, restore the temperature and/or pressure to within the limit within 30 minutes; perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the Reactor Coolant System; determine that the Reactor Coolant System remains acceptable for continued operations or be in at least HOT STANDBY within the next 6 hours and reduce the RCS T_{cold} and pressure to less than 210°F and 500 psia, respectively, within the following 30 hours.

L.1 within 72 hours

SURVEILLANCE REQUIREMENTS Insert 2 M.1

<format into note>

OR 3.4.3.1

~~4.4.8.1.1~~ The Reactor Coolant System temperature and pressure shall be determined to be within the limits at least once per 30 minutes during system heatup, cooldown, and inservice leak and hydrostatic testing operations.

4.4.8.1.2 The reactor vessel material irradiation surveillance specimens shall be removed and examined, to determine changes in material properties, at the intervals required by 10 CFR Part 50 Appendix H in accordance with the schedule in Table 4.4-5. The results of these examinations shall be used to update Figure 3.4-2. LA.1

*See Special Test Exception 3.10.5. A.2

Specification 3.4.3

INSERTS FOR CTS 3.4.8.1

INSERT 1

----------NOTE----------

Required Action A.2 shall be completed whenever this Condition is entered.

INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ----------NOTE---------- Required action C.2 shall be completed whenever this Condition is entered. ----------	C.1 Initiate action to restore parameter(s) to within limits.	Immediately
	AND	
Requirements of LCO not met any time in other than MODE 1, 2, 3, or 4.	C.2 Determine RCS is acceptable for continued operation.	Prior to entering MODE 4.

Specification 3.4.3

TABLE ~~3.4-3~~ 3.4.3-1

Maximum Allowable Heatup and Cooldown Rates

<8 Effective Full Power Years

Heatup

T_c* (°F)	Rate (°F/HR)
< 128°F	20°F/HR
128° - 180°F	30°F/HR
181° - 230°F	50°F/HR
> 230°F	75°F/HR

Cooldown

T_c* (°F)	Rate (°F/HR)
≤ 93°F	See Figure 3.4-2c
94° - 114°F	10°F/HR
115°F - 148°F	20°F/HR
> 148°F	100°F/HR

8-32 Effective Full Power Years

Heatup

T_c* (°F)	Rate (°F/HR)
< 116°F	10°F/HR
117° - 150°F	20°F/HR
151° - 199°F	30°F/HR
200°F - 246°F	50°F/HR
> 246°F	75°F/HR

Cooldown

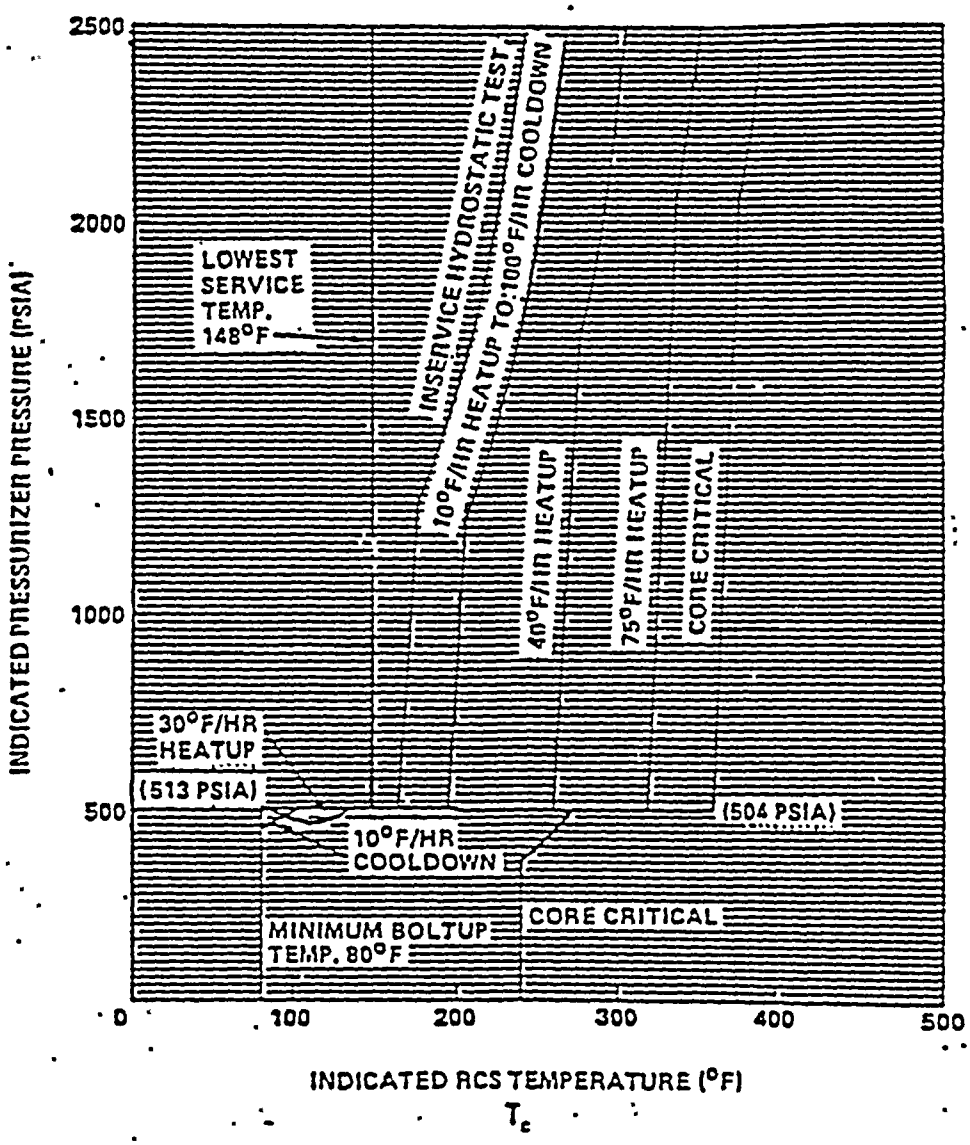
T_c* (°F)	Rate (°F/HR)
≤ 108°F	See Figure 3.4-2d
109° - 126°F	10°F/HR
127°F - 147°F	20°F/HR
148°F - 162°F	40°F/HR
> 162°F	100°F/HR

*Indicated Cold Leg Temperature

CTS Table. 3.4-3 has moved to ITS Table 3.4.3-1 Reference ITS 3.4.3 DOC A.1 for discussion

Specification 3.4.3

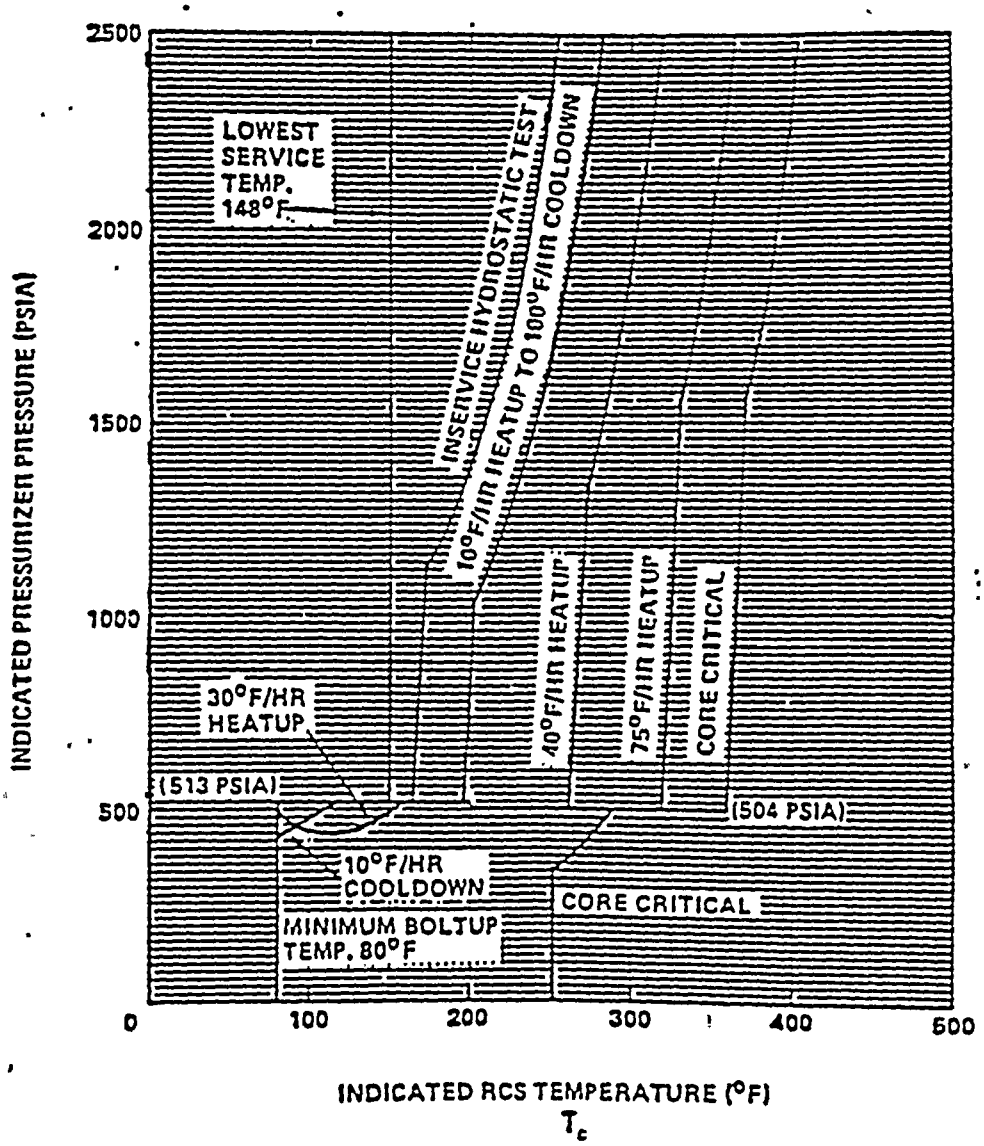
FIGURE ~~3.4-2a~~ 3.4.3-1
REACTOR COOLANT SYSTEM PRESSURE/TEMPERATURE
LIMITATIONS FOR LESS THAN 8 EFFECTIVE
FULL POWER YEARS OF OPERATION



CTS Figure 3.4-2a has been moved to ITS Figure 3.4.3-1. Reference ITS 3.4.3 DOC A.1 for discussion

Specification 3.4.3

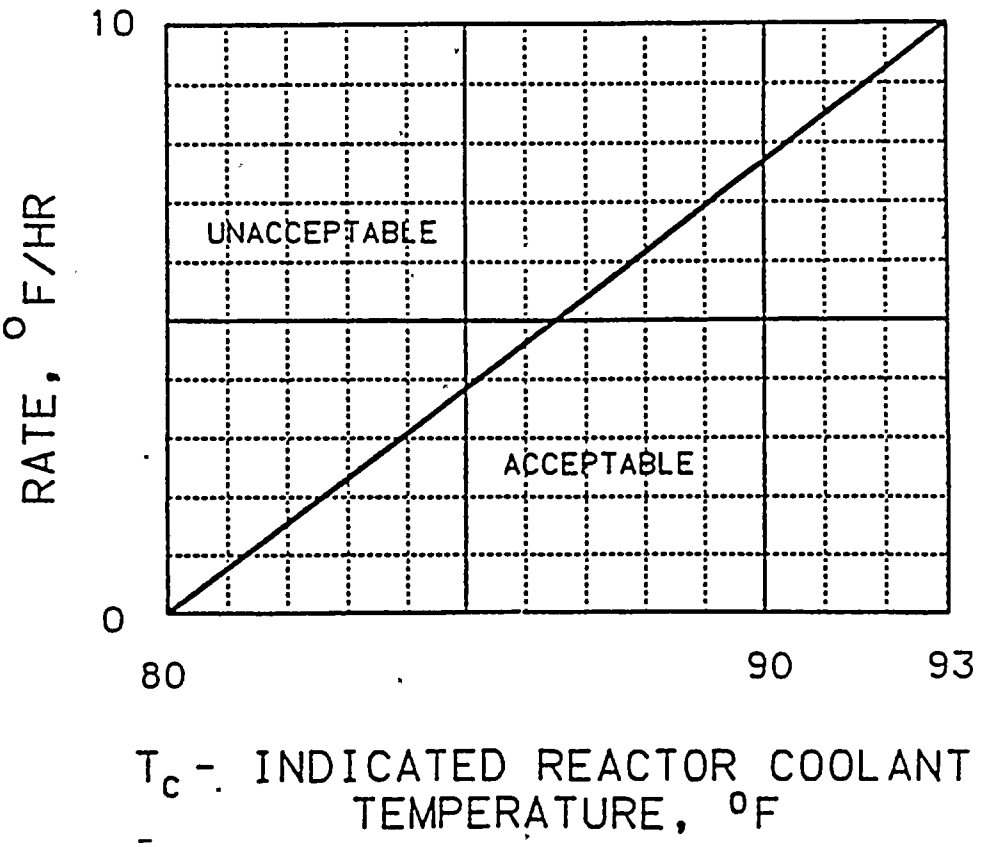
FIGURE ~~3.4-2b~~ 3.4.3-2
REACTOR COOLANT SYSTEM PRESSURE/TEMPERATURE LIMITATIONS FOR 8 TO 32 EFFECTIVE FULL POWER YEARS OF OPERATION



3/4 4-29a

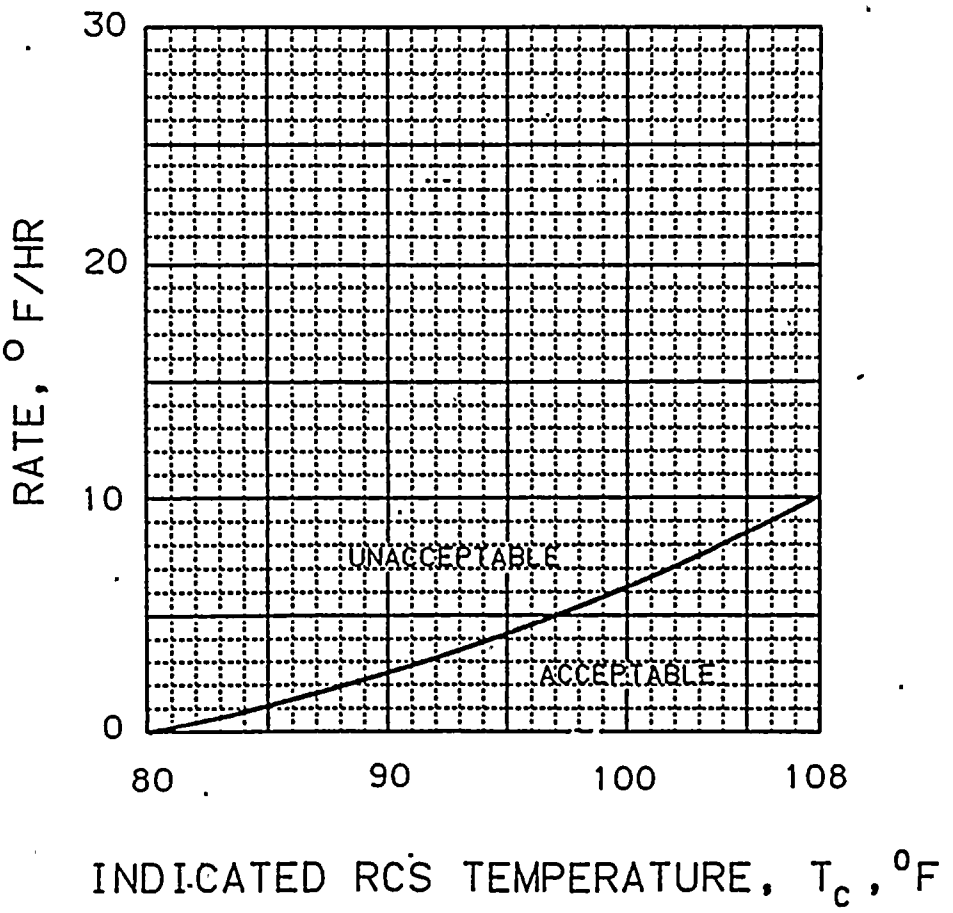
ITS Figure 3.4-2b has been moved to ITS Figure 3.4.3-2. Reference 3.4.3 DOC A.1 for discussion

FIGURE ~~3.4-2c~~ 3.4.3-3
MAXIMUM ALLOWABLE COOLDOWN RATES
< 8 EFPY



LTS Figure 3.4-2c has been moved to LTS Figure 3.4.3-3 Reference 3.4.3 DOC A.1 for discussion

FIGURE ~~3.4-2d~~ 3.4.3-4
MAXIMUM ALLOWABLE COOLDOWN RATES,
8-32 EFPY



LTS Figure 3.4-2d has been moved to ITS Figure 3.4.3-4. Reference ITS Figure 3.4.3 DOC A.1 for discussion

TABLE 4.4-5

REACTOR VESSEL MATERIAL SURVEILLANCE PROGRAM - WITHDRAWAL SCHEDULE

CAPSULE NUMER	VESSEL LOCATION	LEAD FACTOR	WITHDRAWAL TIME (EFPY)
1	38°	1.0<LF< 1.5	8 - 10
2	43°	1.0<LF< 1.5	Standby
3	137°	1.0<LF< 1.5	4 - 5
4	142°	1.0<LF< 1.5	Standby
5	230°	1.0<LF< 1.5	12 - 15
6	310°	1.0<LF< 1.5	18 - 24

LA.1

Specification 3.4.3

Specification 3.4.3

FOR INFORMATION ONLY

TABLE 4.4-5

REACTOR VESSEL MATERIAL SURVEILLANCE PROGRAM - WITHDRAWAL SCHEDULE

CAPSULE NUMBER	VESSEL LOCATION	LEAD FACTOR (LF)	WITHDRAWAL TIME (EFPY)
1	38°	1.0<LF<1.5	Standby
2	43°	1.0<LF<1.5	Standby
3	137°	1.0<LF<1.5	4 - 6
4	142°	1.0<LF<1.5	Standby
5	230°	1.0<LF<1.5	12 - 15
6	310°	1.0<LF<1.5	18 - 24

LA.1

DISCUSSION OF CHANGES
SPECIFICATION 3.4.3

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 CTS 3.4.8.1, Applicability Footnote, references "See Special Test Exception 3.10.5." Cross references are not used in the ITS or NUREG-1432. Removing cross references does not alter the requirements of the referenced Specification. Also, it should be noted that special test exception 3.10.5 does not exist in CTS. Special test exception 3.10.5 has been deleted by previous Technical Specification amendments (Unit 1 #54, Unit 2 #39, and Unit 3 #27). Therefore, this is an administrative change with no impact on safety. This change is consistent with NUREG-1432.

A.3 CTS 3.4.8.1 ACTION requires an engineering evaluation to be performed to determine the effects of an out of limits condition on the structural integrity of the RCS. In addition, CTS 3.4.8.1 ACTION requires a determination that the RCS remains acceptable for continued operations. ITS 3.4.3 Actions A.2 and C.2 require that it be determined if the RCS is acceptable for continued operation if there is an out of limits condition. It is implicit in ITS 3.4.3 Actions A.2 and C.2 that an evaluation of structural integrity would be performed to determine the acceptability of the RCS for continued operations, since that is the primary concern in the event of exceeding the pressure/temperature limits. ITS Bases 3.4.3 Background states that in the event the LCO limits are exceeded, an evaluation must be performed to determine the effect on the structural integrity of the RCPB components. ITS Bases 3.4.3 Actions A.2 and C.2 states that the evaluation must verify the RCPB integrity remains acceptable and must be completed before continuing operation.

Since ITS LCO 3.0.2 allows Actions to be exited if LCO compliance is achieved, ITS 3.4.3, Condition A, adds a note to explicitly require performance of Action A.2. The addition of the note neither adds nor detracts from the intent of CTS and is therefore administrative. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 The CTS 3.4.8.1 Action associated with violation of the Pressure/Temperature Limits allows 30 minutes to restore temperature and/or pressure to within limits. ITS Action C, Mode 5 and lower applicability, requires that action be initiated immediately to restore temperature and/or pressure to within limits. The ITS requirement to immediately initiate action to restore parameters to within limits is more restrictive than the CTS requirement allowing 30 minutes to restore parameters to within limits, since the action to restore parameters may not begin until well into the 30 minute limit. Further, if the 30 minute requirement in CTS is not met, CTS allows up to 36 hours to reduce pressure, which would not impose the urgency to restore parameters as does the ITS requirement. This change does not detrimentally affect plant safety. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS

LA.1 CTS 3.4.8.1, SR 4.4.8.1.2, addresses the reactor vessel material irradiation Surveillance Requirements. ITS 3.4.3 will not contain this information. Generic Letter 91-01 states that a program for the reactor vessel material surveillance ensures the availability of data to update the inservice operating temperature and pressure limits. This program assists in fulfilling the requirements of Appendix H to Part 50 of Title 10 of the Code Federal Regulations to prevent the brittle fracture of the reactor vessel. The relocation of this Surveillance is allowed because section II.B.3 of Appendix H to 10 CFR Part 50 requires the submittal to, and approval by, the NRC of a proposed withdrawal schedule for material specimens before implementation. Hence, the placement of this schedule in the TS duplicates the controls on changes to this schedule that have been established by Appendix H. Therefore, this information (SR 4.4.8.1.1 and Tables 4.4-5) will be relocated to a Licensee Controlled Document (Technical Requirements Manual (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 information is not required to be in the ITS to provide adequate protection of public health and safety. Therefore, relocation of this information to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 ITS 3.4.3, Action A.2, allows 72 hours following out of limit parameters to determine that the RCS is acceptable for continued operation (if the parameters are restored to within limits within 30 minutes) prior to commencing actions to place the plant in Mode 3. CTS 3.4.8.1 requires the determination to be performed within 6 hours and 30 minutes. In CTS, after the initial 30 minutes to restore pressure and/or temperature within limits is expired, 6 hours is given to complete entry into Mode 3. In ITS, an initial 30 minutes to restore pressure and/or temperature within limits is allowed, plus a concurrent 72 hours is allowed to complete the determination and then 6 hours is given to complete entry into Mode 3. This change is acceptable because 72 hours is a reasonable time to accomplish the determination. This change is consistent with NUREG-1432.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.3

ADMINISTRATIVE CHANGES
(ITS 3.4.3 Discussion of Changes Labeled A.1, A.2 and A.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, "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 Section/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 Section/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 3.4.3 Discussion of Changes Labeled (A.1, A.2 and A.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 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 - MORE RESTRICTIVE
(ITS 3.4.3 Discussion of Changes Labeled M.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. 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 in the specific Discussion of Changes listed 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 3.4.3 Discussion of Changes Labeled M.1) (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 3.4.3 Discussion of Changes Labeled LA.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 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 3.4.3 Discussion of Changes Labeled LA.1) (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 submittal, 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.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.3 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 3.4.3, Action A.2, allows 72 hours following out of limit parameters to determine that the RCS is acceptable for continued operation (if the parameters are restored to within limits within 30 minutes) prior to commencing actions to place the plant in Mode 3. CTS 3.4.8.1 requires the determination to be performed within 6 hours and 30 minutes. In CTS, after the initial 30 minutes to restore pressure and/or temperature within limits is expired, 6 hours is given to complete entry into Mode 3. In ITS, an initial 30 minutes to restore pressure and/or temperature within limits is allowed, plus a concurrent 72 hours is allowed to complete the determination and then 6 hours is given to complete entry into Mode 3. This change is acceptable because 72 hours is a reasonable time to accomplish the determination. 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 3.4.3 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 proposed change will allow 72 hours to complete a determination that the RCS is acceptable for continued operation following out-of-limit parameters, vs. 6 hours 30 minutes in CTS. The 72 hours provides sufficient time to accomplish the determination. A favorable determination must be completed before continuing to operate. The relaxation of the CTS requirements will not result in operation that will increase the probability of initiating an analyzed event. This change does not alter any assumptions relative to mitigation of an accident or transient event. This change has been reviewed to ensure that no previously evaluated accent has been adversely affected. Therefore, this change will not involve a significant increase in the probability or consequences of an accident evaluated.

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

Allowing 72 hours to determine that the RCS is acceptable for continued operation does not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal plant operation. While these changes do relax the requirements of the CTS, they are consistent with the assumptions made in the safety analyses and is consistent with NUREG-1432. Therefore, this change will not create the possibility of a new or different kind of accident on any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.3 Discussion of Changes Labeled L.1) (continued)

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

The proposed change allows a 72 hour Completion Time to determine that the RCS is acceptable for continued operation following out-of-limit pressure and/or temperature parameters. An evaluation for this change has determined that there is no impact on the margin of safety. This change maintains the requirements of the safety analyses and is consistent with NUREG-1432. As such, no question of safety is involved. Therefore, this change will not involve a significant reduction in a margin of safety.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.4
MARK UP

<CTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops—MODES 1 and 2

<LCO 3.4.1.1>

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

APPLICABILITY: MODES 1 and 2.

ACTIONS

<.4.1.1 ACT>

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

SURVEILLANCE REQUIREMENTS

<4.4.1.1>

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

Palo Verde - Units 1,2,3

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.4
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.4 RCS Loops—MODES 1 and 2

BASES

BACKGROUND

The primary function of the RCS is removal of the heat generated in the fuel due to the fission process and transfer of this heat, via the steam generators (SGs), to the secondary plant.

The secondary functions of the RCS include:

a. Moderating the neutron energy level to the thermal state, to increase the probability of fission;

b. Improving the neutron economy by acting as a reflector;

c. Carrying the soluble neutron poison, boric acid;

d. Providing a second barrier against fission product release to the environment; and

e. Removing the heat generated in the fuel due to fission product decay following a unit shutdown.

The RCS configuration for heat transport uses two RCS loops. Each RCS loop contains a SG and two reactor coolant pumps (RCPs). An RCP is located in each of the two SG cold legs. The pump flow rate has been sized to provide core heat removal with appropriate margin to departure from nucleate boiling (DNB) during power operation and for anticipated transients originating from power operation. This Specification requires two RCS loops with both RCPs in operation in each loop. The intent of the Specification is to require core heat removal with forced flow during power operation. Specifying two RCS loops provides the minimum necessary paths (two SGs) for heat removal. 3

APPLICABLE SAFETY ANALYSES

Safety analyses contain various assumptions for the Design Bases Accident (DBA) initial conditions including RCS pressure, RCS temperature, reactor power level, core parameters, and safety system setpoints. The important

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

aspect for this LCO is the reactor coolant forced flow rate, which is represented by the number of RCS loops in service.

Both transient and steady state analyses have been performed to establish the effect of flow on DNB. The transient or accident analysis for the plant has been performed assuming four RCPs are in operation. The majority of the plant safety analyses are based on initial conditions at high core power or zero power. The accident analyses that are of most importance to RCP operation are the four pump coastdown, single pump locked rotor, single pump (broken shaft or coastdown), and rod withdrawal events (Ref. 1).

Steady state DNB analysis had been performed for the four pump combination. For four pump operation, the steady state DNB analysis, which generates the pressure and temperature and Safety Limit (i.e., the departure from nucleate boiling ratio (DNBR) limit), assumes a maximum power level of 107% RTP. This is the design overpower condition for four pump operation. The 107% value is the accident analysis setpoint of the nuclear overpower (high flux) trip and is based on an analysis assumption that bounds possible instrumentation errors. The DNBR limit defines a locus of pressure and temperature points that result in a minimum DNBR greater than or equal to the critical heat flux correlation limit.

RCS Loops—MODES 1 and 2 satisfy Criteria 2 and 3 of ~~the NRC Policy Statement~~. 10CFR50.36 (c)(2)(ii) (3)

LCO

The purpose of this LCO is to require adequate forced flow for core heat removal. Flow is represented by having both RCS loops with both RCPs in each loop in operation for removal of heat by the two SGs. To meet safety analysis acceptance criteria for DNB, four pumps are required at rated power.

Each OPERABLE loop consists of two RCPs providing forced flow for heat transport to an SG that is OPERABLE in accordance with the Steam Generator Tube Surveillance Program. SG, and hence RCS loop, OPERABILITY with regard to SG water level is ensured by the Reactor Protection System (RPS) in MODES 1 and 2. A reactor trip places the plant in

(continued)

BASES

LCO (continued)

MODE 3 if any SG level is ≤ 25% as sensed by the RPS. The minimum water level to declare the SG OPERABLE is 25%. 44% wide range level (2)

APPLICABILITY

In MODES 1 and 2, the reactor is critical and thus has the potential to produce maximum THERMAL POWER. Thus, to ensure that the assumptions of the accident analyses remain valid, all RCS loops are required to be OPERABLE and in operation in these MODES to prevent DNB and core damage.

The decay heat production rate is much lower than the full power heat rate. As such, the forced circulation flow and heat sink requirements are reduced for lower, noncritical MODES as indicated by the LCOs for MODES 3, 4, 5, and 6.

Operation in other MODES is covered by:

LCO 3.4.5, "RCS Loops—MODE 3";
LCO 3.4.6, "RCS Loops—MODE 4";
LCO 3.4.7, "RCS Loops—MODE 5, Loops Filled";
LCO 3.4.8, "RCS Loops—MODE 5, Loops Not Filled";
LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation—High Water Level" (MODE 6); and
LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation—Low Water Level" (MODE 6).

ACTIONS

A.1

If the requirements of the LCO are not met, the Required Action is to reduce power and bring the plant to MODE 3. This lowers power level and thus reduces the core heat removal needs and minimizes the possibility of violating DNB limits. It should be noted that the reactor will trip and place the plant in MODE 3 as soon as the RPS senses less than four RCPs operating.

The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging safety systems.

(continued)

BASES (continued)

DOC LA.2

SURVEILLANCE REQUIREMENTS

SR 3.4.4.1

This SR requires verification every 12 hours ~~of~~ the required number of loops in operation. Verification includes flow rate, temperature, or pump status monitoring, which help to ensure that forced flow is providing heat removal while maintaining the margin to DNB. The Frequency of 12 hours has been shown by operating practice to be sufficient to regularly assess degradation and verify operation within safety analyses assumptions. In addition, control room indication and alarms will normally indicate loop status.

REFERENCES 1. UFSAR, Section ~~17~~.

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.4

1. The Bases was revised for consistency with other Bases sections.

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). Plant specific parameters/values are directly transferred from the CTS to the ITS.

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

PVNGS CTS
SPECIFICATION 3.4.4
MARK UP

A.1

3.4

3.4.4

3/4.4 REACTOR COOLANT SYSTEM (RCS)

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION - MODES 1 and 2

~~STARTUP AND POWER OPERATION~~

LIMITING CONDITION FOR OPERATION

LCO 3.4.4

~~3.4.1.1~~ Both reactor coolant loops and both reactor coolant pumps in each ~~loop~~ shall be in operation. OPERABLE and

LA.1

APPLICABILITY: MODES 1 and 2*.

ACTION:

ACT A

With less than the above required reactor coolant pumps in operation, be in at least HOT STANDBY within ~~1~~ 6 hour.

L.1

SURVEILLANCE REQUIREMENTS

SR 3.4.4.1

~~4.4.1.1~~ The above required reactor coolant loops shall be verified to be in operation and circulating reactor coolant at least once per 12 hours.

LA.2

*See Special Test Exception 3.10.3.

A.2

DISCUSSION OF CHANGES
SPECIFICATION 3.4.4

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 CTS 3.4.1.1, Applicability Footnote, references "See Special Test Exception 3.10.3." Cross references are not used in the ITS or NUREG-1432. Removing cross references does not alter the requirements of the referenced Specification. 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 - LESS RESTRICTIVE

L.1 CTS 3.4.1.1 requires entry into Mode 3 within 1 hour with less than 2 RCPs operating in each loop. ITS 3.4.4, Action A, requires entry into Mode 3 within 6 hours with less than 2 RCPs operating in each loop. The relaxation of Completion Time to enter Mode 3 constitutes a less restrictive change. The Completion Time of 6 hours is reasonable, based on operating experience, to reach Mode 3 from full power conditions in an orderly manner and without challenging safety concerns. It should be noted that the reactor will trip and place the plant in Mode 3 as soon as the RPS senses less than four RCPs operating. This change does not detrimentally affect plant safety and is consistent with NUREG-1432.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.4

ADMINISTRATIVE CHANGES
(ITS 3.4.4 Discussion of Changes Labeled A.1 and A.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, "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 Section/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 Section/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 3.4.4 Discussion of Changes Labeled (A.1 and A.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 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 3.4.4 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 3.4.4 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 submittal, 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.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.4 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 CTS 3.4.1.1 requires entry into Mode 3 within 1 hour with less than 2 RCPs operating in each loop. ITS 3.4.4, Action A, requires entry into Mode 3 within 6 hours with less than 2 RCPs operating in each loop. The relaxation of Completion Time to enter Mode 3 constitutes a less restrictive change. The Completion Time of 6 hours is reasonable, based on operating experience, to reach Mode 3 from full power conditions in an orderly manner and without challenging safety concerns. It should be noted that the reactor will trip and place the plant in Mode 3 as soon as the RPS senses less than four RCPs operating. This change does not detrimentally affect plant safety and 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 3.4.4 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 proposed change relaxes the completion time for the plant to enter Mode 3 with less than 2 RCP's operating in each loop. The CTS 3.4.1.1 requires the plant to enter Mode 3 within 1 hour with less than 2 RCP's operating in each loop, where the ITS allows the plant 6 hours to reach Mode 3 with less than 2 RCP's operating in each loop. The completion time of 6 hours is reasonable, based upon operating experience, to reach Mode 3 from full power conditions in an orderly manner and without challenging safety concerns. The current design of the plant has the Reactor Protection System initiate a reactor trip placing the plant in Mode 3 as soon as it senses there are less than 4 RCP's operating. Therefore, this change will not affect the probability of an accident. The consequences of an accident are not significantly affected by this change. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the 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 relaxes the completion time for the plant to enter Mode 3 with less than 2 RCP's operating in each loop. The CTS 3.4.1.1 requires the plant to enter Mode 3 within 1 hour with less than 2 RCP's operating in each loop, where the ITS allows the plant 6 hours to reach Mode 3 with less than 2 RCP's operating in each loop. The completion time of 6 hours is reasonable, based upon operating experience, to reach Mode 3 from full power conditions in an orderly manner and without challenging safety concerns. This change will not physically alter the plant (no new or different type of equipment will be installed). This 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 3.4.4 Discussion of Changes Labeled L.1) (continued)

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

The proposed change relaxes the completion time for the plant to enter Mode 3 with less than 2 RCP's operating in each loop. The CTS 3.4.1.1 requires the plant to enter Mode 3 within 1 hour with less than 2 RCP's operating in each loop, where the ITS allows the plant 6 hours to reach Mode 3 with less than 2 RCP's operating in each loop. The completion time of 6 hours is reasonable, based upon operating experience, to reach Mode 3 from full power conditions in an orderly manner and without challenging safety concerns. The margin of safety is not affected by this change. Therefore, this change does not involve a significant reduction in a margin of safety.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.5
MARK UP

<DOC>
<CTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops—MODE 3

<LCO 3.4.1.2> LCO 3.4.5 ~~Two~~ RCS loops shall be OPERABLE and one RCS loop shall be in operation.

<DOC A.1>
<DOC M.2>
<3.4.1.2 Footnote *>

----------NOTE----------
All reactor coolant pumps may be de-energized for ≤ 1 hour per 8 hour period, provided:

a. No operations are permitted that would cause reduction of the RCS boron concentration; and

b. Core outlet temperature is maintained at least 10°F below saturation temperature.

APPLICABILITY: MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.4.1.2 ACT a.> A. One required RCS loop inoperable.	A.1 Restore required RCS loop to OPERABLE status.	72 hours
<3.4.1.2 ACT a.> B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 4.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.4.1.2 ACT b.> <DOC M.1> <DOC M.3> c. No RCS loop OPERABLE. OR No RCS loop in operation.	C.1 Suspend all operations involving a reduction of RCS boron concentration.	Immediately
	AND	
	C.2 Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
<4.4.1.2.2> SR 3.4.5.1	Verify required RCS loop is in operation.	12 hours
<4.4.1.2.3> SR 3.4.5.2	Verify secondary side water level in each steam generator ≥ ~~25%~~ %.	12 hours
<4.4.1.2.1> SR 3.4.5.3	Verify correct breaker alignment and indicated power available to the required pump that is not in operation.	7 days

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.5
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.5 RCS Loops—MODE 3

BASES

BACKGROUND

The primary function of the reactor coolant in MODE 3 is removal of decay heat and transfer of this heat, via the steam generators (SGs), to the secondary plant fluid. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

In MODE 3, reactor coolant pumps (RCPs) are used to provide forced circulation heat removal during heatup and cooldown. The MODE 3 decay heat removal requirements are low enough that a single RCS loop with one RCP is sufficient to remove core decay heat. However, two RCS loops are required to be OPERABLE to provide redundant paths for decay heat removal. Only one RCP needs to be OPERABLE to declare the associated RCS loop OPERABLE.

Reactor coolant natural circulation is not normally used but is sufficient for core cooling. However, natural circulation does not provide turbulent flow conditions. Therefore, boron reduction in natural circulation is prohibited because mixing to obtain a homogeneous concentration in all portions of the RCS cannot be ensured.

APPLICABLE SAFETY ANALYSES

Analyses have shown that the rod withdrawal event from MODE 3 with one RCS loop in operation is bounded by the rod withdrawal initiated from MODE 2.

Failure to provide heat removal may result in challenges to a fission product barrier. The RCS loops are part of the primary success path that functions or actuates to prevent or mitigate a Design Basis Accident or transient that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier.

RCS Loops—MODE 3 satisfy Criterion 3 of the NRC Policy Statement. 10CFR50.36 (c)(2)(ii).

(continued)

BASES (continued)

LCO

The purpose of this LCO is to require ~~two~~ RCS loops to be available for heat removal, thus providing redundancy. The LCO requires the ~~two~~ loops to be OPERABLE with the intent of requiring both SGs to be capable (~~≥ 25%~~ water level) of transferring heat from the reactor coolant at a controlled rate. Forced reactor coolant flow is the required way to transport heat, although natural circulation flow provides adequate removal. A minimum of one running RCP meets the LCO requirement for one loop in operation.

(8) ≥ 25% wide range

<DOC LA.3>

The Note permits a limited period of operation without RCPs. All RCPs may be de-energized for ≤ 1 hour per 8 hour period. This means that natural circulation has been established. When in natural circulation, a reduction in boron concentration is prohibited because an even concentration distribution throughout the RCS cannot be ensured. Core outlet temperature is to be maintained at least 10°F below the saturation temperature so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

(2) The intent is to stop any known or direct positive reactivity additions to the RCS due to dilution

In MODE ~~3, 4, and 5,~~ it is sometimes necessary to stop all RCPs ~~or shutdown cooling (SDC) pump forced circulation (e.g., to change operation from one SDC train to the other, to perform surveillance or startup testing, to perform the transition to and from SDC System cooling~~, or to avoid operation below the RCP minimum net positive suction head limit). The time period is acceptable because natural circulation is adequate for heat removal, or the reactor coolant temperature can be maintained subcooled and boron stratification affecting reactivity control is not expected.

(3) (5)

(9) RCS (loop 1 or loop 2) associated (9)

An OPERABLE loop consists of at least one RCP providing forced flow for heat transport and an SG that is OPERABLE in accordance with the Steam Generator Tube Surveillance Program. An RCP is OPERABLE if it is capable of being powered and is able to provide forced flow if required.

APPLICABILITY

In MODE 3, the heat load is lower than at power; therefore, one RCS loop in operation is adequate for transport and heat removal. A second RCS loop is required to be OPERABLE but not in operation for redundant heat removal capability.

Operation in other MODES is covered by:

(continued)

BASES

APPLICABILITY (continued)

LCO 3.4.4, "RCS Loops—MODES 1 and 2";
LCO 3.4.6, "RCS Loops—MODE 4";
LCO 3.4.7, "RCS Loops—MODE 5, Loops Filled";
LCO 3.4.8, "RCS Loops—MODE 5, Loops Not Filled";
LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation—High Water Level" (MODE 6); and
LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation—Low Water Level" (MODE 6).

ACTIONS

A.1

If one required RCS loop is inoperable, redundancy for forced flow heat removal is lost. The Required Action is restoration of the required RCS loop to OPERABLE status within a Completion Time of 72 hours. This time allowance is a justified period to be without the redundant, nonoperating loop because a single loop in operation has a heat transfer capability greater than that needed to remove the decay heat produced in the reactor core.

B.1

If restoration is not possible within 72 hours, the unit must be placed in MODE 4 within 12 hours. In MODE 4, the plant may be placed on the SDC System. The Completion Time of 12 hours is compatible with required operation to achieve cooldown and depressurization from the existing plant conditions in an orderly manner and without challenging plant systems.

C.1 and C.2

If no RCS loop is OPERABLE or in operation, ~~except as provided in Note 1 in the LCO section~~, all operations involving a reduction of RCS boron concentration must be immediately suspended. This is necessary because boron dilution requires forced circulation for proper homogenization. Action to restore one RCS loop to OPERABLE status and operation shall be initiated immediately and continued until one RCS loop is restored to OPERABLE status and operation. The immediate Completion Times reflect the importance of maintaining operation for decay heat removal.

(continued)

BASES (continued)

<DOC LA.2>

SURVEILLANCE REQUIREMENTS

SR 3.4.5.1

This SR requires verification every 12 hours that the required number of RCS loops are in operation and circulating Reactor Coolant (1). Verification includes flow rate, temperature, ~~and~~ or (4) pump status monitoring, which help ensure that forced flow is providing heat removal. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess degradation and verify operation within safety analyses assumptions. In addition, control room indication and alarms will normally indicate loop status.

<DOC LA.3>

SR 3.4.5.2

This SR requires verification every 12 hours that the secondary side water level in each SG is ≥ ~~25%~~ wide range (8). An adequate SG water level is required in order to have a heat sink for removal of the core decay heat from the reactor coolant. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess degradation and verify operation within the safety analyses assumptions.

SR 3.4.5.3

Verification that the required number of RCPs are OPERABLE ensures that the single failure criterion is met and that an additional RCS loop can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power availability to the required RCPs. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

REFERENCES None.

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.5

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

2. ITS 3.4.5, LCO Bases, adds a sentence to clarify the intent of the Note, item (a), in the LCO. Since this Note could be interpreted to stop any activity that has even a remote possibility of affecting RCS boron concentration, it was decided to clarify its intent. NUREG-1432 does not clarify intent of the LCO Note, item (a). Interpreting this Note in the global sense would have profound affects on maintenance activities and limit our ability to respond to plant needs. A sentence that states, "The intent is to stop any known or direct positive reactivity additions to the RCS", was added to clarify intent of the Note, item (a). This clarifies PVNGS operating practice and is consistent with PVNGS licensing basis.

3. NUREG-1432, LCO 3.4.5, Bases Section makes reference to Mode 4 and 5 operation. ITS LCO 3.4.5, Bases Section will only reference Mode 3 operation. This Specification is a Mode 3 Applicability and should only reference Mode 3 operations. Though the statement is true for Modes 4 and 5 it adds no value to the information presented. In fact it introduces some confusion as to why a Mode 3 Specification is referencing operations in Modes 4 and 5. The removal of this information is a deviation from NUREG-1432 but is consistent with PVNGS licensing basis.

4. Bases revised for consistency with other Bases Sections.

5. ITS 3.4.5 LCO Bases removes any references that state it may be necessary to stop SDC pump forced circulation for shifting of SDC trains, or to transition to or from SDC. This is done because PVNGS does not secure SDC forced circulation for any of these evolutions. This change is consistent with PVNGS licensing basis.

6. NOT USED

7. ITS, Actions C, Bases deletes reference to Note 1 in the LCO section. Location of Note 1 reference implies that suspension of operations involving a reduction in of RCS boron concentration are not required. This implies that compliance with Note 1 is not required. The bases is trying to emphasize that performance of Required Actions is not required when the RCS loops are secured in accordance with Note 1. Compliance with Note 1 is still required; no operations are permitted that would cause reduction of the RCS boron concentration, and core outlet temperature is maintained at least 10°F below saturation temperature. There is no need to reference Note 1 in Action C Bases. Note 1 stands alone and its usage is understood. If no RCS loops are in operation, based on Note 1 usage, it is not required to perform the Required Actions of Actions A and C. It is only required to comply with the requirements of Note 1. Should failure to meet the requirements of Note 1 occur, entry into Actions A and C is required. This change is consistent with PVNGS licensing basis.

8. 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 are directly transferred from the CTS to the ITS.

PVNGS CTS
SPECIFICATION 3.4.5
MARK UP

Specification 3.4.5

A.1

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 ~~HOT STANDBY~~ RCS LOOPS - MODE 3

~~LIMITING CONDITION FOR OPERATION~~

LCO 3.4.5 ~~3.4.1.2~~ Two ~~The~~ reactor coolant loops ~~listed below~~ shall be OPERABLE and at least one of these reactor coolant loops shall be in operation*.

~~a. Reactor Coolant Loop 1 and its associated steam generator and at least one associated reactor coolant pump.~~

~~b. Reactor Coolant Loop 2 and its associated steam generator and at least one associated reactor coolant pump.~~

LA.1

~~APPLICABILITY: MODE 3#.~~ Format into NOTE

ACTION: one required RCS loop inoperable

A.3

ACT A ~~a. With less than the above required reactor coolant loops OPERABLE, restore the required loops to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.~~

ACT B

M.3

~~b.~~ With no reactor coolant loop OPERABLE or in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required reactor coolant loop to operation.

ACT C

immediately

M.1

SURVEILLANCE REQUIREMENTS

SR 3.4.5.3 ~~4.4.1.2.1~~ At least the above required reactor coolant pumps, if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

SR 3.4.5.1 ~~4.4.1.2.2~~ At least one reactor coolant loop shall be verified to be in operation ~~and circulating reactor coolant~~ at least once per 12 hours.

LA.2

SR 3.4.5.2 ~~4.4.1.2.3~~ The required steam generator(s) shall be determined OPERABLE by verifying the secondary side water level to be ≥ 25% ~~indicated wide range~~ level at least once per 12 hours.

LA.3

per 8 hour period

M.2

*All reactor coolant pumps may be deenergized for up to 1 hour provided (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

Unit 1 only ~~#See Special Test Exception 3.10.9~~

A.2

DISCUSSION OF CHANGES
SPECIFICATION 3.4.5

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 CTS 3.4.1.2, Applicability Footnote, references "See Special Test Exception 3.10.9." Cross references are not used in the ITS or NUREG-1432. Removing cross references does not alter the requirements of the referenced Specification. Therefore, this is an administrative change with no impact on safety. This change is consistent with NUREG-1432.

A.3 CTS 3.4.1.2, Action a, does not specifically identify the condition that defines Operable, not in operation, or condition not met. ITS 3.4.5 Actions A and B do define what condition defines inoperable, not in operation, or condition not met (one RCS loop inoperable). This change will split CTS 3.4.1.2, Action a, into two separate Actions, A and B, in ITS. The splitting of an Action into two separate Actions for clarification constitutes an administrative change. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 CTS 3.4.1.2, Action b, requires the suspension of all operations involving a reduction in boron concentration of the RCS when no RCS loop is in operation. The CTS does not provide any Completion Time associated with this Action. ITS 3.4.5, Action C.1 requires suspension of all operations involving a reduction of RCS boron concentration, "immediately." CTS only associates the term "immediately" with Action to return the required RCP loop to operation, not with the Action to suspend all operations involving a reduction in boron concentration of the RCS. The addition of "immediately" for Completion Time to suspend all operations involving a reduction in boron concentration of the RCS reflects the importance of maintaining operation of decay heat removal. The addition of this requirement constitutes a more restrictive change to PVNGS plant operation. This change is consistent with NUREG-1432.

M.2 CTS 3.4.1.2, Footnote *, allows all RCPs to be de-energized for up to one hour. ITS 3.4.5 LCO Note allows all RCPs to be de-energized for up to 1 hour per 8 hour period. Therefore, the amount of time all RCPs may be de-energized has been restricted from less than or equal to one hour, to less than or equal to one hour per eight hour period. CTS would permit repeated application of the one hour exemption, indefinitely. This additional restriction on plant operation restricts immediate, repeated application of the one-hour allowance, which would circumvent the intent of the Note. Although not explicitly stated in CTS, PVNGS operating practice complies with the 1 hour per 8 hour period requirement statement in ITS 3.4.5 Note. This change provides explicit wording that clarifies PVNGS operating practice in application of this LCO. Placing a limitation on the de-energization of all RCPs will not adversely affect plant safety. Placing additional restrictions on plant operation constitutes a more restrictive change. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE (continued)

M.3 CTS 3.4.1.2, Action b, requirements are imposed only when no reactor coolant loop is in operation. ITS 3.4.5, Action c, contains the same Action requirements as CTS 3.4.1.2 Action b (except as discussed in M.1), but is more restrictive by also imposing the Action requirements when no reactor coolant loops are OPERABLE. This change is acceptable because this will eliminate any ambiguity that could incorrectly result in having two loops inoperable yet one loop in operation for the purposes of compliance with the Actions. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS

LA.1 CTS LCO 3.4.1.2 specifies the loop numbers, components making up a loop, and that one RCP per loop is required. The specific loop numbers exist in the UFSAR, and the components making up a loop and the number of RCPs required per loop is moved to Section 3.4.5 of the ITS Bases.

Any changes to the UFSAR will require a 10 CFR 50.59 evaluation. Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This information is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

LA.2 CTS 4.4.1.2.2 requires the reactor coolant loops to be verified in operation and "circulating reactor coolant." The requirement to circulate reactor coolant is moved to Section 3.4.5 of the ITS Bases.

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This information is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS (continued)

LA.3 CTS SR 4.4.1.2.3 specifies that "indicated wide range" level is to be used for verification of SG level. All values in ITS are indicated values. This information, less the word "indicated", is moved to ITS 3.4.5 Bases Section.

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This information is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

None

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.5

ADMINISTRATIVE CHANGES
(ITS 3.4.5 Discussion of Changes Labeled A.1, A.2 and A.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, "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 Section/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 Section/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 3.4.5 Discussion of Changes Labeled (A.1, A.2 and A.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 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 - MORE RESTRICTIVE
(ITS 3.4.5 Discussion of Changes Labeled M.1, M.2 and M.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. 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 in the specific Discussion of Changes listed 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 3.4.5 Discussion of Changes Labeled M.1, M.2 and M.3) (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 3.4.5 Discussion of Changes Labeled LA.1, LA.2, and LA.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 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 3.4.5 Discussion of Changes Labeled LA.1, LA.2, and LA.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 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 submittal, 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.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.6
MARK UP

<DOC>

<CTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops—MODE 4

<LCO 3.4.1.3> LCO 3.4.6 Two loops or trains consisting of any combination of RCS loops and shutdown cooling (SDC) trains shall be OPERABLE and at least one loop or train shall be in operation.

<3.4.1.3 Footnote>

---NOTES---

1. All reactor coolant pumps (RCPs) and SDC pumps may be de-energized for ≤ 1 hour per 8 hour period, provided:

   a. No operations are permitted that would cause reduction of the RCS boron concentration; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. No RCP shall be started with any RCS cold leg temperature ≤ ~~[285]~~ 214°F unless during cooldown, or ≤ 291°F during heatup, unless the

   a. Pressurizer water level is < [60]%; or

   b. Secondary side water temperature in each steam generator (SG) is < 100°F above each of the RCS cold leg temperatures.

3. No more than 2 RCPs may be in operation with RCS cold leg temperature ≤ 200°F. No more than 3 RCPs may be in operation with RCS cold leg temperature > 200°F but ≤ 500°F

APPLICABILITY: MODE 4.

ACTIONS

<3.4.1.3.a.>

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RCS loop inoperable. AND Two SDC trains inoperable.	A.1 Initiate action to restore a second loop or train to OPERABLE status.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.4.1.3.a B. One required SDC train inoperable. AND Two required RCS loops inoperable.	B.1 Be in MODE 5.	24 hours
3.4.1.3.b. C. ~~Required~~ No RCS loop or SDC train ~~inoperable~~ OPERABLE. (10) OR No RCS loop or SDC train in operation.	C.1 Suspend all operations involving reduction of RCS boron concentration. AND C.2 Initiate action to restore one loop or train to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.4.1.3.3 SR 3.4.6.1	Verify one RCS loop or SDC train is in operation.	12 hours
4.4.1.3.2 SR 3.4.6.2	Verify secondary side water level in required SG(s) is ≥ ~~25%~~.	12 hours

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.6.3	Verify correct breaker alignment and indicated power available to the required pump that is not in operation.	7 days

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.6
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.6 RCS Loops—MODE 4

BASES

BACKGROUND

In MODE 4, the primary function of the reactor coolant is the removal of decay heat and transfer of this heat to the steam generators (SGs) or shutdown cooling (SDC) heat exchangers. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

In MODE 4, either reactor coolant pumps (RCPs) or SDC trains can be used for coolant circulation. The intent of this LCO is to provide forced flow from at least one RCP or one SDC train for decay heat removal and transport. The flow provided by one RCP loop or SDC train is adequate for heat removal. The other intent of this LCO is to require that two paths be available to provide redundancy for heat removal.

APPLICABLE SAFETY ANALYSES

In MODE 4, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RCS loops and SDC trains provide this circulation.

10 CFR 50.36 (c)(2)(ii)

RCS Loops—MODE 4 have been identified in the NRC Policy Statement as important contributors to risk reduction.

LCO

The purpose of this LCO is to require that at least two loops or trains, RCS or SDC, be OPERABLE in MODE 4 and one of these loops or trains be in operation. The LCO allows the two loops that are required to be OPERABLE to consist of any combination of RCS and SDC System loops. Any one loop or train in operation provides enough flow to remove the decay heat from the core with forced circulation. An additional loop or train is required to be OPERABLE to provide redundancy for heat removal.

Note 1 permits all RCPs and SDC pumps to be de-energized ≤ 1 hour per 8 hour period. This means that natural circulation ~~has been~~ should be established, after the operating RCP or SDC pump is secured, using the SGs. The Note

Depending on decay heat & current RCS temperature, it may be difficult to establish verifiable natural circulation.

(continued)

(11)

Note 3 restricts RCP operation to no more than 2 RCPs with RCS cold leg temperature ≤200°F, and no more than 3 RCPs with RCS cold leg temperature >200°F but ≤500°F. Satisfying these conditions will maintain the analysis assumptions of the flow induced pressure correction factors due to RCP operation (Ref. 1).

BASES

LCO (continued)

prohibits boron dilution when forced flow is stopped because an even concentration distribution cannot be ensured. Core outlet temperature is to be maintained at least 10°F below saturation temperature so that no vapor bubble may form and possibly cause a natural circulation flow obstruction. The response of the RCS without the RCPs or SDC pumps depends on the core decay heat load and the length of time that the pumps are stopped. As decay heat diminishes, the effects on RCS temperature and pressure diminish. Without cooling by forced flow, higher heat loads will cause the reactor coolant temperature and pressure to increase at a rate proportional to the decay heat load. Because pressure can increase, the applicable system pressure limits (pressure and temperature (P/T) limits or low temperature overpressure protection (LTOP) limits) must be observed and forced SDC flow or heat removal via the SGs must be re-established prior to reaching the pressure limit. The circumstances for stopping both RCPs or SDC pumps are to be limited to situations where:

(3) The intent is to stop any known or direct positive reactivity additions to the RCS (due to dilution)

(1) (P) (O) (T) (P) (1)

a. Pressure and temperature increases can be maintained well within the allowable pressure (P/T limits and LTOP) and 10°F subcooling limits; or

b. An alternate heat removal path through the SGs is in operation.

Note 2 requires ~~that either of the following two conditions be satisfied~~ (that) before an RCP may be started with any RCS cold leg temperature ≤ ~~285~~ 214°F (during cooldown) or ≤ 291°F during heatup (that) (2)

(4) ~~a. Pressurizer water level is < 60%; or~~

~~b.~~ Secondary side water temperature (saturation temperature corresponding to SG pressure) in each SG is ~~< 100°F~~ 100 above each of the RCS cold leg temperatures.

<3.4.6 Footnote**>

Satisfying ~~either of~~ the above conditions will preclude a large pressure surge in the RCS when the RCP is started.

An OPERABLE RCS loop consists of at least one OPERABLE RCP and an SG that is OPERABLE in accordance with the Steam Generator Tube Surveillance Program and has the minimum water level specified in SR 3.4.6.2.

Similarly, for the SDC System, an OPERABLE SDC train is composed of ~~the~~ an OPERABLE SDC pump~~s~~ capable of providing (1)

(continued)

BASES

LCO (continued)

forced flow to the SDC heat exchanger for heat removal. RCPs and SDC pumps are OPERABLE if they are capable of being powered and are able to provide flow if required.

1

APPLICABILITY

In MODE 4, this LCO applies because it is possible to remove core decay heat and to provide proper boron mixing with either the RCS loops and SGs or the SDC System.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops—MODES 1 and 2";
LCO 3.4.5, "RCS Loops—MODE 3";
LCO 3.4.7, "RCS Loops—MODE 5, Loops Filled";
LCO 3.4.8, "RCS Loops—MODE 5, Loops Not Filled";
LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation—High Water Level" (MODE 6); and
LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation—Low Water Level" (MODE 6).

ACTIONS

A.1

6

If only one required RCS loop ~~or SDC train~~ is OPERABLE and in operation, redundancy for heat removal is lost. Action must be initiated immediately to restore a second loop ~~or~~ train to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for decay heat removal.

B.1

If only one required SDC train is OPERABLE and in operation, redundancy for heat removal is lost. The plant must be placed in MODE 5 within the next 24 hours. Placing the plant in MODE 5 is a conservative action with regard to decay heat removal. With only one SDC train OPERABLE, redundancy for decay heat removal is lost and, in the event of a loss of the remaining SDC train, it would be safer to initiate that loss from MODE 5 (≤ 200°F) rather than MODE 4 (~~200~~°F to ~~300~~°F). The Completion Time of 24 hours is reasonable, based on operating experience, to reach MODE 5

350 9 210

(continued)

BASES

ACTIONS

B.1 (continued)

from MODE 4, with only one SDC train operating, in an orderly manner and without challenging plant systems.

C.1 and C.2

If no RCS loops or SDC trains are OPERABLE or in operation, except during conditions permitted by Note 1 in the LCO section, all operations involving reduction of RCS boron concentration must be suspended and action to restore one RCS loop or SDC train to OPERABLE status and operation must be initiated. Boron dilution requires forced circulation for proper mixing, and the margin to criticality must not be reduced in this type of operation. The immediate Completion Times reflect the importance of decay heat removal. The action to restore must continue until one loop or train is restored to operation.

7

SR 4.4.1.3.3

1

SURVEILLANCE REQUIREMENTS

SR 3.4.6.1

This SR requires verification every 12 hours that one required loop or train is in operation and circulating reactor coolant at a flow rate of greater than or equal to 4000 gpm. This ensures forced flow is providing heat removal. Verification includes flow rate, temperature, or pump status monitoring. The 12 hour Frequency has been shown by operating practice to be sufficient to regularly assess RCS loop status. In addition, control room indication and alarms will normally indicate loop status.

SR 4.4.1.3.2

9

SR 3.4.6.2

This SR requires verification every 12 hours of secondary side water level in the required SG(s) ≥ ~~25%~~ wide range. An adequate SG water level is required in order to have a heat sink for removal of the core decay heat from the reactor coolant. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess degradation and verify operation within safety analyses assumptions.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.6.3

Verification that the required pump is OPERABLE ensures that an additional RCS loop or SDC train can be placed in operation, if needed to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pumps. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

REFERENCES ~~None~~

1. PVNGS Operating License Amendments 52, 38, and 24 for Units 1, 2, and 3, respectively, and associated NRC Safety Evaluation dated July 25, 1990.

11

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.6

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

2. NUREG-1432 specifies a single temperature as the determinant to place an L-TOP in service or to remove an L-TOP from service. ITS uses two different temperatures, dependent on whether the plant is in a cooldown or heatup evolution, to perform the same function. ITS will continue to apply PVNGS licensing basis and use two specific temperatures to determine when an L-TOP will be placed in service or removed from service. This is acceptable because these temperatures reflect the metallurgical characteristics of the PVNGS reactor vessel. Because of the different thermal/hydraulic stresses applied to the reactor vessel, depending whether a cooldown or heatup is occurring, two different temperatures are used to reflect the transition point from ductile to brittle failure. Hence, there are two different temperatures, depending on whether a cooldown or heatup is occurring, where L-TOPs are required to be OPERABLE and in service. The continued use of two separate temperatures for L-TOP use is a deviation from NUREG-1432 but is consistent with PVNGS licensing basis.

3. ITS 3.4.6, LCO Bases, adds a sentence to clarify the intent of the Note, item (a), in the LCO. Since this Note could be interpreted to stop any activity that has even a remote possibility of affecting RCS boron concentration, it was decided to clarify its intent. NUREG-1432 does not clarify intent of the LCO Note, item (a). Interpreting this Note in the global sense would have profound affects on maintenance activities and limit our ability to respond to plant needs. A sentence that states, "The intent is to stop any known or direct positive reactivity additions to the RCS", was added to clarify intent of the Note, item (a). This clarifies PVNGS operating practice and is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

4. NUREG-1432 LCO 3.4.6, Note 2, allows the use of either secondary side water temperature <u>or</u> pressurizer water level as a condition to preclude RCS pressure surges when starting an RCP in Mode 4. ITS LCO 3.4.6 does not allow the use of pressurizer water level in lieu of secondary water temperature limits to preclude RCS pressure surges when starting an RCP. The decision not to allow the use of pressurizer water level as a conditional requirement is a deviation from the NUREG-1432 but is consistent with PVNGS licensing basis (CTS 3.4.1.3). The Bases has also been revised to be consistent with the LCO.

5. NUREG-1432 3.4.6 Bases states that, "natural circulation has been established using the SGs." ITS 3.4.6 Bases states that, "natural circulation should be established, after the operating RCP or SDC pump is secured, using SGs." This is done to remove confusion associated with the NUREG-1432 statement. NUREG-1432 implies that natural circulation should be established prior to securing the operating RCP or SDC pump. This is not possible when a RCP or SDC pump is in operation, therefore, additional information is added to require natural circulation establishment after the operating RCP or SDC pump is secured. Also, ITS 3.4.6 Bases states that, "Depending on decay heat and current RCS temperature, it may be difficult to establish verifiable natural circulation." This was added because NUREG-1432 is silent about conditions of low decay heat load in conjunction with low RCS temperatures. Establishing ideal natural circulation parameter indications in these conditions can be difficult. As long as the control room operator can establish temperature control to maintain current RCS temperatures, heat removal is established, therefore, natural circulation is established. This is a deviation from NUREG-1432 but is consistent with PVNGS licensing basis.

6. NUREG-1432, Actions A, Bases makes reference to a SDC train in operation. This Action only addresses a single RCS loop in operation. Therefore, the reference to a SDC train in operation is deleted from ITS, Action A, Bases. This change is consistent with PVNGS licensing basis.

7. ITS, Actions C, Bases deletes reference to Note 1 in the LCO section. Location of Note 1 reference implies that suspension of operations involving a reduction in of RCS boron concentration are not required. This implies that compliance with Note 1 is not required. The bases is trying to emphasize that performance of Required Actions is not required when RCS loops and SDC trains are secured in accordance with Note 1. Compliance with Note 1 is still required; no operations are permitted that would cause reduction of the RCS boron concentration, and core outlet temperature is maintained at least 10°F below saturation temperature. There is no need to reference Note 1 in Action C Bases. Note 1 stands alone and its usage is understood. If no RCS loop or SDC train are in operation, based on Note 1 usage, it is not required to perform the Required Actions of Actions A or B, and C. It is only required to comply with the requirements of Note 1. Should failure to meet the requirements of Note 1 occur then entry into Actions A or B, and C is required. This change is consistent with PVNGS licensing basis.

8. NOT USED

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

10. The wording of NUREG-1432 LCO 3.4.6, Action C Condition is not consistent with the NUREG Bases or the other LCO 3.4.6 Actions. The original NUREG Condition wording, "Required RCS loop or SDC train inoperable," implies that if any of the two required RCS loops or SDC trains are inoperable, this Condition would be entered. However, according to the NUREG Bases for Actions C.1 and C.2, and CTS 3.4.1.3, this Condition and required Action applies when no RCS loops or SDC trains are operable or in operation. This revised wording is consistent with the wording used in NUREG-1432 (and ITS) LCO 3.4.5 Action Condition C, which is a similar Condition. This change is consistent with PVNGS licensing basis.

11. ITS LCO 3.4.6 Not 3 restricts operation of RCPs to no more than 2 RCPs in operation with RCS cold leg temperature ≤ 200°F, and no more than 3 RCPs with RCS cold leg temperature > 200°F but ≤ 500°F. NUREG-1432 LCO 3.4.6 does not specify these restrictions. These restrictions are necessary to maintain the analysis assumptions of the flow induced pressure correction factors due to RCP operation, and are consistent with the current licensing basis (CTS 3.4.1.3). The ITS Bases for LCO 3.4.6 and References include the basis for the RCP operating restrictions. This change is consistent with PVNGS licensing basis.

PVNGS CTS
SPECIFICATION 3.4.6
MARK UP

Specification 3.4.6

A.1

3.4

REACTOR COOLANT SYSTEM (RCS)

3.4.6 ~~HOT SHUTDOWN~~ RCS LOOPS - MODE 4

LIMITING CONDITION FOR OPERATION

LCO 3.9.6 ~~3.4.1.3~~ At least two of the loop(s)/train(s) listed below shall be OPERABLE and at least one reactor coolant and/or shutdown cooling loops shall be in operation*.

a. Reactor Coolant Loop 1 and its associated steam generator and at least one associated reactor coolant pump**,

b. Reactor Coolant Loop 2 and its associated steam generator and at least one associated reactor coolant pump**,

c. Shutdown Cooling Train A,

d. Shutdown Cooling Train B.

A.3

A.4

APPLICABILITY: MODE 4#. format into NOTE

ACTION:

One required RCS loop inoperable & two SDC trains inoperable

One required SDC train & two required RCS loops inoperable

ACT A With less than the above required reactor coolant and/or shutdown cooling loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status as soon as possible;

ACT B if the remaining OPERABLE loop is a shutdown cooling loop, be in COLD SHUTDOWN within 24 hours.

A.3

ACT C With no reactor coolant loop or shutdown cooling train OPERABLE or in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required coolant loop to operation.

M.1

Immediately

reduction

per 8 hour period

M.2

LCO NOTE

1. *All reactor coolant pumps and shutdown cooling pumps may be deenergized for up to 1 hour provided (1) no operations are permitted that would cause ~~dilution~~ of the Reactor Coolant System boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

A.5

2. **A reactor coolant pump shall not be started with one or more of the Reactor Coolant System cold leg temperatures less than or equal to 214°F during cooldown, or 291°F during heatup, unless the secondary water temperature (saturation temperature corresponding to steam generator pressure) of each steam generator is less than 100°F above each of the Reactor Coolant System cold leg temperatures.

LA.4

may be in operation

3. ~~Reactor Coolant Pump operation is limited to~~ No more than 2 Reactor Coolant Pumps with RCS cold leg temperature less than or equal to 200°F, 3 Reactor Coolant Pumps with RCS cold leg temperature greater than 200°F but less than or equal to 500°F.

A.1

Unit 1 only

#See Special Test Exception 3/10.9.

A.2

No more than

Specification 3.4.6

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 ~~HOT SHUTDOWN~~ RCS LOOPS - MODE 4

A.1

SURVEILLANCE REQUIREMENTS

M.3

SR 3.4.6.3 ~~4.4.1.3.1~~ The required ~~reactor coolant pump(s)~~ pump, if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

SR 3.4.6.2 ~~4.4.1.3.2~~ The required steam generator(s) shall be determined OPERABLE by verifying the secondary side water level to be ≥ 25% indicated wide range level at least once per 12 hours.

LA.5

SR 3.4.6.1 ~~4.4.1.3.3~~ At least one reactor coolant or shutdown cooling loop shall be verified to be in operation and circulating reactor coolant at a flow rate greater than or equal to 4000 gpm at least once per 12 hours.

A.2

DISCUSSION OF CHANGES
SPECIFICATION 3.4.6

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 CTS 3.4.1.3, Applicability Footnote, references "See Special Test Exception 3.10.9." Cross references are not used in the ITS or NUREG-1432. Removing cross references does not alter the requirements of the referenced Specification. Therefore, this is an administrative change with no impact on safety. This change is consistent with NUREG-1432.

A.3 CTS 3.4.1.2, Action b, states, in part, "with no reactor coolant or shutdown cooling loop in operation . . ." ITS 3.4.6, Action C, adds a Condition of, "no RCS loop or SDC train OPERABLE." The addition of this statement to Action C in ITS provides clarification of intent. In the CTS, because of the wording, there existed some ambiguity with Action b. The plant could be in Mode 4 with the required RCS loop or SDC train inoperable and only be in CTS Action a. The added wording to ITS Action C clarifies its usage by requiring its performance with the required RCS loop or SDC train inoperable. Although not explicitly stated in CTS, PVNGS operating practice complies with the intent of ITS 3.4.6 Action C. This change provides explicit wording that clarifies Palo Verde practice in usage of ITS 3.4.6 Action C, therefore, this is an administrative change. This change is consistent with NUREG-1432.

ADMINISTRATIVE CHANGES (continued)

A.4 CTS 3.4.1.3, Action a, does not specifically identify the conditions that define Operable, or not in operation. ITS 3.4.6 Actions A and B do define what conditions define inoperable, or not in operation. This change will split the CTS 3.4.1.3, Action a, into two separate Actions, A and B, in the ITS. The splitting of an Action into two separate Actions for clarification constitutes an administrative change. This change is consistent with NUREG-1432.

A.5 CTS LCO 3.4.1.3 Footnote * discusses the requirements which allows all RCPs and SDC pumps to be de-energized for a period of time. One requirement is that no operations be permitted that would cause dilution of the RCS boron concentration. ITS LCO 3.4.6 Note 1 changed the word "dilution" to "reduction." Both words are used in the same context; reducing boron concentration of the RCS is not acceptable. This change does not alter the LCO intent. Therefore, this is an administrative change with no impact on safety. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 CTS, Action 3.4.1.3.b, requires the suspension of all operations involving a reduction in boron concentration of the RCS when no RCS loop is in operation. The CTS does not provide any Completion Time associated with this Action. ITS 3.4.6, Action C.1 requires suspension of all operations involving a reduction of RCS boron concentration, "immediately." CTS only associates the term "immediately" with action to return the required RCP loop to operation, not with the action to suspend all operations involving a reduction in boron concentration of the RCS. The addition of "immediately" for Completion Time to suspend all operations involving a reduction in boron concentration of the RCS reflects the importance of maintaining operation of decay heat removal. The addition of this requirement constitutes a more restrictive change to PVNGS plant operation. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE (continued)

M.2 CTS 3.4.1.3, Footnote *, allows all RCPs and shutdown cooling pumps to be de-energized for up to one hour. ITS LCO 3.4.6 Note 1 allows all RCPs and shutdown cooling pumps to be de-energized for up to 1 hour per 8 hour period. Therefore, the amount of time all RCPs and shutdown cooling pumps may be de-energized has been restricted from less than or equal to one hour, to less than or equal to one hour per eight hour period. CTS would permit repeated application of the one hour exemption, indefinitely. This additional restriction on plant operation restricts immediate, repeated application of the one-hour allowance, which would circumvent the intent of the Note. Although not explicitly stated in CTS, PVNGS operating practice complies with the 1 hour per 8 hour period requirement statement in ITS 3.4.6 Note. This change provides explicit wording that clarifies PVNGS operating practice in application of this LCO. Placing a limitation on the de-energization of all RCPs and shutdown cooling pumps will not adversely affect plant safety. Placing additional restrictions on plant operation constitutes a more restrictive change. This change is consistent with NUREG-1432.

M.3 CTS SR 4.4.1.3.1 requires performance only for RCPs not in operation. ITS SR 3.4.6.3 requires performance for both RCPs and SDC pumps not in operation. The additional requirement to perform this Surveillance for the SDC pump not in operation constitutes a more restrictive change to TS. Verification that the required pump is Operable ensures that an additional RCS loop or SDC train can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Therefore, this change does not detrimentally affect plant safety. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS

LA.1 NOT USED

TECHNICAL CHANGES - RELOCATIONS (continued)

LA.2 CTS SR 4.4.1.3.3 contains a minimum flow rate that SDC must equal or exceed. This information will be relocated to ITS SR 3.4.6.1 Bases. Also, CTS 4.4.1.3.3 requires at least one reactor coolant loop or SDC train be verified in operation and "circulating reactor coolant." The requirement to circulate reactor coolant is moved to Section SR 3.4.6.1 of the ITS Bases. In addition, both pieces of information do not meet the 10 CFR 50.36 (c) (2) (ii) criteria for inclusion in to the ITS and are, therefore, being relocated. Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program.

Any changes to the Bases will be in accordance with Chapter 5.0 Bases Control Program. Any technical changes to plant procedures will be in accordance with the PVNGS procedure control process. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This information is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this information to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS (continued)

LA.3 CTS LCO 3.4.1.3 specifies the loop/train numbers for the reactor coolant loops and SDC train, components making up a reactor coolant loop, and that one RCP per loop is required. This information does not meet the 10 CFR 50.36 (c) (2) (ii) criteria for inclusion in to the ITS and is, therefore, being relocated. The specific reactor coolant loop and SDC train numbers exist in the UFSAR, and the components making up a reactor coolant loop and the number of RCPs required per loop is moved to Section 3.4.6 of the ITS Bases.

Any changes to the UFSAR will require a 10 CFR 50.59 evaluation. Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This information is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled document is acceptable and is consistent with NUREG-1432.

LA.4 CTS 3.4.6, Footnote** contains information that provides guidance determining SG water temperature. Although this information is useful, it is not required to determine the OPERABILITY of a system, component or structure, and is, therefore, relocated to ITS 3.4.6 LCO Bases.

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This information is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS (continued)

LA.5 CTS SR 4.4.1.3.2 specifies that "indicated wide range" level is to be used for verification of SG level. All values in ITS are indicated values. This information, less the word "indicated", is moved to ITS SR 3.4.6.2 Bases section. This information is not required to determine OPERABILITY of a system, component or structure and therefore is being relocated to a Licensee Controlled Document (Bases Section).

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This information is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

None

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.6

ADMINISTRATIVE CHANGES
(ITS 3.4.6 Discussion of Changes Labeled A.1, A.2, A.3, A.4, and A.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, "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 Section/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 Section/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 3.4.6 Discussion of Changes Labeled (A.1, A.2, A.3, A.4, and A.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 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 - MORE RESTRICTIVE
(ITS 3.4.6 Discussion of Changes Labeled M.1, M.2 and M.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. 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 in the specific Discussion of Changes listed 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 3.4.6 Discussion of Changes Labeled M.1, M.2 and M.3) (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 3.4.6 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 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 3.4.6 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, 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 submittal, 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.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.7
MARK UP

<DOC>

<CTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops—MODE 5, Loops Filled

<LCO 3.4.1.4.1>

LCO 3.4.7 (1) One ~~s~~hutdown ~~c~~ooling (SDC) train shall be OPERABLE and in operation, and either:

a. One additional SDC train shall be OPERABLE; or

b. The secondary side water level of each ~~s~~team ~~g~~enerator (1) (SG) shall be ≥ ~~[~~25%~~]~~.

----------NOTES----------

1. The SDC pump of the train in operation may be de-energized for ≤ 1 hour per 8 hour period provided:

   a. No operations are permitted that would cause reduction of the RCS boron concentration; and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

<3.4.1.4 Footnotes>

2. One required SDC train may be inoperable for up to 2 hours for surveillance testing provided that the other SDC train is OPERABLE and in operation.

(1) 3. No ~~r~~eactor ~~c~~oolant ~~p~~ump (RCP) shall be started with one or more of the RCS cold leg temperatures ≤ ~~[285]~~ 214 °F during cooldown, or ≤ 291°F during heatup unless (5) unless:

   ~~a. The pressurizer water level is < [60]%; or~~

   ~~b.~~ The secondary side water temperature in each SG is < ~~[~~100~~]~~°F above each of the RCS cold leg temperatures. (2)

(5A) All SDC trains may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

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4. No more than 2 RCPs may be in operation with RCS cold leg temperature ≤ 200°F. No more than 3 RCPs may be in operation with RCS cold leg temperature > 200°F but ≤ 500°F. (9)

APPLICABILITY: MODE 5 with RCS loops filled.

Palo Verde-Units 1,2,3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.4.1.4.1 ACT a.> A. One SDC train inoperable. AND Any SG with secondary side water level not within limit.	A.1 Initiate action to restore a second SDC train to OPERABLE status. OR A.2 Initiate action to restore SG secondary side water levels to within limits.	Immediately Immediately
<3.4.1.4.1 ACT b.> B. Required SDC train inoperable. OR No SDC train in operation.	B.1 Suspend all operations involving reduction in RCS boron concentration. AND B.2 Initiate action to restore one SDC train to OPERABLE status and operation.	Immediately Immediately

Palo Verde - Units 1,2,3

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
<4.4.1.4.1.2>	SR 3.4.7.1	Verify one SDC train is in operation.	12 hours
<4.4.1.4.1.1>	SR 3.4.7.2	Verify required SG secondary side water level is ≥ ~~X~~25~~X~~%.	12 hours
<DOC M.1>	SR 3.4.7.3	Verify correct breaker alignment and indicated power available to the required SDC pump that is not in operation.	7 days

Palo Verde-Units 1,2,3

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.7
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.7 RCS Loops—MODE 5, Loops Filled

BASES

BACKGROUND

In MODE 5 with the RCS loops filled, the primary function of the reactor coolant is the removal of decay heat and transfer this heat either to the steam generator (SG) secondary side coolant or the component cooling water via the shutdown cooling (SDC) heat exchangers. While the principal means for decay heat removal is via the SDC System, the SGs are specified as a backup means for redundancy. Even though the SGs cannot produce steam in this MODE, they are capable of being a heat sink due to their large contained volume of secondary side water. As long as the SG secondary side water is at a lower temperature than the reactor coolant, heat transfer will occur. The rate of heat transfer is directly proportional to the temperature difference. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

1 Essential 8

In MODE 5 with RCS loops filled, the SDC trains are the principal means for decay heat removal. The number of trains in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one SDC train for decay heat removal and transport. The flow provided by one SDC train is adequate for decay heat removal. The other intent of this LCO is to require that a second path be available to provide redundancy for decay heat removal.

The LCO provides for redundant paths of decay heat removal capability. The first path can be an SDC train that must be OPERABLE and in operation. The second path can be another OPERABLE SDC train, or through the SGs, each having an adequate water level.

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The SDC trains provide this circulation.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

RCS Loops—MODE 5 (Loops Filled) have been identified in the ~~NRC Policy Statement~~ as important contributors to risk reduction. 10CFR50.36(c)(2)(ii) (1)

<LCO3.4.1.4.1.b>

LCO

The purpose of this LCO is to require at least one of the SDC trains be OPERABLE and in operation with an additional SDC train OPERABLE or secondary side water level of each SG shall be ≥ ~~25%~~. (8) wide range One SDC train provides sufficient forced circulation to perform the safety functions of the reactor coolant under these conditions. The second SDC train is normally maintained OPERABLE as a backup to the operating SDC train to provide redundant paths for decay heat removal. However, if the standby SDC train is not OPERABLE, a sufficient alternate method to provide redundant paths for decay heat removal is two SGs with their secondary side water levels ≥ ~~25%~~. Should the operating SDC train fail, the SGs could be used to remove the decay heat.

Note 1 permits all SDC pumps to be de-energized ≤ 1 hour per 8 hour period. The circumstances for stopping both SDC trains are to be limited to situations where pressure and temperature increases can be maintained well within the allowable pressure (pressure and temperature and low temperature overpressure protection) and 10°F subcooling limits, or an alternate heat removal path through the SG(s) is in operation.

This LCO is modified by a Note that prohibits boron dilution when SDC forced flow is stopped because an even concentration distribution cannot be ensured. (3) Intent is to stop any known or direct positive reactivity changes to the RCS due to dilution Core outlet temperature is to be maintained at least 10°F below saturation temperature, so that no vapor bubble would form and possibly cause a natural circulation flow obstruction. In this MODE, the SG(s) can be used as the backup for SDC heat removal. To ensure their availability, the RCS loop flow path is to be maintained with subcooled liquid.

In MODE 5, it is sometimes necessary to stop all RCP or SDC forced circulation. This is permitted to change operation from one SDC train to the other, perform surveillance or startup testing, perform the transition to and from the SDC, or to avoid operation below the RCP minimum net positive suction head limit. The time period is acceptable because natural circulation is acceptable for decay heat removal,

(continued)

(9)

Note 4 restricts RCP operation to no more than 2 RCPs with RCS cold leg temperature ≤ 200°F, and no more than 3 RCPs with RCS cold leg temperature >200°F but ≤ 500°F. Satisfying these conditions will maintain the analysis assumptions of the flow induced pressure correction factors due to RCP operation (Ref. 3).

BASES

LCO (continued)

the reactor coolant temperature can be maintained subcooled, and boron stratification affecting reactivity control is not expected.

Note 2 allows one SDC train to be inoperable for a period of up to 2 hours provided that the other SDC train is OPERABLE and in operation. This permits periodic surveillance tests to be performed on the inoperable train during the only time when such testing is safe and possible.

Note 3 requires that ~~either of the following two conditions be satisfied~~ before an RCP may be started with any RCS cold leg temperature ≤ ~~[285]~~ 214°F during a cooldown, or ≤ 291°F during a heatup, the

a. Pressurizer water level must be ≤ [60]% or (5) (2)

b. Secondary side water temperature in each SG must be < ~~[100]~~ 100°F above each of the RCS cold leg temperatures.

Satisfying ~~either of~~ the above conditions will preclude a low temperature overpressure event due to a thermal transient when the RCP is started. (saturation temperature corresponding to SG pressure)

3.4.1.4.1 Footnote ##

Note 3 provides for an orderly transition from MODE 5 to MODE 4 during a planned heatup by permitting removal of SDC trains from operation when at least one RCP is in operation. This Note provides for the transition to MODE 4 where an RCP is permitted to be in operation and replaces the RCS circulation function provided by the SDC trains.

An OPERABLE SDC train is composed of an OPERABLE SDC pump capable of providing flow to the ~~and an OPERABLE~~ SDC heat exchanger for heat removal. (current Section XI) (1)

SDC pumps are OPERABLE if they are capable of being powered and are able to provide flow if required. An OPERABLE SG can perform as a heat sink when it has an adequate water ~~level and~~ is OPERABLE in accordance with the SG Tube Surveillance Program and has the minimum water level specified in SR 3.4.7.2. (4)

(Insert 1) (7)

APPLICABILITY

In MODE 5 with RCS loops filled, this LCO requires forced circulation to remove decay heat from the core and to provide proper boron mixing. One SDC train provides sufficient circulation for these purposes.

(continued)

INSERT FOR ITS BASES 3.4.7
LCO BASES
(Units 1, 2, and 3)
INSERT 1

LCO	When entering RCS Loops - MODE 5 Loops Filled from RCS Loops - MODE 5 Loops not Filled the additional requirement of total gas concentration must be addressed for SGs to be considered as a heat sink. A total gas concentration of < 20 cc/kg is required for MODE 5 operations. This limit ensures that gases coming out of solution in the SG U-tubes will not adversely affect natural circulation with RCS pressure at atmospheric conditions. Normal operating procedures implement the findings for determination of when RCS loops are considered filled, which in turn allows for transition from RCS Loops - MODE 5 Loops not Filled to RCS Loops - MODE 5 Loops Filled. The ability to feed and the ability to steam SGs is not a requirement. Since RCS temperature is less than 210°F in MODE 5-Loops Filled, no boiling (i.e. loss of SG inventory) will occur, therefore, the ability to feed and the ability to steam SGs is not a requirement. However, a means to feed and steam the SGs, whenever the Unit is in RCS Loops - MODE 5 Loops Filled, should be provided. Feed sources available are not limited only to Essential Auxiliary Feedwater Pumps and the Condensate Storage Tank ~~(Ref. 1)~~. Steaming capability is usually via ADVs. Also, the RCS must be intact (ability to pressurize to at least 100 psia) for the SGs to be considered as a heat sink. With the RCS not intact a majority of heat removal, assuming a loss of SDC flow, will be out the vent (Ref. 2). Therefore, with the RCS not intact, transition to LCO 3.4.8, RCS Loops - MODE 5 Loops not Filled, is appropriate.

BASES

APPLICABILITY (continued)

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops—MODES 1 and 2";
LCO 3.4.5, "RCS Loops—MODE 3";
LCO 3.4.6, "RCS Loops—MODE 4";
LCO 3.4.8, "RCS Loops—MODE 5, Loops Not Filled";
LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation—High Water Level" (MODE 6); and
LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation—Low Water Level" (MODE 6).

ACTIONS

<LCO 3.4.11.9.1.b>

A.1 and A.2

If ~~the required~~ SDC train is inoperable and any SGs have secondary side water levels < ~~25%~~ wide range (8) redundancy for heat removal is lost. Action must be initiated immediately to restore a second SDC train to OPERABLE status or to restore the water level in the required SGs. Either Required Action A.1 or Required Action A.2 will restore redundant decay heat removal paths. The immediate Completion Times reflect the importance of maintaining the availability of two paths for decay heat removal.

(a) (1)

B.1 and B.2

If ~~the~~ ~~the required~~ SDC train is not OPERABLE or no SDC train is in operation, ~~except as permitted in Note 1~~ (6) all operations involving the reduction of RCS boron concentration must be suspended. Action to restore one SDC train to OPERABLE status and operation must be initiated. Boron dilution requires forced circulation for proper mixing and the margin to criticality must not be reduced in this type of operation. The immediate Completion Times reflect the importance of maintaining operation for decay heat removal.

<SR 4.4.14.2>

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

and circulating reactor coolant at a flow rate of greater than or equal to 4000 gpm. (1)

This SR requires verification every 12 hours that one SDC train is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing decay heat removal. The

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1 (continued)

12 hour Frequency has been shown by operating practice to be sufficient to regularly assess degradation and verify operation is within safety analyses assumptions. In addition, control room indication and alarms will normally indicate loop status.

The SDC flow is established to ensure that core outlet temperature is maintained sufficiently below saturation to allow time for swapover to the standby SDC train should the operating train be lost.

SR 3.4.7.2

Verifying the SGs are OPERABLE by ensuring their secondary side water levels are ≥ ~~25%~~ wide range ensures that redundant heat removal paths are available if the second SDC train is inoperable. The Surveillance is required to be performed when the LCO requirement is being met by use of the SGs. If both SDC trains are OPERABLE, this SR is not needed. The 12 hour Frequency has been shown by operating practice to be sufficient to regularly assess degradation and verify operation within safety analyses assumptions.

(LCO 3.4.1.4.1.b)

SR 3.4.7.3

Verification that the second SDC train is OPERABLE ensures that redundant paths for decay heat removal are available. The requirement also ensures that the additional train can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pumps. The Surveillance is required to be performed when the LCO requirement is being met by one of two SDC trains, e.g., both SGs have < ~~25%~~ water level. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

REFERENCES ~~None~~ 1. Not used

2. CEN-PSD-770 Analysis for lower Mode functional Recovery

3. PVNGS Operating License Amendments 52, 38 and 24 for Units 1, 2 and 3, respectively and associated NRC Safety Evaluation dated July 25, 1990.

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.7

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

2. NUREG-1432 specifies a single temperature as the determinant to place an L-TOP in service or to remove an L-TOP from service. ITS uses two different temperatures, dependent on whether the plant is in a cooldown or heatup evolution, to perform the same function. ITS will continue to apply PVNGS licensing basis and use two specific temperatures to determine when an L-TOP will be placed in service or removed from service. This is acceptable because these temperatures reflect the metallurgical characteristics of the PVNGS reactor vessel. Because of the different thermal/hydraulic stresses applied to the reactor vessel, depending whether a cooldown or heatup is occurring, two different temperatures are used to reflect the transition point from ductile to brittle failure. Hence, there are two different temperatures, depending on whether a cooldown or heatup is occurring, where L-TOPs are required to be OPERABLE and in service. The continued use of two separate temperatures for L-TOP use is a deviation from the NUREG-1432 but is consistent with Palo Verde licensing basis. The Bases has also been revised to be consistent with the LCO.

3. ITS 3.4.7, LCO Bases, adds a sentence to clarify the intent of the Note, item (a), in the LCO. Since this Note could be interpreted to stop any activity that has even a remote possibility of affecting RCS boron concentration, it was decided to clarify its intent. NUREG-1432 does not clarify intent of the LCO Note, item (a). Interpreting this Note in the global sense would have profound affects on maintenance activities and limit our ability to respond to plant needs. A sentence that states, "The intent is to stop any known or direct positive reactivity additions to the RCS", was added to clarify intent of the Note, item (a). This clarifies PVNGS operating practice and is consistent with PVNGS licensing basis.

4. Bases revised for consistency with other Bases Sections.

5. NUREG-1432, LCO 3.4.7, Note, allows the use of either secondary side water temperature <u>or</u> pressurizer water level as a condition to preclude RCS pressure surges when starting an RCP in Mode 5. ITS LCO 3.4.7 does not allow the use of pressurizer water level in lieu of secondary water temperature limits to preclude RCS pressure surges when starting an RCP in Mode 5. The decision not to allow the use of pressurizer water level as a conditional requirement is a deviation from the NUREG-1432 but is consistent with Palo Verde licensing basis (CTS 3.4.1.4.1). The Bases has also been revised to be consistent with the LCO.

6. ITS, Actions B, Bases deletes reference to Note 1 in the LCO section. Location of Note 1 reference implies that suspension of operations involving a reduction in of RCS boron concentration are not required. This implies that compliance with Note 1 is not required. The bases is trying to emphasize that performance of Required Actions is not required when SDC trains are secured in accordance with Note 1. Compliance with Note 1 is still required; no operations are permitted that would cause reduction of the RCS boron concentration, and core outlet temperature is maintained at least 10°F below saturation temperature. There is no need to reference Note 1 in Action B Bases. Note 1 stands alone and its usage is understood. If no SDC train is in operation, based on Note 1 usage, it is not required to perform the Required Actions of Actions A and B. It is only required to comply with the requirements of Note 1. Should failure to meet the requirements of Note 1 occur then entry into Actions A and B is required. This change is consistent with PVNGS licensing basis.

7. ITS 3.4.7 LCO Bases provides additional information concerning SG Operability. This information does not exist in NUREG-1432. PVNGS has defined SG Operability in MODE 5-Loops Filled. This is plant specific information/interpretation for PVNGS. This change is consistent with PVNGS licensing basis.

8. 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 are directly transferred from the CTS to the ITS.

9. ITS LCO 3.4.7 Note 4 restricts operation of RCPs to no more than 2 RCPs in operation with RCS cold leg temperature ≤ 200°F, and no more than 3 RCPs in operation with RCS cold leg temperature > 200°F but ≤ 500°F. NUREG-1432 LCO 3.4.7 does not specify these restrictions. These restrictions are necessary to maintain the analysis assumptions of the flow induced pressure correction factors due to RCP operation, and are consistent with the current licensing basis (CTS 3.4.1.4.1). The ITS Bases for LCO 3.4.7 and References include the basis for these RCP operating restrictions. This change is consistent with PVNGS licensing basis.

PVNGS CTS
SPECIFICATION 3.4.7
MARK UP

A.1

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 ~~COLD SHUTDOWN - LOOPS FILLED~~ RCS Loops - MODE 5, Loops Not Filled

LIMITING CONDITION FOR OPERATION

LCO 3.4.7 ~~3.4.1.4.1 At least~~ one shutdown cooling ~~loop~~ train shall be OPERABLE and in operation*, and either:

a. One additional shutdown cooling loop shall be OPERABLE#, or

b. The secondary side water level of at least two steam generators shall be greater than 25% indicated/wide range level.

Format into Note

LA.3

APPLICABILITY: MODE 5 with reactor coolant loops filled##.

ACTION: One SDC train inoperable and any SG with secondary water level not w/i limits

A.4

ALT A ~~*~~. With less than the above required loops OPERABLE or with less than the required steam generator level, immediately initiate corrective action to return the required loops to OPERABLE status or to restore the required level as soon as possible.

required SDC train inoperable or

A.3

ALT B ~~*~~. ~~With~~ no shutdown cooling loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required shutdown cooling loop to operation.

immediately

M.3

SURVEILLANCE REQUIREMENTS

SR 3.4.7.2 ~~4.4.1.4.1.1~~ The secondary side water level of both steam generators when required shall be determined to be within limits at least once per 12 hours.

LA.2

SR 3.4.7.1 ~~4.4.1.4.1.2~~ At least one shutdown cooling loop shall be determined to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 3780 gpm at least once per 12 hours.

SR 3.4.7.1

M.1

of the train in operation

Insert 1

per 8 hour period

M.2

A.2

1. *The shutdown cooling pump may be deenergized for up to 1 hour provided (1) no operations are permitted that would cause ~~dilution~~ reduction of the Reactor Coolant System boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

LCO NOTE

2. #One shutdown cooling ~~loop~~ train may be inoperable for up to 2 hours for surveillance testing provided the other shutdown cooling ~~loop~~ train is OPERABLE and in operation.

3. ##A reactor coolant pump shall not be started with one or more of the Reactor Coolant System cold leg temperatures less than or equal to 214°F during cooldown, or 291°F during heatup, unless the secondary water temperature (saturation temperature corresponding to steam generator pressure) of each steam generator is less than 100°F above each of the Reactor Coolant System cold leg temperatures.

LA.4

4. ~~Reactor Coolant Pump operation is limited to~~ No more than 2 Reactor Coolant Pumps may be in operation with RCS cold leg temperature less than or equal to 200°F, 3 Reactor Coolant Pumps with RCS cold leg temperature greater than 200°F but less than or equal to 500°F.

A.1

No more than

4. All SDC trains may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation

L.1

INSERT FOR CTS 3.4.1.4.1
SURVEILLANCE REQUIREMENTS
(Units 1, 2, and 3)
INSERT 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.3	Verify correct breaker alignment and indicated power available to the required SDC pump that is not in operation.	7 days

DISCUSSION OF CHANGES
SPECIFICATION 3.4.7

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 CTS LCO 3.4.1.4.1 Footnote * discusses the requirements which allow all RCPs and SDC pumps to be de-energized for a period of time. One requirement is that no operations be permitted that would cause dilution of the RCS boron concentration. ITS LCO 3.4.7 LCO Note 1 changed the word "dilution" to "reduction." Both words are used in the same context; reducing boron concentration of the RCS is not acceptable. This change does not alter the LCO intent. Therefore, this is an administrative change with no impact on safety. This change is consistent with NUREG-1432.

A.3 CTS 3.4.1.4.1, Action b, states, in part, "with no shutdown cooling loop in operation . . ." ITS 3.4.7, Action B, adds a Condition of, "required SDC train inoperable." The addition of this statement to Action B in ITS provides clarification of intent. In the CTS, because of the wording, there existed some ambiguity with Action b. The plant could be in Mode 5 with the required RCS loop or SDC train inoperable and only be in CTS Action a. The added wording to ITS Action B clarifies its usage by requiring its performance with the required SDC train inoperable. Although not explicitly stated in CTS, PVNGS operating practice complies with the intent of ITS 3.4.7 Action B. This change provides explicit wording that clarifies Palo Verde practice in usage of ITS 3.4.7 Action B, therefore, this is an administrative change. This change is consistent with NUREG-1432.

ADMINISTRATIVE CHANGES (continued)

A.4 CTS 3.4.1.4.1, Action a, does not specifically identify the conditions that define Operable, or not in operation. ITS 3.4.7 Actions A and B do define what conditions define inoperable, or not in operation. This change provides clarification of CTS 3.4.1.4.1, Action a. Providing clarification constitutes an administrative change. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 ITS SR 3.4.7.3 has been added which requires verification of correct breaker alignment and indicated power available to the required SDC pump that is not in operation. CTS 3.4.1.4.1 does not contain this requirement. Verification that the required pump is Operable ensures that an additional SDC train can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. The addition of this SR, for the SDC pump not in operation, constitutes a more restrictive change to PVNGS plant operation. This change is consistent with NUREG-1432.

M.2 CTS 3.4.1.4.1, Footnote *, allows all shutdown cooling pumps to be de-energized for up to one hour. ITS 3.4.7 LCO Note 1 allows all shutdown cooling pumps to be de-energized for up to 1 hour per 8 hour period. Therefore, the amount of time all shutdown cooling pumps may be de-energized has been restricted from less than or equal to one hour, to less than or equal to one hour per eight hour period. CTS would permit repeated application of the one hour exemption, indefinitely. This additional restriction on plant operation restricts immediate, repeated application of the one-hour allowance, which would circumvent the intent of the NOTE. Although not explicitly stated in CTS, PVNGS operating practice complies with the 1 hour per 8 hour period requirement statement in ITS 3.4.7 NOTE. This change provides explicit wording that clarifies PVNGS operating practice in application of this LCO. Placing a limitation on the de-energization of all shutdown cooling pumps will not adversely affect plant safety. Placing additional restrictions on plant operation constitutes a more restrictive change to PVNGS operating practice. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE (continued)

M.3 CTS 3.4.1.4.1, Action b, requires the suspension of all operations involving a reduction in boron concentration of the RCS when no SDC loop is in operation. The CTS does not provide any Completion Time associated with this Action. ITS 3.4.7, Action B.1 requires suspension of all operations involving a reduction of RCS boron concentration, "immediately." CTS only associates the term "immediately" with Action to return the required SDC loop to operation, not with the Action to suspend all operations involving a reduction in boron concentration of the RCS. The addition of "immediately" for Completion Time to suspend all operations involving a reduction in boron concentration of the RCS reflects the importance of maintaining operation of decay heat removal. The addition of this requirement constitutes a more restrictive change to PVNGS plant operation. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS

LA.1 NOT USED

TECHNICAL CHANGES - RELOCATIONS (continued)

LA.2 CTS SR 4.4.1.4.1.2 contains a minimum flow rate that SDC must equal or exceed. This information will be relocated to ITS SR 3.4.7.1 Bases. Also, CTS 4.4.1.4.1.2 requires at least one SDC train be verified in operation and "circulating reactor coolant." The requirement to circulate reactor coolant is moved to Section SR 3.4.7.1 of the ITS Bases. In addition, both pieces of information do not meet the 10 CFR 50.36 (c) (2) (ii) criteria for inclusion in to the ITS and are, therefore, being relocated.

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This information is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this information to a Licensee Controlled document (Bases) is acceptable and is consistent with NUREG-1432.

LA.3 CTS LCO 3.4.1.4.1.b specifies that "indicated wide range" level is to be used for verification of SG level. All values in ITS are indicated values. This information, less the word "indicated", is moved to ITS 3.4.7 Bases Section. This information is not required to determine OPERABILITY of a system, component or structure and therefore is being relocated to a Licensee Controlled Document (Bases Section).

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This information is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS (continued)

LA.4 CTS 3.4.7, Footnote ##, contains information that provides guidance determining SG water temperature. Although this information is useful, it is not required to determine the OPERABILITY of a system, component or structure, and is therefore being relocated to ITS 3.4.7 LCO Bases.

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This information is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 ITS 3.4.7 LCO Note 5 allows all SDC trains to be removed from operation during a planned heatup to Mode 4 when at least one RCS loop is in operation. CTS has no such allowance for transition into Mode 4. The addition of this information to the LCO provides for an orderly transition from Mode 5 to Mode 4 during a planned heatup. This provides for the transition to Mode 4 where an RCP is permitted to be in operation and replaces the RCS circulation function provided by the SDC trains. Therefore, this change does not detrimentally affect plant safety. This change is consistent with NUREG-1432.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.7

ADMINISTRATIVE CHANGES
(ITS 3.4.7 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 Section/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 Section/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 3.4.7 Discussion of Changes Labeled (A.1, A.2, A.3 and A.4) (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, 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 - MORE RESTRICTIVE
(ITS 3.4.7 Discussion of Changes Labeled M.1, M.2 and M.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. 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 in the specific Discussion of Changes listed 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 3.4.7 Discussion of Changes Labeled M.1, M.2 and M.3) (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 3.4.7 Discussion of Changes Labeled LA.1, LA.2, LA.3 and LA.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 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 3.4.7 Discussion of Changes Labeled LA.1, LA.2, LA.3 and LA.4) (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 submittal, 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.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.7 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 3.4.7 LCO Note 4 allows all SDC trains to be removed from operation during a planned heatup to Mode 4 when at least one RCS loop is in operation. CTS has no such allowance for transition into Mode 4. The addition of this information to the LCO provides for an orderly transition from Mode 5 to Mode 4 during a planned heatup. This provides for the transition to Mode 4 where an RCP is permitted to be in operation and replaces the RCS circulation function provided by the SDC trains. 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 3.4.7 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 proposed change provides a Note that permits all SDC trains to be removed from service during a planned heatup to Mode 4 when at least one RCS loop is in operation. The CTS has no such allowance for transition to Mode 4. This change provides for an orderly transition from Mode 5 to Mode 4 during a heatup. This change will not result in operation that will increase the probability of initiating an analyzed event. In addition, this change does not alter assumptions relative to mitigation of an accident or transient event. This change has been reviewed to ensure that no previously evaluated accident has been adversely affected. 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?

Allowing all SDC trains to be removed from operation during a planned heatup to Mode 4 when at least one RCS loop is in operation does not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal plant operation. This change relaxes the requirements of the CTS by allowing the SDC trains to be inoperable with one RCS loop in operation, however, it is consistent with the assumptions made in the safety analyses, licensing basis, and consistent with NUREG-1432. Therefore, this change 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 change provides a relation for SDC trains being inoperable during a planned heatup to Mode 4 with one RCS loop in operation. An evaluation of this change concluded that there is no impact on the margin of safety. The change maintains requirements of the safety analysis, licensing basis, and consistent with NUREG-1432. As such, no question of safety is involved. Therefore, this change will not involve a significant reduction in a margin of safety.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.8
MARK UP

<DOC>

<CTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops—MODE 5, Loops Not Filled

<LCO 3.4.1.4.2> LCO 3.4.8 (1) Two ~~shutdown~~ cooling (SDC) trains shall be OPERABLE and one SDC train shall be in operation.

1 hour per 8 hour period

<3.4.1.4.2 Footnote *> ----------NOTES----------

1. All SDC pumps may be de-energized for ≤ ~~15 minutes when~~ ~~switching from one train to another~~ provided: (3)

<3.4.1.4.2 Footnote *>

   a. ~~A~~The core outlet temperature is maintained > 10°F below saturation temperature;~~)~~

<3.4.1.4.2 Footnote *>

   b. No operations are permitted that would cause a reduction of the RCS boron concentration; and

<DOC M.1>

   c. No draining operations to further reduce the RCS water volume are permitted.

<3.4.1.4.2 Footnote #>

2. One SDC train may be inoperable for ≤ 2 hours for surveillance testing provided the other SDC train is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

<ACT A>

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SDC train inoperable.	A.1 Initiate action to restore SDC train to OPERABLE status.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<ACT B> B. Required SDC trains inoperable. OR No SDC train in operation.	B.1 Suspend all operations involving reduction of RCS boron concentration. AND B.2 Initiate action to restore one SDC train to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
<SR 4.4.1.4.2> SR 3.4.8.1	Verify one SDC train is in operation.	12 hours
<DOC M.2> SR 3.4.8.2	Verify correct breaker alignment and indicated power available to the required SDC pump that is not in operation.	7 days

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.8
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.8 RCS Loops—MODE 5, Loops Not Filled

BASES

BACKGROUND

In MODE 5 with the RCS loops not filled, the primary function of the reactor coolant is the removal of decay heat and transfer of this heat to the shutdown cooling (SDC) heat exchangers. The steam generators (SGs) are not available as a heat sink when the loops are not filled. The secondary function of the reactor coolant is to act as a carrier for the soluble neutron poison, boric acid. (1)

In MODE 5 with loops not filled, only the SDC System can be used for coolant circulation. The number of trains in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one SDC train for decay heat removal and transport and to require that two paths be available to provide redundancy for heat removal.

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in determining the time available for mitigation of the accidental boron dilution event. The SDC trains provide this circulation. The flow provided by one SDC train is adequate for decay heat removal and for boron mixing.

RCS loops—MODE 5 (loops not filled) have been identified in ~~the NRC Policy Statement~~ 10CFR 50.36 (c)(2)(ii) as important contributors to risk reduction. (1)

LCO

The purpose of this LCO is to require a minimum of two SDC trains be OPERABLE and one of these trains be in operation. An OPERABLE train is one that is capable of transferring heat from the reactor coolant at a controlled rate. Heat cannot be removed via the SDC System unless forced flow is used. A minimum of one running SDC pump meets the LCO requirement for one train in operation. An additional SDC train is required to be OPERABLE to meet the single failure criterion.

(continued)

BASES

LCO (continued)

Note 1 permits ~~the~~ all SDC pumps to be de-energized for ≤ 1 hour per 8 hour period ~~≤ 15 minutes when switching from one train to another~~. The circumstances for stopping both SDC pumps are to be limited to situations when the outage time is short and the core outlet temperature is maintained > 10°F below saturation temperature. The Note prohibits boron dilution or draining operations when SDC forced flow is stopped.

Note 2 allows one SDC train to be inoperable for a period of 2 hours provided that the other train is OPERABLE and in operation. This permits periodic surveillance tests to be performed on the inoperable train during the only time when these tests ~~are safe and~~ possible.

An OPERABLE SDC train is composed of ~~an~~ the OPERABLE SDC pump (LS or LPSI) capable of providing ~~forced~~ flow to ~~an OPERABLE~~ SDC heat exchanger (for heat removal), along with the appropriate flow and temperature instrumentation for control, protection, and indication. SDC pumps are OPERABLE if they are capable of being powered and are able to provide flow (current Section XI) if required.

APPLICABILITY

In MODE 5 with loops not filled, this LCO requires core heat removal and coolant circulation by the SDC System.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops—MODES 1 and 2";
LCO 3.4.5, "RCS Loops—MODE 3";
LCO 3.4.6, "RCS Loops—MODE 4";
LCO 3.4.7, "RCS Loops—MODE 5, Loops Filled";
LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation—High Water Level" (MODE 6); and
LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation—Low Water Level" (MODE 6).

ACTIONS

A.1

If ~~the required~~ SDC train is inoperable, redundancy for heat removal is lost. Action must be initiated immediately to restore a second train to OPERABLE status. The Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

If no SDC train is OPERABLE or in operation, except as provided in Note 1, all operations involving the reduction of RCS boron concentration must be suspended. Action to restore one SDC train to OPERABLE status and operation must be initiated immediately. Boron dilution requires forced circulation for proper mixing and the margin to criticality must not be reduced in this type of operation. The immediate Completion Time reflects the importance of maintaining operation for decay heat removal.

<DOC LA.1>

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This SR requires verification every 12 hours that one SDC train is in operation and circulating reactor coolant. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing decay heat removal. The 12 hour Frequency has been shown by operating practice to be sufficient to regularly assess degradation and verify operation is within safety analyses assumptions.

SR 3.4.8.2

Verification that the required number of trains are OPERABLE ensures that redundant paths for heat removal are available and that additional trains can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and indicated power available to the required pumps. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

REFERENCES None.

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.8

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

2. ITS 3.4.8 LCO Bases contains information that identifies a SDC pump as either a Containment Spray pump (CS) or a Low Pressure Safety Injection pump (LPSI). NUREG-1432 does not identify which pumps can be used as a SDC pump. PVNGS has the capability to use either a LPSI or CS pump to perform SDC. The information added to the LCO Bases emphasizes this fact. When used for SDC, either pump (CS or LPSI) must meet the requirements as outlined in the SRs to be considered an Operable SDC pump. The decision to use this information is a deviation from the NUREG-1432 but is consistent with Palo Verde licensing basis.

3. NUREG-1432 LCO 3.4.8 allows de-energization of SDC pumps for ≤ 15 minutes only for the purpose of switching one train to another. ITS 3.4.8 will allow de-energization of all SDC pumps for ≤ 1 hour per 8 hour period with no stipulation on the reason for SDC pump de-energization. This allows de-energization of all SDC pumps for ≤ 1 hour to support plant operations. This does not lessen the impact or the concern associated with de-energization of all SDC pumps in this condition, it allows more flexibility in supporting plant operations. The requirement to maintain core outlet temperature > 10°F below saturation temperature is still applicable. It is this requirement that ensures adequate core cooling is taking place. As long as core outlet temperature is maintained > 10°F below saturation temperature for the time period that flow is secured, the time period with no SDC flow, though relevant, is of no consequence. This also maintains consistency with other similar NUREG Specifications (3.4.5, 3.4.6 and 3.4.7). The removal of the restrictions for stopping all SDC pumps is a deviation from NUREG-1432 but is consistent with Palo Verde licensing basis. The Bases has also been revised to be consistent with the LCO.

4. Bases revised for consistency with other Bases Sections.

5. NOT USED

6. NOT USED

PVNGS CTS
SPECIFICATION 3.4.8
MARK UP

Specification 3.4.8

A.1

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 ~~COLD SHUTDOWN~~ - LOOPS NOT FILLED (RCS Loops - MODES)

LIMITING CONDITION FOR OPERATION

LCO 3.4.8 ~~3.4.1.4.2~~ Two shutdown cooling loops shall be OPERABLE# and at least one shutdown cooling loop shall be in operation*.

APPLICABILITY: MODE 5 with reactor coolant loops not filled. (format into NOTE)

ACTION:

(One SDC train inoperable)

ACT A ~~a.~~ With less than the above required loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status as soon as possible. (Required SDC trains inoperable or) M.5

ALT B ~~b.~~ ~~With~~ no shutdown cooling loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate ~~corrective~~ action to return the required shutdown cooling loop to operation. (immediately) M.3

SURVEILLANCE REQUIREMENTS

~~4.4.1.4.2~~ At least one shutdown cooling loop shall be determined to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 3780 gpm at least once per 12 hours. LA.1

SR 3.4.8.1

Insert 1 M.2

(≤) (2)* One shutdown cooling loop may be inoperable for ~~up to~~ 2 hours for surveillance testing provided the other shutdown cooling loop is OPERABLE and in operation.

(All) (1)* ~~The~~ shutdown cooling pump(s) may be deenergized for ~~up to 1 hour~~ provided (1) no operations are permitted that would cause ~~dilution~~ (reduction) of the Reactor Coolant System boron concentration, and (2) core outlet temperature is maintained at least 10°F below saturation temperature. (≤ 1 hour per 8 hour period) M.4

(A) L. No draining operations to further reduce the RCS water volume are permitted A.2

M.1

INSERT FOR CTS 3.4.1.4.2
SURVEILLANCE REQUIREMENTS
(Units 1, 2, and 3)
INSERT 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.2	Verify correct breaker alignment and indicated power available to the required SDC pump that is not in operation.	7 days

DISCUSSION OF CHANGES
SPECIFICATION 3.4.8

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 CTS LCO 3.4.1.4.2 Footnote * discusses the requirements which allow all SDC pumps to be de-energized for a period of time. One requirement is that no operations be permitted that would cause dilution of the RCS boron concentration. ITS LCO 3.4.8, Note 1b, changed the word "dilution" to "reduction." Both words are used in the same context; reducing boron concentration of the RCS is not acceptable. This change does not alter the LCO intent. Therefore, this is an administrative change with no impact on safety. This change is consistent with NUREG-1432.

A.3 NOT USED

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 ITS 3.4.8 introduces an additional requirement to the LCO Note that allows the SDC loops to be de-energized. The restriction added disallows all draining operations that would further reduce the RCS water volume. CTS 3.4.1.4.2 has no such additional restriction. This additional restriction ensures that while no forced circulation is taking place, the water volume remains stable. The water volume is the only mechanism of heat dissipation while both shutdown cooling trains are secured. The addition of restrictions constitute a more restrictive change. This change will not have any adverse affects on plant safety. This change is consistent with NUREG-1432.

M.2 ITS SR 3.4.8.2 has been added which requires verification of correct breaker alignment and indicated power available to the required SDC pump that is not in operation. CTS 3.4.1.4.2 does not contain this requirement. Verification that the required pump is Operable ensures that an additional SDC train can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. The addition of this SR, for the SDC pump not in operation, constitutes a more restrictive change to PVNGS plant operation. This change is consistent with NUREG-1432.

M.3 CTS 3.4.1.4.2, Action b, requires the suspension of all operations involving a reduction in boron concentration of the RCS when no SDC loop is in operation. The CTS does not provide any Completion Time associated with this Action. ITS 3.4.8, Action B.1 requires suspension of all operations involving a reduction of RCS boron concentration, "immediately." CTS only associates the term "immediately" with Action to return the required SDC loop to operation, not with the Action to suspend all operations involving a reduction in boron concentration of the RCS. The addition of "immediately" for Completion Time to suspend all operations involving a reduction in boron concentration of the RCS reflects the importance of maintaining operation of decay heat removal. The addition of this requirement constitutes a more restrictive change to PVNGS plant operation. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE (continued)

M.4 CTS 3.4.1.4.2, Footnote *, allows all shutdown cooling pumps to be de-energized for up to one hour. ITS 3.4.8 LCO Note 1 allows all shutdown cooling pumps to be de-energized for up to 1 hour per 8 hour period. Therefore, the amount of time all shutdown cooling pumps may be de-energized has been restricted from less than or equal to one hour, to less than or equal to one hour per eight hour period. CTS would permit repeated application of the one hour exemption, indefinitely. This additional restriction on plant operation restricts immediate, repeated application of the one-hour allowance, which would circumvent the intent of the NOTE. Although not explicitly stated in CTS, PVNGS operating practice complies with the 1 hour per 8 hour period requirement statement in ITS 3.4.8 NOTE. This change provides explicit wording that clarifies PVNGS operating practice in application of this LCO. Placing a limitation on the de-energization of all shutdown cooling pumps will not adversely affect plant safety. Placing additional restrictions on plant operation constitutes a more restrictive change to PVNGS operating practice. This change is consistent with NUREG-1432.

M.5 CTS 3.4.1.4.2, Action b, requires suspension of all operations involving a reduction in boron concentration of the RCS when no SDC loop is in operation. The CTS does not specify an Action if a SDC loop is in operation but both loops are not OPERABLE (i.e., do not meet SRs). ITS 3.4.8, Action B, requires suspension of all operations involving reduction of RCS boron concentration when either no SDC loop is in operation OR when the two required SDC trains are inoperable. The addition of this requirement constitutes a more restrictive change to PVNGS plant operation. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS

LA.1 CTS SR 4.4.1.4.2 contains a minimum flow rate that SDC must equal or exceed. This information is a minimum SDC flow limit and is, therefore, more suitably located in the ITS Bases. Also, CTS 4.4.1.4.2 requires at least one SDC train be verified in operation and "circulating reactor coolant." The requirement to circulate reactor coolant is moved to Section 3.4.8 of the ITS Bases. In addition, both pieces of information do not meet the 10 CFR 50.36 (c) (2) (ii) criteria for inclusion in to the ITS and are, therefore, relocated.

TECHNICAL CHANGES - RELOCATIONS (continued)

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. Any technical changes to the plant procedures will be in accordance with the PVNGS procedure control process. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This information is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this information to a Licensee Controlled document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

None

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.8

ADMINISTRATIVE CHANGES
(ITS 3.4.8 Discussion of Changes Labeled A.1, A.2 and A.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, "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 Section/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 Section/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 3.4.8 Discussion of Changes Labeled (A.1, A.2 and A.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 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 - MORE RESTRICTIVE
(ITS 3.4.8 Discussion of Changes Labeled M.1, 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 in the specific Discussion of Changes listed 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 3.4.8 Discussion of Changes Labeled M.1, 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 3.4.8 Discussion of Changes Labeled LA.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 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 3.4.8 Discussion of Changes Labeled LA.1) (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 submittal, 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.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.9
MARK UP

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

≥27% and ≤ 56% (6)

<LCO 3.9.3.1> LCO 3.4.9 The pressurizer shall be OPERABLE with:

a. Pressurizer water level ~~[60]%,~~ and

b. Two groups of pressurizer heaters OPERABLE with the capacity of each group ≥ ~~[150]~~ kW and capable of being powered from an emergency power supply.

125 (6)

APPLICABILITY: MODES 1, 2, and 3.

Insert 1 (4)

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
<3.4.3.1.b ACT> A.	Pressurizer water level not within limit.	A.1	Be in MODE 3 with reactor trip breakers open.	6 hours
		AND		
		A.2	Be in MODE 4.	12 hours (6)
<3.4.3.1.a ACT> B.	One required group of pressurizer heaters inoperable.	B.1	Restore required group of pressurizer heaters to OPERABLE status.	72 hours
<3.4.3.1.a ACT> C.	Required Action and associated Completion Time of Condition B not met.	C.1	Be in MODE 3.	6 hours
		AND		
		C.2	Be in MODE 4.	12 hours (6)

INSERT FOR ITS 3.4.9
APPLICABILITY NOTE
(Units 1, 2, and 3)
INSERT 1

----------NOTE----------

The pressurizer water level limit does not apply during:

a. THERMAL POWER ramp > 5% RTP per minute; or

b. THERMAL POWER step >10% RTP.

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
4.4.3.1.1	SR 3.4.9.1	Verify pressurizer water level is ~~≤ [60]%~~ (6) ≥ 27% and ≤ 50%.	12 hours
4.4.3.1.2	SR 3.4.9.2	Verify capacity of each required group of pressurizer heaters ≥ ~~[150]~~ (125) (6) kW.	92 days
	~~SR 3.4.9.3~~	~~Verify required pressurizer heaters are capable of being powered from an emergency power supply.~~	~~[18] months~~

(1)

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.9
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEMS (RCS)

B 3.4.9 Pressurizer

LCO 3.4.11 "Pressurizer Safety Valves - MODE 4." (6)

BASES

BACKGROUND

The pressurizer provides a point in the RCS where liquid and vapor are maintained in equilibrium under saturated conditions for pressure control purposes to prevent bulk boiling in the remainder of the RCS. Key functions include maintaining required primary system pressure during steady state operation and limiting the pressure changes caused by reactor coolant thermal expansion and contraction during normal load transients. (MODES 1, 2, and 3) (7)

The pressure control components addressed by this LCO include the pressurizer water level, the required heaters and their backup heater controls, and emergency power supplies. Pressurizer safety valves and pressurizer ~~power~~ (vents) (6) ~~operated relief valves (PORVs)~~ are addressed by LCO 3.4.10, "Pressurizer Safety Valves" and LCO 3.4.X "Pressurizer ~~Power Operated Relief Valves (PORVs)~~ (vents) (6)," respectively. (12) (6)

The maximum ~~water level limit~~ (steady state) has been established to ensure that a liquid to vapor interface exists to permit RCS pressure control, using the sprays and heaters during normal operation and proper pressure response for anticipated design basis transients. The water level limit serves two purposes: (5) (LCO 3.4.3.1) (maximum and minimum steady state)

a. Pressure control during normal operation maintains subcooled reactor coolant in the loops and thus in the preferred state for heat transport; and

b. By restricting the level to a maximum, expected transient reactor coolant volume increases (pressurizer insurge) will not cause excessive level changes that could result in degraded ability for pressure control. (LCO 3.4.3.1) (5)

The maximum ~~water level limit~~ (steady state) permits pressure control equipment to function as designed. The limit preserves the steam space during normal operation, thus, both sprays and heaters can operate to maintain the design operating pressure. The level limit also prevents filling the pressurizer (water solid) for anticipated design basis transients, thus ensuring that pressure relief devices

(continued)

The minimum steady state water level in the pressurizer assures pressurizer heaters, which are required to achieve and maintain pressure control, remain covered with water to prevent failure, which could occur if the heaters were energized uncovered. (2)

BASES

BACKGROUND (continued)

(~~PORVs or~~ pressurizer safety valves) can control pressure by steam relief rather than water relief. If the level limits were exceeded prior to a transient that creates a large pressurizer insurge volume leading to water relief, the maximum RCS pressure might exceed the Safety Limit of 2750 psi~~a~~. (a) (b)

The requirement to have two groups of pressurizer heaters ensures that RCS pressure can be maintained. The pressurizer heaters maintain RCS pressure to keep the reactor coolant subcooled. Inability to control RCS pressure during natural circulation flow could result in loss of single phase flow and decreased capability to remove core decay heat.

APPLICABLE SAFETY ANALYSES

In MODES 1, 2, and 3, the LCO requirement for a steam bubble is reflected implicitly in the accident analyses. No safety analyses are performed in lower MODES. All analyses performed from a critical reactor condition assume the existence of a steam bubble and saturated conditions in the pressurizer. In making this assumption, the analyses neglect the small fraction of noncondensable gases normally present.

Safety analyses presented in the (b) FSAR do not take credit for pressurizer heater operation; however, an implicit initial condition assumption of the safety analyses is that the RCS is operating at normal pressure.

Although the heaters are not specifically used in accident analysis, the need to maintain subcooling in the long term during loss of offsite power, as indicated in NUREG-0737 (Ref. 1), is the reason for their inclusion. The requirement for emergency power supplies is based on NUREG-0737 (Ref. 1). The intent is to keep the reactor coolant in a subcooled condition with natural circulation at hot, high pressure conditions for an undefined, but extended, time period after a loss of offsite power. While loss of offsite power is a coincident occurrence assumed in the accident analyses, maintaining hot, high pressure conditions over an extended time period is not evaluated in the accident analyses.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The pressurizer satisfies Criterion 2 and Criterion 3 of the ~~NRC Policy Statement~~ 10CFR 50.36 (C)(2)(ii). (5)

LCO

The LCO requirement for the pressurizer to be OPERABLE with water level ≥ 27% and ≤ 56% (6) ~~[60]%~~ ensures that a steam bubble exists. Limiting the maximum operating water level preserves the steam space for pressure control. The LCO has been established to minimize the consequences of potential overpressure transients. Requiring the presence of a steam bubble is also consistent with analytical assumptions.

The LCO requires two groups of OPERABLE pressurizer heaters, each with a capacity ≥ ~~[150]~~ kW (125) (6) and capable of being powered from an emergency power supply. The minimum heater capacity required is sufficient to maintain the RCS near normal operating pressure when accounting for heat losses through the pressurizer insulation. By maintaining the pressure near the operating conditions, a wide subcooling margin to saturation can be obtained in the loops. ~~The exact design value of [150] kW is derived from the use of 12 heaters rated at 12.5 kW each. The amount needed to maintain pressure is dependent on the ambient heat losses.~~ (3)

APPLICABILITY

The need for pressure control is most pertinent when core heat can cause the greatest effect on RCS temperature resulting in the greatest effect on pressurizer level and RCS pressure control. Thus, Applicability has been designated for MODES 1 and 2. The Applicability is also provided for MODE 3. The purpose is to prevent solid water RCS operation during heatup and cooldown to avoid rapid pressure rises caused by normal operational perturbation, such as reactor coolant pump startup. The LCO does not apply to MODE 5 (Loops Filled) because LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," applies (6) (12). The LCO does not apply to MODES 5 and 6 with partial loop operation. Also, a Note has been added to indicate the limit on pressurizer level may be exceeded during short term operational transients such as a THERMAL POWER ramp increase of >5% per minute or a THERMAL POWER step increase of > 10% RTP. (4)

In MODES 1, 2, and 3, there is the need to maintain the availability of pressurizer heaters capable of being powered from an emergency power supply. In the event of a loss of offsite power, the initial conditions of these MODES gives

(continued)

BASES

APPLICABILITY (continued)

the greatest demand for maintaining the RCS in a hot pressurized condition with loop subcooling for an extended period. For MODES 4, 5, or 6, it is not necessary to control pressure (by heaters) to ensure loop subcooling for heat transfer when the Shutdown Cooling System is in service and therefore the LCO is not applicable.

ACTIONS

A.1 and A.2

With pressurizer water level not within the limit, action must be taken to restore the plant to operation within the bounds of the safety analyses. To achieve this status, the unit must be brought to MODE 3, with the reactor trip breakers open, within 6 hours and to MODE 4 within 6 ~~12~~ hours. This takes the plant out of the applicable MODES and restores the plant to operation within the bounds of the safety analyses.

Six hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging plant systems. Further pressure and temperature reduction to MODE 4 brings the plant to a MODE where the LCO is not applicable. The 12 hour time to reach the nonapplicable MODE is reasonable based on operating experience for that evolution.

B.1

If one required group of pressurizer heaters is inoperable, restoration is required within 72 hours. The Completion Time of 72 hours is reasonable considering that a demand caused by loss of offsite power would be unlikely in this period. Pressure control may be maintained during this time using normal station powered heaters.

C.1 and C.2

If one required group of pressurizer heaters is inoperable and cannot be restored within the allowed Completion Time of Required Action B.1, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and to MODE 4

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

within ~~12~~ hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging safety systems. Similarly, the Completion Time of ~~12~~ hours is reasonable, based on operating experience, to reach MODE 4 from full power in an orderly manner and without challenging plant systems. (6)

SURVEILLANCE REQUIREMENTS

<DOC LA.2>

SR 3.4.9.1

This Surveillance ensures that during steady state operation, pressurizer water level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The Surveillance is performed by observing the indicated level. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess the level for any deviation and verify that operation is within safety analyses assumptions. Alarms are also available for early detection of abnormal level indications.

SR 3.4.9.2

The Surveillance is satisfied when the power supplies are demonstrated to be capable of producing the minimum power and the associated pressurizer heaters are verified to be at their design rating. (This may be done by testing the power supply output and by performing an electrical check on heater element continuity and resistance.) The Frequency of 92 days is considered adequate to detect heater degradation and has been shown by operating experience to be acceptable.

~~SR 3.4.9.3~~

~~This SR is not applicable if the heaters are permanently powered by 1E power supplies.~~

~~This Surveillance demonstrates that the heaters can be manually transferred to and energized by emergency power supplies. The Frequency of [18] months is based on a~~ (1)

(continued)

BASES

SURVEILLANCE REQUIREMENTS

~~SR 3.4.9.3 (continued)~~

~~typical fuel cycle and industry accepted practice. This is consistent with similar verifications of emergency power.~~

1

REFERENCES

1. NUREG-0737, November 1980.

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.9

1. Performance of NUREG-1432 SR 3.4.9.3, as outlined in the NUREG Bases, is not required because PVNGS pressurizer heaters are permanently powered by 1E power supplies. This change is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

2. NUREG-1432, 3.4.9, makes no reference to pressurizer minimum level in the Bases. ITS 3.4.9 will use the Bases from CTS 3.4.3.1 that discusses pressurizer minimum level. This is to be done since pressurizer minimum water level is part of the LCO. The use of the CTS Bases discussion about minimum pressurizer level is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

3. NUREG-1432, LCO 3.4.9 Bases, discusses the design characteristics of the pressurizer heaters. The discussion will be deleted in ITS 3.4.9 Bases since the description is not applicable to PVNGS pressurizer heaters. The removal of the discussion concerning pressurizer heater design is a deviation from NUREG-1432 but is consistent with PVNGS licensing basis.

4. ITS 3.4.9 Applicability contains a Note that clarifies when pressurizer level is applicable. The use of this Note serves to eliminate unnecessary entry into this LCO when pressurizer level is transitory due to plant evolutions. NUREG-1432, SR 3.4.9.1 requires verification of pressurizer level at steady-state conditions (Bases SR 3.4.9.1). Use of a Note in the Applicability of ITS 3.4.9 that excludes pressurizer level limits based on transient conditions maintains consistency between the SR and Applicability. The pressurizer pressure LCO 3.4.1 contains the same exclusion for similar reasons. A power change > 5% RTP per minute or a step change > 10% RTP, already defined in NUREG-1432 LCO 3.4.1 as a short term operational transient, serves as the transition point for pressurizer level Applicability. The addition of this information is a deviation from NUREG-1432 but is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

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

6. 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. PVNGS does not have PORVs.

7. Bases revised for consistency with other Bases Sections.

PVNGS CTS
SPECIFICATION 3.4.9
MARK UP

Specification 3.4.9

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 ~~3/4.4.3~~ PRESSURIZER

~~PRESSURIZER~~

~~LIMITING CONDITION FOR OPERATION~~

LCO 3.4.9 ~~3.4.3.1~~ The pressurizer shall be OPERABLE with a minimum ~~steady-state~~ water level of greater than or equal to 27% ~~indicated level (425 cubic feet)~~ and a maximum ~~steady-state~~ water level of less than or equal to 56% ~~indicated level (948 cubic feet)~~ and at least two groups of pressurizer heaters capable of being powered ~~from Class 1E buses~~ an emergency power supply and each having a minimum capacity of 125 kW.

A.1 LA.2 LA.3 A.2 NE4 ACT B ACT C ACT A M.1

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

Insert 1

~~With only~~ one group ~~of the above required~~ pressurizer heaters ~~OPERABLE~~ inoperable, restore ~~at least two~~ group required to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

With the pressurizer ~~otherwise inoperable~~ water level not within limits, restore the pressurizer to OPERABLE status ~~within 1 hour~~, or be in at least HOT STANDBY with the reactor trip breakers open within 6 hours and in HOT SHUTDOWN within the following 6 hours.

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1 ~~4.4.3.1.1~~ The pressurizer water volume shall be ~~determined~~ verified to be within its limits at least once per 12 hours.

SR 3.4.9.2 ~~4.4.3.1.2~~ The capacity of ~~the above~~ each required groups of pressurizer heaters shall be verified to be at least 125 kW at least once per 92 days.

~~4.4.3.1.3 The emergency power supply for the pressurizer heaters shall be demonstrated OPERABLE at least once per 18 months by verifying that on an Engineered Safety Features Actuation test signal concurrent with a loss-of-offsite power:~~

~~a. The pressurizer heaters are automatically shed from the emergency power sources, and~~

~~b. The pressurizer heaters can be reconnected to their respective buses manually from the control room.~~

LA.1

INSERT FOR CTS 3.4.3.1
APPLICABILITY NOTE
(Units 1, 2, and 3)
INSERT 1

----------NOTE----------

The pressurizer water level limit does not apply during:

a. THERMAL POWER ramp > 5% RTP per minute; or

b. THERMAL POWER step >10% RTP.

DISCUSSION OF CHANGES
SPECIFICATION 3.4.9

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 CTS 3.4.3.1 specifies minimum and maximum pressurizer steady state water levels. ITS LCO 3.4.9 specifies minimum and maximum pressurizer water levels with a Note stating that the pressurizer water level limit does not apply during:

- THERMAL POWER ramp > 5% RTP per minute: or
- THERMAL POWER step > 10% RTP.

The Note in ITS LCO 3.4.9 clarifies the transient (or non-steady state) conditions when the pressurizer water level limit does not apply, which is consistent with CTS 3.4.3.1 which specifies the steady state water level limits. The use of this Note in ITS serves to eliminate unnecessary entry into the ACTIONs of this LCO when pressurizer water level is transitory due to plant evolutions. This is consistent with CTS 3.4.3.1 which specifies steady state water levels and thus eliminates unnecessary entry into the LCO ACTIONs when pressurizer water level is transitory due to plant evolutions. NUREG-1432, SR 3.4.9.1 requires verification of pressurizer level at steady-state conditions (Bases SR 3.4.9.1). Use of a Note in the Applicability of ITS 3.4.9 that excludes pressurizer level limits based on transient conditions maintains consistency between the SR and Applicability. The pressurizer pressure ITS LCO 3.4.1 contains the same exclusion for similar reasons. A power change > 5% RTP per minute or a step change > 10% RTP, already defined in NUREG-1432 LCO 3.4.1 as a short term operational transient, serves as the transition point for pressurizer level Applicability. The addition of the clarifying Note in ITS LCO 3.4.9 is consistent with PVNGS licensing basis (CTS).

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 CTS 3.4.3.1 Action b allows 1 hour to restore pressurizer level and then, if pressurizer level is not restored within 1 hour, an additional 6 hours to reach Mode 3. ITS 3.4.9, Action A, allows a Completion Time of 6 hours to reach Mode 3. Removal of the of the 1 hour allowance to restore pressurizer level constitutes a more restrictive change to PVNGS plant operation. This is acceptable because ITS LCO 3.0.2 states, "If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated." This allows pressurizer level to be restored, if possible, anytime during the Completion Time, which would allow LCO exit. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS

LA.1 CTS SR 4.4.3.1.3 tests the emergency power supply for the class pressurizer heaters. NUREG SR 3.4.9.3 only requires the class heater power emergency power supply to be tested if they are not permanently powered by 1E power supplies. PVNGS class pressurizer heaters are permanently powered by 1E power, therefore, this Surveillance is relocated. This surveillance is not required to determine the Operability of a system, component or structure, and therefore is being relocated to a Licensee Controlled Document (Technical Requirements Manual [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 a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS (continued)

LA.2 CTS 3.4.3.1 uses the phrase "steady state" in the LCO for pressurizer level. The use of this phrase serves to eliminate unnecessary entry into this LCO when pressurizer level is transitory due to plant evolutions. NUREG-1432, SR 3.4.9.1 requires verification of pressurizer level at steady-state conditions (Bases SR 3.4.9.1). This information will be placed in the associated Bases Sections to provide clarification. This terminology maintains consistency between the SR and Applicability. This information details the specifics of when this LCO is applicable. This information is relocated to a Licensee Controlled Document (i.e. Bases Section).

Any changes to the Bases will be in accordance with Chapter 5.0 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 a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

LA.3 CTS LCO 3.4.3.1 specifies that "indicated level" when defining pressurizer Operability as it pertains to pressurizer level. All values in ITS are indicated values unless otherwise specified. This information, less the word "indicated", is moved to ITS 3.4.9 Bases Section.

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. This provides an equivalent level of control and is an administrative change with no impact on the margin of safety. This information is not required to be in ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

None

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.9

ADMINISTRATIVE CHANGES
(ITS 3.4.9 Discussion of Changes Labeled A.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, "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 Section/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 Section/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 3.4.9 Discussion of Changes Labeled A.1) (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, 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 - MORE RESTRICTIVE
(ITS 3.4.9 Discussion of Changes Labeled M.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. 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 in the specific Discussion of Changes listed 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 3.4.9 Discussion of Changes Labeled M.1) (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 3.4.9 Discussion of Changes Labeled LA.1, LA.2, and LA.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 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 3.4.9 Discussion of Changes Labeled LA.1, LA.2, and LA.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 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 submittal, 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.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.10
MARK UP

<DOC>

<CTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Safety Valves - MODES 1, 2 and 3 (1)

<CO 3.4.2.2>

LCO 3.4.10 ~~[Two]~~ Four pressurizer safety valves shall be OPERABLE with lift settings ≥ ~~[2478]~~ 2450.25 psia and ≤ ~~[2525]~~ 2549.25 psia. (5)

APPLICABILITY: MODES 1, 2, and 3.
~~MODE 4 with all RCS cold leg temperatures > [285]°F.~~ (1)

<DOC L.2>

----------NOTE----------
The lift settings are not required to be within LCO limits during MODES 3 and 4 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for ~~[36]~~ 72 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup. (5)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.4.2.2 ACT> A. One pressurizer safety valve inoperable.	A.1 Restore valve to OPERABLE status.	15 minutes
<3.4.2.2 ACT> B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	AND	(5)
<DOC L.1> OR Two ~~or more~~ (5) pressurizer safety valves inoperable.	B.2 Be in MODE 4 ~~with all RCS cold leg temperatures ≤ [285]°F.~~ (1)	~~12~~ hours

1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
4.4.2.2	SR 3.4.10.1	Verify each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be within ± 1%.	In accordance with the Inservice Testing Program

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.10
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.10 Pressurizer Safety Valves

BASES

BACKGROUND

The purpose of the ~~two~~ four spring loaded pressurizer safety valves is to provide RCS overpressure protection. Operating in conjunction with the Reactor Protection System, ~~two~~ four valves are used to ensure that the Safety Limit (SL) of 2750 psia is not exceeded for analyzed transients during ~~One~~ operation in MODES 1, ~~and~~ 2 and 3. ~~Two~~ safety valves ~~are~~ used for ~~MODE 3 and portions of~~ MODE 4. For ~~the remainder of MODE 4~~, MODE 5, and MODE 6 with the head on, overpressure protection is provided by operating procedures and the LCO 3.4.~~X~~ "Low Temperature Overpressure Protection (LTOP) System." For these conditions, American Society of Mechanical Engineers (ASME) requirements are satisfied with one safety valve.

<DOC A3>

The self actuated pressurizer safety valves are designed in accordance with the requirements set forth in the ASME, Boiler and Pressure Vessel Code, Section III (Ref. 1). The required lift pressure is ~~2500~~ 2475 psia ~~± 1%~~ +3%, -1%. The safety valves discharge steam from the pressurizer to a quench tank located in the containment. The discharge flow is indicated by an increase in temperature downstream of the safety valves and by an increase in the quench tank temperature and level.

The upper and lower pressure limits are based on the ± 1%-tolerance requirement (Ref. 1) for lifting pressures above 1000 psig. The lift setting is for the ambient conditions associated with MODES 1, 2, and 3. This requires either that the valves be set hot or that a correlation between hot and cold settings be established.

The pressurizer safety valves are part of the primary success path and mitigate the effects of postulated accidents. OPERABILITY of the safety valves ensures that the RCS pressure will be limited to 110% of design pressure. The consequences of exceeding the ASME pressure limit (Ref. 1) could include damage to RCS components, increased leakage, or a requirement to perform additional stress analyses prior to resumption of reactor operation.

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

All accident analyses in the FSAR that require safety valve actuation assume operation of ~~both~~ four pressurizer safety valves to limit increasing reactor coolant pressure. The overpressure protection analysis is also based on operation of ~~both~~ four safety valves and assumes that the valves open at the high range of the setting (2475 psia) ~~(2800 psia system design pressure plus 3%)~~. These valves must accommodate pressurizer insurges that could occur during a startup, rod withdrawal, ejected rod, loss of main feedwater, or main feedwater line break accident. The ~~startup~~ Loss of Load with Delayed Reactor Trip accident establishes the minimum safety valve capacity. The ~~startup~~ accident is assumed to occur at 100% power. Single failure of a safety valve is neither assumed in the accident analysis nor required to be addressed by the ASME Code. Compliance with this specification is required to ensure that the accident analysis and design basis calculations remain valid.

The pressurizer safety valves satisfy Criterion 3 of ~~the NRC Policy Statement~~ 10CFR 50.36(c)(2)(ii).

LCO

The ~~[two]~~ four pressurizer safety valves are set to open ~~at the~~ RCS design pressure ~~(2500 psia)~~ (2475 psia) and within the ASME specified tolerance (25 psia less than) to avoid exceeding the maximum RCS design pressure SL, to maintain accident analysis assumptions, and to comply with ASME Code requirements. ~~The upper and lower pressure tolerance limits are based on the ± 1% tolerance requirements (Ref. 1) for lifting pressures above 1000 psig. The limit protected by this specification is the reactor coolant pressure boundary (RCPB) SL of 110% of design pressure. Inoperability of one or ~~both~~ more valves could result in exceeding the SL if a transient were to occur. The consequences of exceeding the ASME pressure limit could include damage to one or more RCS components, increased leakage, or additional stress analysis being required prior to resumption of reactor operation.~~

APPLICABILITY

In MODES 1, 2, and 3, ~~and portions of MODE 4 above the LTOP temperature~~ OPERABILITY of ~~[two]~~ four valves is required because the combined capacity is required to keep reactor coolant pressure below 110% of its design value during certain accidents. MODE 3 ~~and portions of MODE 4 are~~ is conservatively

(continued)

BASES

APPLICABILITY (continued)

included, although the listed accidents may not require ~~both~~ four safety valves for protection.

~~The LCO is not applicable in MODE 4 when all RCS cold leg temperatures are ≤ [285]°F and MODE 5 because LTOP protection is provided. Overpressure protection is not required in MODE 6 with the reactor vessel head detensioned.~~

The requirements for overpressure protection in other MODES are covered by LCOs 3.4.11, "Pressurizer Safety Valves-MODE 4," and 3.4.13, "LTOP System."

The Note allows entry into MODES 3 and 4 with the lift settings outside the LCO limits. This permits testing and examination of the safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. The cold setting gives assurance that the valves are OPERABLE near their design condition. Only one valve at a time will be removed from service for testing. The ~~[36]~~ 12 hour exception is based on 18 hour outage time for each of the ~~two~~ four valves. The 18 hour period is derived from operating experience that hot testing can be performed within this timeframe.

ACTIONS

A.1

With one pressurizer safety valve inoperable, restoration must take place within 15 minutes. The Completion Time of 15 minutes reflects the importance of maintaining the RCS overpressure protection system. An inoperable safety valve coincident with an RCS overpressure event could challenge the integrity of the RCPB.

B.1 and B.2

If the Required Action cannot be met within the required Completion Time or if two or more pressurizer safety valves are inoperable, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 ~~at or below [285]°F~~ within 12 hours. The 6 hours allowed is reasonable, based on operating experience, to reach MODE 3 from full power without challenging plant systems. Similarly, the 12 hours allowed is reasonable, based on operating experience, to reach MODE 4 without challenging plant systems. ~~At or below~~

(continued)

1

BASES

ACTIONS

B.1 and B.2 (continued)

7

~~[286] °F, overpressure protection is provided by LTOP.~~ The change from MODE 1, 2, or 3 to MODE 4 reduces the RCS energy (core power and pressure), lowers the potential for large pressurizer insurges, and thereby removes the need for overpressure protection by ~~[two]~~ four pressurizer safety valves.

5

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1

SRs are specified in the Inservice Testing Program. Pressurizer safety valves are to be tested in accordance with the requirements of Section XI of the ASME Code (Ref. 1), which provides the activities and the Frequency necessary to satisfy the SRs. No additional requirements are specified.

The pressurizer safety valve setpoint is ~~± [3]%~~ +3, -1% 5 (Ref. 2) for OPERABILITY; however, the valves are reset to ± 1% during the Surveillance to allow for drift. The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

9

REFERENCES

1. ASME, Boiler and Pressure Vessel Code, Section III, Section XI.

5

2. PVNGS Operating License Amendment nos. 75, 61 and 47 for Units 1, 2, and 3, respectively, and associated NRC Safety Evaluation dated May 16, 1994.

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.10

1. NUREG-1432 uses one Specification to address Modes 1, 2, 3 and 4. ITS splits this Specification into two separate Specifications. ITS Specification 3.4.10 will address Modes 1, 2, and 3; ITS 3.4.11 will address Mode 4. This was necessary because the number of pressurizer safety valves required in Modes 1-4 by NUREG-1432 are the same, whereas at PVNGS a different number of pressure safety valves are required dependent on whether the plant is in Modes 1-3 or Mode 4. Keeping the pressurizer safety valve Specification as one Specification at PVNGS would have made the Actions Table confusing. Therefore, two separate Specifications are used to address pressurizer safety valves. The use of two Specifications is consistent with PVNGS CTS. The Bases has also been revised to be consistent with the LCO.

2. NUREG-1432 Bases makes reference to upper and lower pressure tolerances being based on the ± 1% requirements of ASME, Boiler and Pressure Vessel Code for pressures above 1000 psig. ITS uses ± 1% to set pressurizer safety valves and +3, -1% for "as found" OPERABILITY determination. This was approved for PVNGS in TS Amendment #75 (Unit 1), #61 (Unit 2), #47 (Unit 3). This is consistent with PVNGS licensing basis.

3. NUREG-1432, Bases 3.4.10, Applicable Safety Analysis, states that the startup accident establishes the minimum safety valve capacity. ITS, Bases 3.4.10, Applicable Safety Analysis will state that the Loss of Load with delayed Reactor Trip establishes the minimum safety valve capacity. This is acceptable because PVNGS safety analysis shows this event to be the most limiting. This change is consistent with PVNGS licensing basis.

4. NUREG-1432, Bases 3.4.10, contains a statement that says, "For these conditions, American society of Mechanical engineers (ASME) requirements are satisfied with one safety valve." ITS 3.4.10 Bases does not contain this statement. There is no Technical Specification requirement that requires one pressurizer safety valve to be Operable in Modes 5 or 6. This change is consistent with PVNGS licensing basis.

5. 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 are directly transferred from the CTS to the ITS.

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

7. Bases section deleted because the associated Specification/Surveillance was deleted.

8. NUREG-1432 Bases 3.4.10 Applicability provides an unnecessarily complex level of detail to describe when LCO 3.4.10 is not applicable. ITS Bases 3.4.10 uses a more simple approach used elsewhere in the NUREG Bases (e.g., 3.9.4 and 3.9.5 Bases) to describe that the requirements for overpressure protection in other MODES are covered by LCOs 3.4.11 and 3.4.13.

9. ITS Bases SR 3.4.10.1 contains maintenance information concerning the approved method for setting PSV lift setpoints from CTS LCO 3.4.2.2, Footnote *. NUREG-1432 Bases do not contain this information. This is consistent with the PVNGS licensing bases.

PVNGS CTS
SPECIFICATION 3.4.10
MARK UP

Specification 3.4.10.

A.1

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 OPERATING Pressurizer Safety Valves - MODES 1, 2, 3

LIMITING CONDITION FOR OPERATION Four

LCO 3.4.10 3.4.2.2 A.1 pressurizer code safety valves shall be OPERABLE with a lift setting of 2475 psia +3, -1%*.

APPLICABILITY: MODES 1, 2, and 3.

ACTION: Insert 1 L.2

ACT A With one pressurizer code safety valve inoperable, either restore the inoperable valve to OPERABLE status within 15 minutes or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours with the shutdown cooling system suction line relief valves aligned to provide overpressure protection for the Reactor Coolant System. L.3

ACT B

SURVEILLANCE REQUIREMENTS Insert 2 L.1

4.4.2.2 No additional Surveillance Requirements other than those required by Specification 4.0.5.

SR 3.4.10.1 Verify each pressurizer safety valve is OPERABLE in accordance with Inservice Testing Program. Following testing, lift settings shall be within ± 1%. A.2

*The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure. L.A.1

INSERT FOR CTS 3.4.2.2
APPLICABILITY NOTE
(Units 1, 2, and 3)
INSERT 1

----------NOTE----------

The lift settings are not required to be within LCO limits during MODES 3 and 4 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for 72 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup.

INSERT FOR CTS 3.4.2.2
ACTION B
(Units 1, 2, and 3)
INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met. OR Two or more pressurizer safety valves inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

DISCUSSION OF CHANGES
SPECIFICATION 3.4.10

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 CTS SR 4.4.2.2 states that pressurizer safety valve Operability is determined by Specification 4.0.5 which includes Inservice Testing ASME Code Class 1, 2, and 3 pumps and valves. ITS SR 3.4.10.1 requires pressurizer safety valve OPERABILITY in accordance with Inservice Testing Program. These two requirements are the same. ITS SR 3.4.10.1 does not add any additional requirements or delete any existing requirements. Therefore, addition of this information is administrative in nature. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

None

TECHNICAL CHANGES - RELOCATIONS

LA.1 CTS LCO 3.4.2.2, footnote *, contains maintenance information concerning the approved method for setting pressurizer safety valve lift setpoints. ITS does not contain this information. This information is not required to determine OPERABILITY of a system, component or structure and therefore is being relocated to a Licensee Controlled Document (Bases Section SR 3.4.10-1). In addition, this information does not meet criteria of 10 CFR 50.36 (c) (2) (ii) for inclusion in to the ITS and is therefore relocated.

Any changes to the Bases will be in accordance with Chapter 5.0 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 a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

LA.2 NOT USED

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 CTS does not address the condition where two or more pressurizer safety valves are not Operable. This would require simultaneous entry into CTS 3.4.2.2 and 3.0.3. ITS does address the condition where two or more pressurizer safety valves are not Operable. ITS 3.4.10 requires performance of Action B with two or more pressurizer safety valves inoperable. This prevents unnecessary entry into 3.0.3. Not requiring entry into 3.0.3 is a less restrictive change. This change is acceptable because the Actions contained in the pressurizer safety valve Specification adequately address this condition. This change is consistent with NUREG-1432.

L.2 ITS 3.4.10 contains a Note that allows pressurizer safety valve settings to be outside the limits of the LCO for 72 hours following entry into Mode 3 for the purpose of setting the pressurizer safety valve lift settings under ambient conditions, provided a preliminary cold setting was made prior to heatup. CTS 3.4.2.2 has no such exclusion. Allowing entry into Mode 3 by temporarily suspending LCO requirements to allow pressurizer safety valve testing constitutes a less restrictive change. This permits testing and examination of the pressurizer safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. This change is acceptable because the cold setting gives assurance that the valves are Operable near their design condition. The 72 hour exception is based on 18 hour outage time for each of the valves. The 18 hour period is derived from operating experience that hot testing can be performed within this time frame. This change is consistent with NUREG-1432.

L.3 CTS 3.4.2.2 is in conflict with CTS 3.4.2.1 when more than one, but not all, pressurizer safety valves (PSVs) are OPERABLE. CTS 3.4.2.1 would allow indefinite continued operation in MODE 4 with a minimum of one OPERABLE PSV, whereas CTS 3.4.2.2 would require the plant to be in MODE 4 with the additional restriction of the shutdown cooling system suction line relief valves aligned to provide overpressure protection for the RCS if not all PSVs are OPERABLE. Since the relief capacity of a single PSV is adequate to relieve any overpressure condition which could occur in MODE 4 above LTOP system temperatures, it is appropriate to use CTS 3.4.2.1 for ITS 3.4.10 and 3.4.11 to allow operation in MODE 4 with one or more PSVs OPERABLE. Although this is a Less Restrictive change with respect to CTS 3.4.2.2, it is consistent with CTS 3.4.2.1. NUREG-1432 does not contain a unique LCO for MODE 4 above LTOP temperatures.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.10

ADMINISTRATIVE CHANGES
(ITS 3.4.10 Discussion of Changes Labeled A.1 and A.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, "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 Section/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 Section/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 3.4.10 Discussion of Changes Labeled (A.1 and A.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 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 3.4.10 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 3.4.10 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 submittal, 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.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.10 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 CTS does not address the condition where two or more pressurizer safety valves are not Operable. This would require simultaneous entry into CTS 3.4.2.2 and 3.0.3. ITS does address the condition where two or more pressurizer safety valves are not Operable. ITS 3.4.10 requires performance of Action B with two or more pressurizer safety valves inoperable. This prevents unnecessary entry into 3.0.3. Not requiring entry into 3.0.3 is a less restrictive change. This change is acceptable because the Actions contained in the pressurizer safety valve Specification adequately address this condition. 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 3.4.10 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 proposed change provides specific requirements to enter Action B for the condition when two or more pressurizer safety valves are not Operable. Action B requires the plant to be in Mode 3 within 6 hours and on to Mode 4. The CTS does not provide any guidance when two or more pressurizer safety valves are inoperable. Therefore, the plant would enter the Actions of 3.0.3. Placing the plant in Mode 3 within 6 hours and then to Mode 4 is less restrictive than required by the CTS. Both Specifications still require the plant to shutdown, however, the proposed change will present a less likelihood of unnecessarily cycling the plant or possible transient that might occur during entering 3.0.3. This change will not alter assumptions relative to mitigation of an accident or transient event. This change has been reviewed to ensure that no previously evaluated accident has been adversely affected. 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 provides specific requirements to enter Action B for the condition when two or more pressurizer safety valves are not Operable. Action B requires the plant to be in Mode 3 within 6 hours and on to Mode 4. The CTS does not provide any guidance when two or more pressurizer safety valves are inoperable. Therefore, the plant would enter the Actions of 3.0.3. Placing the plant in Mode 3 within 6 hours and then to Mode 4 is less restrictive than required by the CTS still requiring the plant to shutdown, however, relaxing the requirement to enter 3.0.3 by allowing the plant to be in Mode 3 within 6 hours and then to Mode 4, does not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal pant operation. This change, while still requiring a plant shutdown, however, relaxing the Mode of shutdown is consistent with the assumptions made in the safety analyses and NUREG-1432. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.10 Discussion of Changes Labeled L.1) (continued)

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

The proposed change provides relaxation in plant shutdown requirements. An evaluation of this change concluded that there is no impact on the margin of safety. The change maintains the 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 - LESS RESTRICTIVE
(ITS 3.4.10 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 ITS 3.4.10 contains a Note that allows pressurizer safety valve settings to be outside the limits of the LCO for 72 hours following entry into Mode 3 for the purpose of setting the pressurizer safety valve lift settings under ambient conditions, provided a preliminary cold setting was made prior to heatup. CTS 3.4.2.2 has no such exclusion. Allowing entry into Mode 3 by temporarily suspending LCO requirements to allow pressurizer safety valve testing constitutes a less restrictive change. This permits testing and examination of the pressurizer safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. This change is acceptable because the cold setting gives assurance that the valves are Operable near their design condition. The 72 hour exception is based on 18 hour outage time for each of the valves. The 18 hour period is derived from operating experience that hot testing can be performed within this time frame. 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 3.4.10 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 provides a Note that allows the pressurizer safety valve settings to be outside the limits for 72 hours following entry into Mode 3 for the purpose of setting the pressurizer safety valve lift settings under ambient conditions, provided a preliminary cold setting was made prior to heatup. The CTS does not provide this allowance. The 72 hour exception is based on 18 hour outage time for each of the valves. The 18 hour period is derived from operating experience that hot testing can be performed within the time frame. This change does not result in operation that will increase the probability of initiating an analyzed event This change will not alter assumptions relative to mitigation of an accident or transient event. This change has been reviewed to ensure that no previously evaluated accident has been adversely affected. 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?

Allowing the 72 hours following entry into Mode 3 for the purpose of setting the pressurizer safety valve setting does not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal plant operation. This change provides relaxation by allowing a 72 hour grace period to set the safety valves, however, this is consistent with the assumption made in the safety analyses, licensing basis, and NUREG-1432. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.10 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 provides relaxation by allowing 72 hours after entering Mode 3 to set the pressurizer safety valve setting. An evaluation of this change has been performed and concluded that there is no impact on the margin of safety. The change maintains the requirement of the safety analyses, licensing basis, and NUREG-1432. As such, n question of safety in involved, Therefore, this change will not involve a significant reduction in a margin os safety.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.11
MARK UP

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.~~10~~ 11 Pressurizer Safety Valves

LCO 3.4.~~10~~ 11 ~~[two]~~ One pressurizer safety valves shall be OPERABLE with lift setting~~s~~ ≥ ~~[2475]~~ 2450.25 psia and ≤ ~~[2525]~~ 2549.25 psia.

APPLICABILITY: ~~MODES 1, 2, and 3,~~ MODE 4 with all RCS cold leg temperatures > ~~[285]~~ 214 °F during cooldown, or MODE 4 with all RCS cold leg temperatures ≥ 291°F during heatup

NOTE

The lift settings are not required to be within LCO limits during MODES 3 and 4 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for ~~[36]~~ 72 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~One~~ All pressurizer safety valve inoperable.	A.1 Restore valve to OPERABLE status.	15 minutes
B. Required Action and associated Completion Time not met. OR Two [or more] pressurizer safety valves inoperable.	B.1 Be in MODE 3. AND ~~B.2~~ A.1 Be in MODE 4 with all RCS cold leg temperatures ≤ ~~[285]~~ °F.	6 hours ~~[12] hours~~ Immediately

One Shutdown Cooling System suction line relief valve in service

Incorr 1

INSERT FOR ITS 3.4.11
ACTION A and B
(Units 1, 2, and 3)
INSERT 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
	AND	
	A.2 Perform SR 3.4.11.2 and SR 3.4.11.3 for the required Shutdown Cooling System suction line relief valve to comply with Action A.1.	Immediately
	AND	
	A.3 Be in Mode 4 with all RCS cold leg temperatures ≤ 214°F during cooldown or ≤ 291°F during heatup.	8 hours

MODE 4

1 2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.~~10~~ 11.1	Verify ~~each~~ the required pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be within ± 1%.	In accordance with the Inservice Testing Program

9

4.4.2.1

Insert 1

4 7

INSERT FOR ITS 3.4.11
SURVEILLANCE REQUIREMENTS
(Units 1, 2, and 3)
INSERT 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.2	----------NOTE---------- Only required to be performed when a Shutdown Cooling System suction line relief valve is being used for overpressure protection. ---------- Verify the required Shutdown Cooling System suction line relief valve aligned to provide overpressure protection for the RCS.	12 hours for unlocked, not sealed, or otherwise not secured open pathway vent valve(s) AND 31 days for locked, sealed, or otherwise secured open pathway vent valve(s).
SR 3.4.11.3	Verify the required Shutdown Cooling System suction line relief valve OPERABLE with the required setpoint.	In accordance with the Inservice Testing Program

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.11
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.~~10~~ 11 Pressurizer Safety Valves - MODE 4

9

BASES

9

BACKGROUND

The purpose of the ~~two~~ four spring loaded pressurizer safety valves is to provide RCS overpressure protection. ~~Operating in conjunction with the Reactor Protection System, two valves are used to ensure that the Safety Limit (SL) of 2750 psia is not exceeded for analyzed transients during operation in MODES 1 and 2.~~ ~~Two~~ safety valves ~~are~~ used for ~~MODE 3 and~~ portions of MODE 4. For the remainder of MODE 4, MODE 5, and MODE 6 with the head on, overpressure protection is provided by operating procedures and the LCO 3.4.~~12~~ 13, "Low Temperature Overpressure Protection (LTOP) System." ~~For these conditions, American Society of Mechanical Engineers (ASME) requirements are satisfied with one safety valve.~~

<DOC A.3>

The self actuated pressurizer safety valves are designed in accordance with the requirements set forth in the ASME, Boiler and Pressure Vessel Code, Section III (Ref. 1). The required lift pressure is ~~2500~~ 2475 psia ~~± 1%.~~ +3% -1%. The safety valves discharge steam from the pressurizer to a quench tank located in the containment. The discharge flow is indicated by an increase in temperature downstream of the safety valves and by an increase in the quench tank temperature and level.

~~The upper and lower pressure limits are based on the ± 1%-tolerance requirement (Ref. 1) for lifting pressures above 1000 psig.~~ The lift setting is for the ambient conditions associated with MODES 1, 2, and 3. This requires either that the valves be set hot or that a correlation between hot and cold settings be established.

The pressurizer safety valves are part of the primary success path and mitigate the effects of postulated accidents. OPERABILITY of the safety valves ensures that the RCS pressure will be limited to 110% of design pressure. The consequences of exceeding the ASME pressure limit (Ref. 1) could include damage to RCS components, increased leakage, or a requirement to perform additional stress analyses prior to resumption of reactor operation.

Insert 1

INSERT FOR ITS BASES3.4.11
BACKGROUND SECTION
(Units 1, 2, and 3)
INSERT 1

BASES

BACKGROUND	Pressurizer Safety Valve Requirements The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit (SL) of 2750 psia. Each safety valve is designed to relieve a minimum of 460,000 lb per hour of saturated steam at valve setpoint. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown above L-TOP System temperatures. Shutdown Cooling System Suction Line Relief Valve Requirements A single Shutdown Cooling system suction line relief valve provides overpressure relief capability and will prevent RCS overpressurization in the event that no pressurizer safety valves are OPERABLE.

BASES (continued)

APPLICABLE SAFETY ANALYSES

All accident analyses in the FSAR that require safety valve actuation assume operation of ~~both~~ four pressurizer safety valves to limit increasing reactor coolant pressure. The overpressure protection analysis is also based on operation of ~~both~~ four safety valves and assumes that the valves open at the high range of the setting (2500-psia system design pressure plus 1%). These valves must accommodate pressurizer insurges that could occur during a startup, rod withdrawal, ejected rod, loss of main feedwater, or main feedwater line break accident. The ~~startup~~ Loss of Load with Delayed Reactor Trip accident establishes the minimum safety valve capacity. The ~~startup~~ accident is assumed to occur at ~~<-15%~~ 100 power. Single failure of a safety valve is neither assumed in the accident analysis nor required to be addressed by the ASME Code. Compliance with this specification is required to ensure that the accident analysis and design basis calculations remain valid.

The pressurizer safety valves satisfy Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36(c)(2)(ii).

LCO

The ~~[two]~~ four pressurizer safety valves are set to open ~~at the~~ RCS design pressure (~~2500 psia~~) and within the ASME specified tolerance to avoid exceeding the maximum RCS design pressure SL, to maintain accident analysis assumptions, and to comply with ASME Code requirements. ~~The upper and lower pressure tolerance limits are based on the ± 1% tolerance requirements (Ref. 1) for lifting pressures above 1000 psig. The limit protected by this specification is the reactor coolant pressure boundary (RCPB) SL of 110% of design pressure.~~ Inoperability of ~~one or both~~ all valves could result in exceeding the SL if a transient were to occur. The consequences of exceeding the ASME pressure limit could include damage to one or more RCS components, increased leakage, or additional stress analysis being required prior to resumption of reactor operation.

(2475 psia) 25 psia less than

APPLICABILITY

In ~~MODES 1, 2, and 3, and portions of~~ MODE 4 above the LTOP System temperature(s) ~~OPERABILITY of [two]~~ one valve~~s~~ is required ~~because the combined capacity is required to keep reactor coolant pressure below 110% of its design value during certain accidents. MODE 3 and portions of MODE 4 are~~ conservatively

(continued)

One pressurizer safety valve is required to be OPERABLE in MODE 4 with no Shutdown Cooling System suction line relief valves in service.

BASES

The requirements for overpressure protection in other MODES and in MODE 4 at or below LTOP System temperatures are covered by LCO 3.4.10, "Pressurizer Safety Valves - MODES 1, 2 and 3," and LCO 3.4.13, "LTOP System

APPLICABILITY (continued)

included, although the listed accidents may not require ~~both~~ safety valve~~s~~ for protection.

~~The LCO is not applicable in MODE 4 when all RCS cold leg temperatures are ≤ [285]°F and MODE 5 because LTOP protection is provided. Overpressure protection is not required in MODE 6 with the reactor vessel head detensioned.~~

The Note allows entry into MODES 3 and 4 with the lift settings outside the LCO limits. This permits testing and examination of the safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. The cold setting gives assurance that the valves are OPERABLE near their design condition. Only one valve at a time will be removed from service for testing. The ~~[36]~~ 12 hour exception is based on 18 hour outage time for each of the ~~two~~ four valves. The 18 hour period is derived from operating experience that hot testing can be performed within this timeframe.

ACTIONS

~~A.1~~

~~With one pressurizer safety valve inoperable, restoration must take place within 15 minutes. The Completion Time of 15 minutes reflects the importance of maintaining the RCS overpressure protection system. An inoperable safety valve coincident with an RCS overpressure event could challenge the integrity of the RCPB.~~

~~A.1 and A.2~~ A.2 and A.3 a condition where overpressure protection is provided, then to

~~If the Required Action cannot be met within the required Completion Time or if two or more pressurizer safety valves are inoperable, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 at or below [285]°F within [12] hours. The 6 hours allowed is reasonable, based on operating experience, to reach MODE 3 from full power without challenging plant systems. Similarly, the [12] hours allowed is reasonable, based on operating experience, to reach MODE 4 without challenging plant systems. At or below~~

Replace with Insert 1a

(continued)

INSERT FOR ITS BASES 3.4.11
ACTIONS SECTION
(Units 1, 2, and 3)
INSERT 1a

BASES

ACTIONS

A.1, A.2 and A.3

To achieve this status, one Shutdown Cooling System suction line relief must be placed in service immediately, then the plant must be brought to at least MODE 4 with all RCS cold leg temperatures ≤ 214°F during cooldown or ≤ 291°F during heatup within 8 hours, so that LCO 3.4.12 (LTOP System) would apply. It is reasonable to pursue the ACTION to place a shutdown cooling system suction relief valve in service immediately (without delay) because the plant is already within the shutdown cooling system entry temperature of less than 350°F. The Completion Time of immediately requires that the required action be pursued without delay and in a controlled manner, and reflects the importance of maintaining the RCS overprotection system. The 8 hours allowed to be in MODE 4 with all RCS temperatures ≤ 214°F during cooldown or ≤ 291°F during heatup is reasonable, based on operating experience, to reach this condition without challenging plant systems.

BASES

ACTIONS ~~B.1 and B.2~~ (continued)

~~[285]°F, overpressure protection is provided by LTOP. The change from MODE 1, 2, or 3 to MODE 4 reduces the RCS energy (core power and pressure), lowers the potential for large pressurizer insurges, and thereby removes the need for overpressure protection by [two] pressurizer safety valves.~~

Insert 1

SURVEILLANCE REQUIREMENTS

SR 3.4.~~10~~11.1

SRs are specified in the Inservice Testing Program. Pressurizer safety valves are to be tested in accordance with the requirements of Section XI of the ASME Code (Ref. 1), which provides the activities and the Frequency necessary to satisfy the SRs. No additional requirements are specified.

The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.

The pressurizer safety valve setpoint (Ref. 3) is ~~± [3]%~~ +3, -1% for OPERABILITY; however, the valves are reset to ± 1% during the Surveillance to allow for drift.

Insert 1

REFERENCES

1. ASME, Boiler and Pressure Vessel Code, Section III, Section XI.
2. ~~ASME, Boiler and Pressure Vessel Code, Section XI.~~
3. PVNGS Operating License Amendment nos. 75, 61 and 47 for Units 1, 2 and 3, respectively, and associated NRC Safety Evaluation dated May 16, 1994.

INSERT FOR ITS BASES 3.4.11
ACTIONS SECTION
(Units 1, 2, and 3)
INSERT 1

BASES

ACTIONS	A.1, A.2 and A.3 For the Shutdown Cooling System suction line relief valve that is required to be in service in accordance with Required Action A.1, SR 3.4.11.2 and SR 3.4.11.3 must be performed or verified performed within 12 hours. This ensures that the required Shutdown Cooling System suction line relief valve is OPERABLE. A Shutdown Cooling System suction line relief valve is OPERABLE when its isolation valves are open, its lift setpoint is set at 467 psig or less, and testing has proven its ability to open at that setpoint. If the Required Actions and associated Completion Times are not met, overpressurization is possible. The 8 hours Completion Time to be in MODE 4 with all RCS cold leg temperatures $\leq$ 214°F during cooldown or $\leq$ 291°F during heatup places the unit in a condition where the LCO does not apply.

INSERT FOR ITS BASES 3.4.11
SURVEILLANCE SECTION
(Units 1, 2, and 3)

INSERT 1

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.11.2

SR 3.4.11.2 requires that the required Shutdown Cooling System suction line relief valve is OPERABLE by verifying its open pathway condition either:

a. Once every 12 hours for a valve that is unlocked, not sealed, or otherwise not secured open in the vent pathway, or

b. Once every 31 days for a valve that is locked, sealed, or otherwise secured open in the vent pathway.

The SR has been modified by a Note that requires performance only if a Shutdown Cooling System suction line relief valve is being used for overpressure protection. The Frequencies consider operating experience with the mispositioning of unlocked and locked pathway vent valves.

SR 3.4.11.3

SRs are specified in the Inservice Testing Program. Shutdown Cooling System suction line relief valves are to be tested in accordance with the requirements of Section XI of the ASME code (Ref. 2), which provides the activities and the Frequency necessary to satisfy the SRs. Shutdown Cooling System suction line relief valve setpoint is 467 psig.

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.11

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

2. NUREG-1432 uses one Specification to address Modes 1, 2, 3 and 4. ITS splits this Specification into two separate Specifications. ITS Specification 3.4.10 will address Modes 1, 2, and 3; ITS 3.4.11 will address Mode 4. This was necessary because the number of pressurizer safety valves required in Modes 1-4 by NUREG-1432 are the same, whereas at PVNGS a different number of pressurizer safety valves are required dependent on whether the plant is in Modes 1-3 or Mode 4. Along with this appropriate wording changes have been made to the bases to incorporate information about PVNGS pressurizer safety valves. Keeping the pressurizer safety valve Specification as one Specification at PVNGS would have made the Actions table confusing. Therefore, two separate Specifications are used to address pressurizer safety valves. The use of two Specifications is consistent with PVNGS CTS. The Bases has also been revised to be consistent with the LCO.

3. NUREG-1432 Bases makes reference to upper and lower pressure tolerances being based on the ± 1% requirements of ASME, Boiler and Pressure Vessel Code for pressures above 1000 psig. ITS uses ± 1% to set pressurizer safety valves and +3, -1% for "as found" OPERABILITY determination. This was approved for PVNGS in TS Amendment #75 (Unit 1), #61 (Unit 2), #47 (Unit 3). This is consistent with PVNGS licensing basis.

4. ITS 3.4.11 ACTION A.1 requires the plant be placed in MODE 4 with one shutdown cooling system suction line relief valve in service if all PSVs are inoperable in order to prevent RCS overpressurization (ITS Bases 3.4.11, Background). This is consistent with CTS 3.4.2.1 ACTION a that requires an operable shutdown cooling loop placed in operation if all PSVs are inoperable, which, according to CTS Bases 3.4.4.2, provides overpressure relief capability and will prevent RCS overpressurization. NUREG-1432 LCO 3.4.10 ACTION B.2 (the model for ITS 3.4.11, ACTION A.1) specifies that the plant be brought to MODE 4 with all RCS cold leg temperatures ≤ [285]°F if the PSVs are inoperable. NUREG Bases 3.4.10 ACTION B.1 states that at or below [285]°F, overpressure protection is provided by LTOP. ITS 3.4.11 ACTION A.1 provides the overpressure protection in event of inoperable PSVs that NUREG-1432 3.4.10 ACTION B.1 would provide. ITS 3.4.11 ACTION A.1 is also consistent with the current licensing basis (CTS 3.4.2.1, ACTION a.2)

5. NUREG-1432, Bases 3.4.11, Applicable Safety Analysis, states that the startup accident establishes the minimum safety valve capacity. ITS, Bases 3.4.11, Applicable Safety Analysis will state that the Loss of Load with delayed Reactor Trip establishes the minimum safety valve capacity. This is acceptable because PVNGS safety analysis shows this event to be the most limiting. This change is consistent with PVNGS licensing basis.

6. ITS 3.4.11 adds Action A.3 which requires the plant to be in MODE 4 ≤ 214°F during cooldown or ≤ 291°F during heatup within 8 hours. This change is consistent with NUREG-1432, LCO 3.4.10, Action B.2, but utilizes PVNGS-specific values for LTOP temperatures (CTS 3.4.8.3) and completion time. The Bases has also been revised to be consistent with the LCO. See also DOC M.2.

7. ITS 3.4.11 adds SRs 3.4.11.2 and 3.4.11.3. NUREG-1432 has no equivalent SRs for the pressurizer safety valve LCO. ITS 3.4.11 uses a single Shutdown Cooling System suction line relief valve as a substitute when all pressurizer safety valves are inoperable in Mode 4. Addition of SRs that pertain to the required Shutdown Cooling System suction line relief valve are acceptable because any component, system, or structure being relied upon by Technical Specification Actions must meet their associated operability requirements (SRs) to be considered Operable. ITS SRs 3.4.11.2 and 3.4.11.3 are the same SRs used in ITS 3.4.13, L-TOP System. This change is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the Surveillance.

8. NUREG-1432, Bases 3.4.11, contains a statement that says, "For these conditions, American society of Mechanical engineers (ASME) requirements are satisfied with one safety valve." ITS 3.4.11 Bases does not contain this statement. There is no Technical Specification requirement that requires one pressurizer safety valve to be Operable in Modes 5 or 6. This change is consistent with PVNGS licensing basis.

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

10. Bases section deleted because the associated Specification/Surveillance was deleted.

11. NUREG-1432 Bases 3.4.10 Applicability provides an unnecessarily complex level of detail to describe when LCO 3.4.10 is not applicable. ITS Bases 3.4.11 (developed from NUREG Bases 3.4.10) uses a more simple approach used elsewhere in the NUREG Bases (e.g., 3.9.4 and 3.9.5 Bases) to describe that the requirements for overpressure protection in other modes are covered by LCOs 3.4.10 and 3.4.13.

12. ITS Bases SR 3.4.11.1 contains maintenance information concerning the approved method for setting PSV lift setpoints from CTS LCO 3.4.2.1, Footnote *. NUREG-1432 Bases do not contain this information. This is consistent with the PVNGS licensing bases.

PVNGS CTS
SPECIFICATION 3.4.11
MARK UP

3.4
3.4.11

REACTOR COOLANT SYSTEM (RCS)
Pressurizer
3/4.4.2 SAFETY VALVES - MODE 4
SHUTDOWN

A.1

~~LIMITING CONDITION FOR OPERATION~~

LCO 3.4.11

~~3.4.2.1~~ ~~A minimum of~~ One pressurizer code safety valve shall be OPERABLE with a lift setting of 2475 psia +3, -1%*.

L.3

APPLICABILITY: MODE 4 with all RCS cold leg temperatures > 214°F during cooldown, or MODE 4 with all RCS cold leg temperatures > 291°F during heatup.

ACTION:

ACT A

a. With no pressurizer code safety valve OPERABLE, immediately suspend all operations involving positive reactivity changes and place an OPERABLE shutdown cooling loop into operation.

L.1

b. The provisions of Specification 3.0.4 may be suspended for up to 12 hours for entering into and during operation in MODE 4 for purposes of setting the pressurizer code safety valves under ambient (HOT) TC conditions provided a preliminary cold setting was made prior to 3 heatup.

L.2

Insert 1

Insert 2

L.1

ACT A
ACT B

SURVEILLANCE REQUIREMENTS

~~4.4.2.1~~ No additional Surveillance Requirements other than those required by Specification 4.0.5.

M.1

M.2

SR 3.4.11.1
SR 3.4.11.2
SR 3.4.11.3

Insert 3

A.2

M.1

~~*The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.~~

LA.1

INSERT FOR CTS 3.4.2.1
APPLICABILITY NOTE
(Units 1, 2, and 3)
INSERT 1

----------NOTE----------

The lift settings are not required to be within LCO limits during MODES 3 and 4 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for 72 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup.

INSERT FOR CTS 3.4.2.1
ACTION A and B
(Units 1, 2, and 3)
INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. All pressurizer safety valves inoperable	A.1 Be in MODE 4 with one Shutdown Cooling System suction line relief valve in service.	Immediately
	AND	
	A.2 Perform SR 3.4.11.2 and SR 3.4.11.3 for the required Shutdown Cooling System suction line relief valve to comply with Action A.1.	Immediately
	AND	
	A.3 Be in Mode 4 with all RCS cold leg temperatures $\leq$ 214°F during cooldown or $\leq$ 291°F during heatup.	8 hours

INSERT FOR CTS 3.4.2.1
SURVEILLANCE REQUIREMENTS
(Units 1, 2, and 3)
INSERT 3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.1	Verify the required pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be within ± 1%.	In accordance with the Inservice Testing Program.
SR 3.4.11.2	----------NOTE---------- Only required to be performed when a Shutdown Cooling System suction line relief valve is being used for overpressure protection. ---------- Verify the required Shutdown Cooling System suction line relief valve aligned to provide overpressure protection for the RCS.	12 hours for unlocked, not sealed, or otherwise not secured open pathway vent valve(s) AND 31 days for locked, sealed, or otherwise secured open pathway vent valve(s).
SR 3.4.11.3	Verify the required Shutdown Cooling System suction line relief valve OPERABLE with the required setpoint.	In accordance with the Inservice Testing Program

DISCUSSION OF CHANGES
SPECIFICATION 3.4.11

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 CTS SR 4.4.2.1 states that pressurizer safety valve operability is determined by Specification 4.0.5 which includes Inservice Testing ASME Code Class 1, 2, and 3 pumps and valves. ITS SR 3.4.11.1 requires pressurizer safety valve OPERABILITY in accordance with Inservice Testing Program. These two requirements are the same. ITS SR 3.4.11.1 does not add any additional requirements or delete any existing requirements. Therefore, addition of this information is administrative in nature. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 ITS includes two additional SRs that ensure the required Shutdown Cooling System suction line relief valve is Operable. The addition of these additional SRs constitutes a more restrictive change to plant operating practices. This is acceptable because any component, system, or structure being relied upon by Technical Specification Actions must meet its associated operability requirements (SRs) to be considered Operable. This change is consistent with NUREG-1432.

M.2 ITS 3.4.11 ACTION A.3 requires the plant be placed in MODE 4 with all RCS cold leg temperatures ≤ 214°F during cooldown or ≤ 291°F during heatup within 8 hours of all PSVs inoperable. This is more restrictive than CTS 3.4.2.1, which only requires being in MODE 4 and placing an operable shutdown cooling loop into operation (addressed by ITS 3.4.11 ACTION A.1), and does not require further cooling to ≤ 214°F during cooldown or ≤ 291°F during heatup. This change is consistent with NUREG-1432 LCO 3.4.10 (model for ITS 3.4.11), and is consistent with the objective to require completion of the final ACTION to result in the plant being out of this LCO and under the APPLICABILITY of another LCO, in this case ITS 3.4.13

TECHNICAL CHANGES - RELOCATIONS

LA.1 CTS 3.4.2.1, footnote *, contains maintenance information concerning the approved method for setting pressurizer safety valve lift setpoints. ITS does not contain this information. This information is not required to determine Operability of a system, component or structure and therefore is being relocated to a Licensee Controlled Document (Bases Section SR 3.4.11-1). In addition, this information does not meet criteria of 10 CFR 50.36 (c) (2) (ii) for inclusion in to the ITS and is therefore relocated.

Any changes to the Bases will be in accordance with Chapter 5.0 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 a Licensee Controlled Document, (Bases Section) is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 CTS 3.4.2.1, Action a, requires immediate suspension of all operations involving positive reactivity changes and to place an Operable shutdown cooling loop into operation. ITS requires immediate entry into Mode 4 with one Shutdown Cooling System suction line relief valve in service, or the unit is placed in a condition where the LCO does not apply. Removing the requirement to suspend all operations involving positive reactivity constitutes a less restrictive change. The requirement to suspend all operations involving positive reactivity changes is not needed for this LCO ACTION and could conflict with the required ACTION to place a shutdown cooling system suction relief valve in service and go to LTOP entry conditions. This requirement is not needed because positive reactivity changes (such as cooling the RCS when MTC is negative) without achieving criticality will not cause a condition that would be detrimental if the PSVs were inoperable. Cooling the RCS would result in lowering RCS pressure and may be necessary to enable compliance with the ACTIONs to place a shutdown cooling system suction relief valve in service and go to LTOP entry conditions. Compliance with other Technical Specifications ensure that criticality is not achieved in MODE 4. The reactivity condition of the plant in MODE 4 is required to be maintained with K_{eff} less than 0.99 in accordance with ITS Table 1.1-1. Also, ITS 3.1.1 and 3.1.2 contain requirements for shutdown margin. In addition, ITS 3.4.2 does not allow criticality unless RCS temperatures ≥ 545°F in MODES 1 and 2 only.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.2 CTS 3.4.2.1, Action b, contains a statement allowing the suspension of Specification 3.0.4 for up to 12 hours for entry into Mode 4. ITS 3.4.11 contains a NOTE that allows pressurizer safety valve settings to be outside the limits of the LCO in Modes 3 and 4, and for 72 hours following entry into Mode 3, for the purpose of setting the pressurizer safety valve lift settings under ambient conditions, provided a preliminary cold setting was made prior to heatup. Allowing entry into Mode 3 by temporarily suspending LCO requirements for 72 hours to allow pressurizer safety valve testing constitutes a less restrictive change. This permits testing and examination of the pressurizer safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. This change is acceptable because the cold setting gives assurance that the valves are OPERABLE near their design condition. The 72 hour exception is based on 18 hour outage time for each of the valves. The 18 hour period is derived from operating experience that hot testing can be performed within this time frame. This change is consistent with NUREG-1432.

L.3 CTS 3.4.2.1 uses Mode 4 Applicability. ITS 3.4.11 Applicability uses Mode 4 with all RCS cold leg temperature > 214°F during cooldown and Mode 4 with all RCS cold leg temperature > 291°F during heatup. Not requiring Applicability throughout Mode 4 constitutes a less restrictive change. This change is acceptable because the LTOP System provides overpressure protection in Mode 4 with all RCS cold leg temperature ≤ 214°F during cooldown and Mode 4 with all RCS cold leg temperature ≤ 291°F during heatup. This change is consistent with NUREG-1432.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.11

ADMINISTRATIVE CHANGES
(ITS 3.4.11 Discussion of Changes Labeled A.1 and A.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, "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 Section/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 Section/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 3.4.11 Discussion of Changes Labeled (A.1 and A.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 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 - MORE RESTRICTIVE
(ITS 3.4.11 Discussion of Changes Labeled M.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. 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 in the specific Discussion of Changes listed 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 3.4.11 Discussion of Changes Labeled M.1) (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 3.4.11 Discussion of Changes Labeled LA.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 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 3.4.11 Discussion of Changes Labeled LA.1) (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 submittal, 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.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.11 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 CTS 3.4.2.1, Action a, requires immediate suspension of all operations involving positive reactivity changes and to place an Operable shutdown cooling loop into operation. ITS requires entry into Mode 4 with one Shutdown Cooling System suction line relief valve in service, or the unit is placed in a condition where the LCO does not apply. Removing the requirement to suspend all operations involving positive reactivity constitutes a less restrictive change. This is acceptable because (1) there are no credible accidents in Mode 4 above L-TOP System enable temperatures that require the operation of more than one pressurizer safety valve for event mitigation, (2) in Mode 4 above L-TOP enable temperatures a Shutdown Cooling System suction line relief valve in service provides overpressure protection in the event that no pressurizer safety valves are Operable, (3) if no pressurizer safety valves or Shutdown Cooling System suction line relief valves are Operable the unit is placed in a condition where the LCO does not apply. 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 3.4.11 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 proposed change relaxes the requirement to immediately suspend all operation involving positive reactivity changes and place the operable shutdown cooling loop into operation. The ITS only requires entry into Mode 4 with all RCS cold leg temperatures < 214°F during cooldown or Mode 4 with all RCS cold leg temperature < 291°F during heatup. This is acceptable since there is no credible accidents in Mode 4 that require the operation of more than one pressurizer safety valve for event mitigation. Implementation of this change will not result in operation that will increase the probability of initiating an analyzed event. This change will not alter assumptions relative to mitigation of an accident or transient event. This change has been reviewed to ensure that no previously evaluated accident has been adversely affected. 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?

Relaxing the requirement of suspending operation involving positive reactivity changes and place an operable shutdown cooling loop into operation does not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal plant operation. This change relaxes CTS requirements however, this is still consistent with the safety analyses, licensing basis, and NUREG-1432. Therefore, this change will to create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.11 Discussion of Changes Labeled L.1) (continued)

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

The proposed change provides relaxation from the CTS by not requiring the suspension of all operations involving positive reactivity changes and placing an operable shutdown cooling loop into operation. An evaluation of this change concluded that the is no impact on the margin of safety. The change maintains the requirements of the safety analysis, licensing basis, and consistent with NUREG-1432. As such, no question of safety is involved. Therefore, this change will not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.11 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 CTS 3.4.2.1, Action b, contains a statement allowing the suspension of Specification 3.0.4 for up to 12 hours for entry into Mode 4. ITS 3.4.11 contains a NOTE that allows pressurizer safety valve settings to be outside the limits of the LCO in Modes 3 and 4, and for 72 hours following entry into Mode 3, for the purpose of setting the pressurizer safety valve lift settings under ambient conditions, provided a preliminary cold setting was made prior to heatup. Allowing entry into Mode 3 by temporarily suspending LCO requirements for 72 hours to allow pressurizer safety valve testing constitutes a less restrictive change. This permits testing and examination of the pressurizer safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. This change is acceptable because the cold setting gives assurance that the valves are OPERABLE near their design condition. The 72 hour exception is based on 18 hour outage time for each of the valves. The 18 hour period is derived from operating experience that hot testing can be performed within this time frame. 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 3.4.11 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 provides a Note that allows the pressurizer safety valve setting to be outside the limits for 72 hours following entry into Mode 3 for the purpose of setting the pressurizer safety valve lift settings under ambient conditions, provided a preliminary clod setting was made prior to heatup. The CTS does not provide this allowance. The 72 hour exception is based on 18 hour outage time for each of the valves. The 18 hour period is derived from operating experience that hot testing can be performed within the time frame. This change does not result in operation that will increase the probability of initiating an analyzed event This change will not alter assumptions relative to mitigation of an accident or transient event. This change has been reviewed to ensure that no previously evaluated accident has been adversely affected. 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?

Allowing the 72 hours following entry into Mode 3 for the purpose of setting the pressurizer safety valve setting does not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal plant operation. This change provides relaxation by allowing a 72 hour grace period to set the safety valves, however, this is consistent with the assumption made in the safety analyses, licensing basis, and NUREG-1432. Therefore, this change well not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.11 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 provides relaxation by allowing 72 hours after entering Mode 3 to set the pressurizer safety valve setting. An evaluation of this change has been performed and concluded that there is no impact on the margin of safety. The change maintains the requirement of the safety analyses, licensing basis, and NUREG-1432. As such, n question of safety in involved, Therefore, this change will not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.11 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 CTS 3.4.2.1 uses Mode 4 Applicability. ITS 3.4.11 Applicability uses Mode 4 with all RCS cold leg temperature > 214°F during cooldown and Mode 4 with all RCS cold leg temperature > 291°F during heatup. Not requiring Applicability throughout Mode 4 constitutes a less restrictive change. This change is acceptable because the LTOP System provides overpressure protection in Mode 4 with all RCS cold leg temperature ≤ 214°F during cooldown and Mode 4 with all RCS cold leg temperature ≤ 291°F during heatup. 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 relaxes the requirements for entry into Mode 4 by allowing RCS cold leg temperature 214°F during cooldown and Mode 4 with RCS cold leg temperature > 291°F during heatup. Relaxing the CTS requirements will not result in operation that will increase the probability of initiating an analyzed event. This change will not alter assumptions relative to mitigation of an accident or transient event. This change has been reviewed to ensure that no previously evaluated accident have been adversely affected. Therefore this change will n involve a significant increase in the probability or consequence of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.11 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?

Relaxing the requirement for Mode 4 operations will not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal pant operation. This change is consistent with assumptions made in the safety analyses, licensing basis, and NUREG-1432. Therefore, this change 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 change relaxes Mode 4 requirements which will not result in operation that will increase the probability of initiating an analyzed event. This change will not alter assumptions relative to mitigation of an accident or transient event. This change has been reviewed to ensure that no previously evaluated accident has been adversely affected. Therefore, this change will not involve a significant increase in the probability or consequences of an accident evaluated.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.12
MARK UP

<CTS>
<DOC>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.~~11~~ 12 Pressurizer ~~Power-Operated Relief Valves (PORVs)~~ Vents

<LCO 3.4.10>

LCO 3.4.~~11~~ 12 ~~Each PORV and associated block valve~~ Four pressurizer vent paths shall be OPERABLE.

APPLICABILITY: MODES 1, 2, ~~and~~ 3, and MODE 4 with RCS pressure ≥ 385 psia

<DOC M.1>

ACTIONS

~~NOTES~~

~~1. Separate Condition entry is allowed for each PORV.~~

~~2. LCO 3.0.4 is not applicable.~~

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~A.~~ One or more PORVs inoperable and capable of being manually cycled.	A.1 Close and maintain power to associated block valve.	1 hour
A 2 ~~B.~~ ~~One PORV~~ inoperable. ~~and not capable of~~ being ~~manually cycled.~~	B.1 Close associated block valve.	1 hour
	AND B.2 Remove power from associated block valve.	1 hour
	AND ~~B.3~~ A.1 2 Restore ~~PORV~~ required pressurizer vent paths to OPERABLE status.	72 hours

<ACTION a>

two or three required pressurizer vent paths

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B.~~ All ~~One block valve~~ PS inoperable. (Action b)	C.1 Place associated PORV in manual control. AND ~~C.2~~ B.1 Restore ~~block valve~~ one to OPERABLE status.	1 hour ~~12~~ 3 hours
~~C.~~ B. Required Action and associated Completion Time of Condition A, ~~B~~ or ~~C~~ not met. (Action a, Action b) (DOC M.1)	~~B~~ C.1 Be in MODE 3. AND ~~B~~ C.2 Be in MODE 4 with RCS pressure < 385 psig.	6 hours [12] 24 hours
E. Two PORVs inoperable and not capable of being manually cycled.	E.1 Close associated block valves. AND E.2 Remove power from associated block valves. AND E.3 Be in MODE 3. AND E.4 Be in MODE 4.	1 hour 1 hour 6 hours [12] hours
F. More than one block valve inoperable.	F.1 Place associated PORVs in manual control. AND	1 hour

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~F.~~ (continued)	F.2 Restore at least one block valve to OPERABLE status.	2 hours
G. Required Action and associated Completion Time of Condition F not met.	G.1 Be in MODE 3. AND G.2 Be in MODE 4.	6 hours [12] hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
	SR 3.4.11.1 ----------NOTE---------- Not required to be performed with block valve closed in accordance with the Required Actions of this LCO. ---------- Perform a complete cycle of each block valve.	[92 days]
4.4.10.b	SR 3.4.~~11~~ 12.~~X~~ 1 Perform a complete cycle of each ~~PORV~~ pressurizer vent valve.	~~X~~18~~X~~ months
4.4.10.C	[SR 3.4.~~11~~ 12.~~X~~ 2 ~~Perform a complete cycle of each solenoid~~ air control valve and check valve on the ~~air accumulators in PORV control systems~~.]	[~~X~~18~~X~~ months]

Verify flow through each pressurizer vent path.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
[SR 3.4.11.4	Verify PORVs and block valve(s) are capable of being powered from an emergency power supply.	[18] months]

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.12
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.~~11~~ 123 Pressurizer ~~Power Operated Relief Valves (PORVs)~~ Vents

BASES

BACKGROUND

The pressurizer is equipped with two types of devices for pressure relief: pressurizer safety valves and PORVs. The PORV is an air operated valve that is automatically opened at a specific set pressure when the pressurizer pressure increases and is automatically closed on decreasing pressure. The PORV may also be manually operated using controls installed in the control room.

An electric, motor operated, normally open, block valve is installed between the pressurizer and the PORV. The function of the block valve is to isolate the PORV. Block valve closure is accomplished manually using controls in the control room and may be used to isolate a leaking PORV to permit continued power operation. Most importantly, the block valve is used to isolate a stuck open PORV to isolate the resulting small break loss of coolant accident (LOCA). Closure terminates the RCS depressurization and coolant inventory loss.

Insert 1

The PORV and its block valve controls are powered from normal power supplies. Their controls are also capable of being powered from emergency supplies. Power supplies for the PORV are separate from those for the block valve. Power supply requirements are defined in NUREG-0737, Paragraph III, G.1 (Ref. 1).

The PORV setpoint is above the high pressure reactor trip setpoint and below the opening setpoint for the pressurizer safety valves as required by Reference 2. The purpose of the relationship of these setpoints is to limit the number of transient pressure increase challenges that might open the PORV, which, if opened, could fail in the open position. The PORV setpoint thus limits the frequency of challenges from transients and limits the possibility of a small break LOCA from a failed open PORV. Placing the setpoint below the pressurizer safety valve opening setpoint reduces the frequency of challenges to the safety valves, which, unlike the PORV, cannot be isolated if they were to fail to open.

The primary purpose of this LCO is to ensure that the PORV, its setpoint, and the block valve are operating correctly so

(continued)

BASES

BACKGROUND (continued)

the potential for a small break LOCA through the PORV pathway is minimized, or if a small break LOCA were to occur through a failed open PORV, the block valve could be manually operated to isolate the path.

The PORV may be manually operated to depressurize the RCS as deemed necessary by the operator in response to normal or abnormal transients. The PORV may be used for depressurization when the pressurizer spray is not available, a condition that may be encountered during loss of offsite power. Operators can manually open the PORVs to reduce RCS pressure in the event of a steam generator tube rupture (SGTR) with offsite power unavailable.

The PORV may also be used for feed and bleed core cooling in the case of multiple equipment failure events that are not within the design basis, such as a total loss of feedwater.

The PORV functions as an automatic overpressure device and limits challenges to the safety valves. Although the PORV acts as an overpressure device for operational purposes, safety analyses [do not take credit for PORV actuation, but] do take credit for the safety valves.

The PORV also provides low temperature overpressure protection (LTOP) during heatup and cooldown. LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," addresses this function.

APPLICABLE SAFETY ANALYSES

The PORV small break LOCA break size is bounded by the spectrum of piping breaks analyzed for plant licensing. Because the PORV small break LOCA is located at the top of the pressurizer, the RCS response characteristics are different from RCS loop piping breaks; analyses have been performed to investigate these characteristics.

The possibility of a small break LOCA through the PORV is reduced when the PORV flow path is OPERABLE and the PORV opening setpoint is established to be reasonably remote from expected transient challenges. The possibility is minimized if the flow path is isolated.

The PORV opening setpoint has been established in accordance with Reference 2. It has been set so expected RCS pressure

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

increases from anticipated transients will not challenge the PORV, minimizing the possibility of small break LOCA through the PORV.

Overpressure protection is provided by safety valves, and analyses do not take credit for the PORV opening for accident mitigation.

Pressurizer PORVs satisfy Criterion 3 of the NRC Policy Statement.

LCO

The LCO requires the PORV and its associated block valve to be OPERABLE. The block valve is required to be OPERABLE so it may be used to isolate the flow path if the PORV is not OPERABLE.

Valve OPERABILITY also means the PORV setpoint is correct. By ensuring that the PORV opening setpoint is correct, the PORV is not subject to frequent challenges from possible pressure increase transients, and therefore the possibility of a small break LOCA through a failed open PORV is not a frequent event.

APPLICABILITY

In MODES 1, 2, and 3, the PORV and its block valve are required to be OPERABLE to limit the potential for a small break LOCA through the flow path. A likely cause for PORV small break LOCA is a result of pressure increase transients that cause the PORV to open. Imbalances in the energy output of the core and heat removal by the secondary system can cause the RCS pressure to increase to the PORV opening setpoint. Pressure increase transients can occur any time the steam generators are used for heat removal. The most rapid increases will occur at higher operating power and pressure conditions of MODES 1 and 2.

Pressure increases are less prominent in MODE 3 because the core input energy is reduced, but the RCS pressure is high. Therefore, this LCO is applicable in MODES 1, 2, and 3. The LCO is not applicable in MODE 4 when both pressure and core energy are decreased and the pressure surges become much less significant. The PORV setpoint is reduced for LTOP in

(continued)

BASES

APPLICABILITY (continued)

MODES 4, 5, and 6 with the reactor vessel head in place. LCO 3.4.12 addresses the PORV requirements in these MODES.

ACTIONS

A.1

The ACTIONS are modified by two Notes. Note 1 clarifies that all pressurizer PORVs are treated as separate entities, each with separate Completion Times (i.e., the Completion Time is on a component basis). Note 2 is an exception to LCO 3.0.4. The exception for LCO 3.0.4 permits entry into MODES 1, 2, and 3 to perform cycling of the PORV or block valve to verify their OPERABLE status. Testing is typically not performed in lower MODES.

With the PORV inoperable and capable of being manually cycled, either the PORV must be restored or the flow path isolated within 1 hour. The block valve should be closed but power must be maintained to the associated block valve, since removal of power would render the block valve inoperable. Although the PORV may be designated inoperable, it may be able to be manually opened and closed and in this manner can be used to perform its function. PORV inoperability may be due to seat leakage, instrumentation problems, automatic control problems, or other causes that do not prevent manual use and do not create a possibility for a small break LOCA. For these reasons, the block valve may be closed but the Action requires power be maintained to the valve. This Condition is only intended to permit operation of the plant for a limited period of time not to exceed the next refueling outage (MODE 6) so that maintenance can be performed on the PORVs to eliminate the problem condition. The PORVs should normally be available for automatic mitigation of overpressure events and should be returned to OPERABLE status prior to entering startup (MODE 2).

Quick access to the PORV for pressure control can be made when power remains on the closed block valve. The Completion Time of 1 hour is based on plant operating experience that minor problems can be corrected or closure can be accomplished in this time period.

(continued)

BASES

ACTIONS (continued)

B.1, B.2, and B.3

If one PORV is inoperable and not capable of being manually cycled, it must either be isolated, by closing the associated block valve and removing the power from the block valve, or restored to OPERABLE status. The Completion Time of 1 hour is reasonable, based on challenges to the PORVs during this time period, and provides the operator adequate time to correct the situation. If the inoperable valve cannot be restored to OPERABLE status, it must be isolated within the specified time. Because there is at least one PORV that remains OPERABLE, an additional 72 hours is provided to restore the inoperable PORV to OPERABLE status.

C.1 and C.2

If one block valve is inoperable, then it must be restored to OPERABLE status, or the associated PORV placed in manual control. The prime importance for the capability to close the block valve is to isolate a stuck open PORV. Therefore, if the block valve cannot be restored to OPERABLE status within 1 hour, the Required Action is to place the PORV in manual control to preclude its automatic opening for an overpressure event and to avoid the potential for a stuck open PORV at a time that the block valve is inoperable. The Completion Times of 1 hour are reasonable based on the small potential for challenges to the system during this time period and provide the operator time to correct the situation. Because at least one PORV remains OPERABLE, the operator is permitted a Completion Time of 72 hours to restore the inoperable block valve to OPERABLE status. The time allowed to restore the block valve is based upon the Completion Time for restoring an inoperable PORV in Condition B since the PORVs are not capable of mitigating an overpressure event when placed in manual control. If the block valve is restored within the Completion Time of 72 hours, the power will be restored and the PORV restored to OPERABLE status.

D.1 and D.2

If the Required Action cannot be met within the associated Completion Time, the plant must be brought to a MODE in which the requirement does not apply. To achieve this

(continued)

BASES

ACTIONS

D.1 and D.2 (continued)

status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

E.1, E.2, E.3, and E.4

If more than one PORV is inoperable and not capable of being manually cycled, it is necessary to either restore at least one valve within the Completion Time of 1 hour or isolate the flow path by closing and removing the power to the associated block valves. The Completion Time of 1 hour is reasonable based on the small potential for challenges to the system during this time and provides the operator time to correct the situation. If one PORV is restored and one PORV remains inoperable, then the plant will be in Condition B with the time clock started at the original declaration of having two PORVs inoperable. If no PORVs are restored within the Completion Time, then the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging plant systems. Similarly, the Completion Time of 12 hours to reach MODE 4 is reasonable, considering that a plant can cool down within that time frame on one safety system train. In MODES 4 and 5, maintaining PORV OPERABILITY may be required. See LCO 3.4.12.

F.1 and F.2

If more than one block valve is inoperable, it is necessary to either restore the block valves within the Completion Time of 1 hour or place the associated PORVs in manual control and restore at least one block valve to OPERABLE status within 2 hours and the remaining block valve in 72 hours. The Completion Time of 1 hour to either restore the block valves or place the associated PORVs in manual

(continued)

BASES

ACTIONS

F.1 and F.2 (continued)

control is reasonable based on the small potential for challenges to the system during this time and provides the operator time to correct the situation.

G.1 and G.2

If the Required Actions and associated Completion Times of Condition E or F are not met, then the plant must be brought to a MODE in which the LCO does not apply. The plant must be brought to at least MODE 3 within 6 hours and to MODE 4 within 12 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging safety systems. Similarly, the Completion Time of 12 hours to reach MODE 4 is reasonable considering that a plant can cool down within that time frame on one safety system train. In MODES 4 and 5, maintaining PORV OPERABILITY may be required. See LCO 3.4.12.

SURVEILLANCE REQUIREMENTS

SR 3.4.11.1

Block valve cycling verifies that it can be closed if necessary. The basis for the Frequency of [92 days] is ASME XI (Ref. 3). If the block valve is closed to isolate a PORV that is capable of being manually cycled, the OPERABILITY of the block valve is of importance because opening the block valve is necessary to permit the PORV to be used for manual control of reactor pressure. If the block valve is closed to isolate an otherwise inoperable PORV, the maximum Completion Time to restore the PORV and open the block valve is 72 hours, which is well within the allowable limits (25%) to extend the block valve surveillance interval of [92 days]. Furthermore, these test requirements would be completed by the reopening of a recently closed block valve upon restoration of the PORV to OPERABLE status (i.e., completion of the Required Action fulfills the SR).

The Note modifies this SR by stating that this SR is not required to be performed with the block valve closed in accordance with the Required Actions of this LCO.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.11.2

SR 3.4.11.2 requires complete cycling of each PORV. PORV cycling demonstrates its function. The Frequency of [18] months is based on a typical refueling cycle and industry accepted practice.

[SR 3.4.11.3

Operating the solenoid air control valves and check valves on the air accumulators ensures the PORV control system actuates properly when called upon. The Frequency of [18] months is based on a typical refueling cycle and the Frequency of the other surveillances used to demonstrate PORV OPERABILITY.]

[SR 3.4.11.4

This Surveillance is not required for plants with permanent 1E power supplies to the valves. The test demonstrates that emergency power can be provided and is performed by transferring power from the normal supply to the emergency supply and cycling the valves. The Frequency of [18] months is based on a typical refueling cycle and industry accepted practice.]

REFERENCES

1. NUREG-0737, Paragraph III, G.I, November 1980.

2. Inspection and Enforcement (IE) Bulletin 79-05B, April 21, 1979.

3. ASME, Boiler and Pressure Vessel Code, Section XI.

INSERT 1
INSERT FOR ITS 3.4.12 BASES

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.12 Pressurizer Vents

BASES

BACKGROUND

The pressurizer vent is part of the reactor coolant gas vent system (RCGVS) as described in UFSAR 18.II.B.1 (Ref.1). The pressurizer can be vented remotely from the control room through the following four paths (see UFSAR Figure 18.II.B-1):

1. From the pressurizer vent through SOV HV-103, then through SOV HV-105 to the reactor drain tank (RTD).

2. From the pressurizer vent through SOV HV-103, then through SOV HV-106 directly to the containment atmosphere.

3. From the pressurizer vent through SOVs HV-108 and HV-109, then through SOV HV-105 to the reactor drain tank (RTD).

4. From the pressurizer vent through SOVs HV-108 and HV-109, then through SOV HV-106 directly to the containment atmosphere.

The RCGVS also includes the reactor head vent, which can be used along with the pressurizer vent to remotely vent gases that could inhibit natural circulation core cooling during post accident situations. However, this function does not meet the criteria of 10 CFR 50.36(c)(2)(ii) to require a Technical Specification LCO, and therefore the reactor head vent is not included in these Technical Specifications.

(continued)

BASES

APPLICABLE SAFETY ANALYSES

The requirement for pressurizer path vent path to be OPERABLE is based on the steam generator tube rupture (SGTR) with loss of offsite power (LOP) and a single failure safety analysis, as described in UFSAR 15.6.3 (Ref. 4). It is assumed that the auxiliary pressurizer spray system (APSS) is not available for this event. Instead, RCS depressurization is performed, 2 hours after the initial SGTR, by venting the RCS via a pressurizer vent path and throttling HPSI flow. The analysis also incorporates an additional failure by assuming that only the smallest of the four available pressurizer vent paths is used. This is identified as the orificed flow path to the RDT.

The results of the analysis for steam generator tube rupture with a loss of offsite power and a fully stuck open ADV using the pressurizer vent system, forwarded to the NRC in Reference 3, states that the analysis assumes that the APSS is inoperable and the pressurizer gas vent system performs the functions of RCS depressurization. The staff has reviewed and accepted the results of the analysis and the design of the pressurizer gas vent system. The staff's detailed evaluation has been reported in Supplement No. 9 to PVNGS SER (Ref. 2).

The pressurizer vent paths satisfy Criterion 3 of 10 CFR 50.36 (c)(2)(ii).

LCO

The LCO requires four pressurizer vent paths be OPERABLE. The four vent paths are:

1. From the pressurizer vent through SOV HV-103, then through SOV HV-105 to the reactor drain tank (RTD).
2. From the pressurizer vent through SOV HV-103, then through SOV HV-106 directly to the containment atmosphere.
3. From the pressurizer vent through SOVs HV-108 and HV-109, then through SOV HV-105 to the reactor drain tank (RTD).
4. From the pressurizer vent through SOVs HV-108 and HV-109, then through SOV HV-106 directly to the containment atmosphere.

(continued)

BASES

LCO (continued

A vent path is flow capability from the pressurizer to the RDT or from the pressurizer to containment atmosphere. Loss of any single valve in the pressurizer vent system will cause two flow paths to become inoperable. A pressurizer vent path is required to depressurize the RCS in a SGTR design basis event which assumes LOP and APPS unavailable.

APPLICABILITY

In MODES 1, 2, 3, and MODE 4 with RCS pressure ≥ 385 psia the four pressurizer vent paths are required to be OPERABLE. The safety analysis for the SGTR with LOP and a Single Failure (loss of APSS) credits a pressurizer vent path to reduce RCS pressure.

In MODES 1, 2, 3, and MODE 4 with RCS pressure ≥ 385 psia the SGs are the primary means of heat removal in the RCS, until shutdown cooling can be initiated. In MODES 1, 2, 3, and MODE 4 with RCS pressure ≥ 385 psia, assuming the APSS is not available, the pressurizer vent paths are the credited means to depressurize the RCS to Shutdown Cooling System entry conditions. Further depressurization into MODE 5 requires use of the pressurizer vent paths. In MODE 5 with the reactor vessel head in place, temperature requirements of MODE 5 (< 210°F) ensure the RCS remains depressurized. In MODE 6 the RCS is depressurized.

ACTIONS

A.1

If two or three pressurizer vent paths are inoperable, they must be restored to OPERABLE status. Loss of any single valve in the pressurizer vent system will cause two flow paths to become inoperable. Any vent path that provides flow capability from the pressurizer to the RDT or to the containment atmosphere, independent of which train is powering the valves in the flow path, can be considered an operable vent path. The Completion Time of 72 hours is reasonable because there is at least one pressurizer vent path that remains OPERABLE.

(continued)

BASES

B.1

If all pressurizer vent paths are inoperable, then restore at least one pressurizer vent path to OPERABLE status. The Completion Time of 6 hours is reasonable to allow time to correct the situation, yet emphasize the importance of restoring at least one pressurizer vent path. If at least one pressurizer vent path is not restored to OPERABLE within the Completion Time, then Action C is entered.

C.1

If the required Actions, A and B, cannot be met within the associated Completion Times, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours, and to MODE 4 with RCS pressure < 385 psia within 24 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.12.1

SR 3.4.12.1 requires complete cycling of each pressurizer vent path valve. The vent valves must be cycled from the control room to demonstrate their operability. Pressurizer vent path valve cycling demonstrates its function. The frequency of 18 months is based on a typical refueling cycle and industry accepted practice. This surveillance test must be performed in Mode 5 or Mode 6.

SR 3.4.12.2

SR 3.4.12.2 requires verification of flow through each pressurizer vent path. Verification of pressurizer vent path flow demonstrates its function. The frequency of 18 months is based on a typical refueling cycle and industry accepted practice. This surveillance test must be performed in Mode 5 or Mode 6.

(continued)

BASES

REFERENCES

1. UFSAR, Section 18.

2. NUREG-0857, initial issue, November 1981, through Supplement 12, November 1987.

3 Letter from Arizona Nuclear Power Project to NRC (ANPP-33905) dated November 4, 1985, "Information Concerning the PVNGS Auxiliary Pressurizer Spray."

4. UFSAR, Section 15.

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.12

1. ITS retains requirements associated with pressurizer pathway vents in Specification 3.4.12. NUREG-1432 has no Specification associated with pressurizer pathway vents. PVNGS credits the pressurizer pathway vents as the depressurization method for the Steam Generator Tube Rupture (SGTR) design basis event. This Specification will be retained thus meeting criterion 3 of 10 CFR 50.36 (c) (2) (ii). This change is consistent with PVNGS licensing basis.

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.

3. 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 are directly transferred from the CTS to the ITS.

PVNGS CTS
SPECIFICATION 3.4.12
MARK UP

Specification 3.4.12
(3.4.12 / Relocated)

A.1

3.4.
3.4.12

REACTOR COOLANT SYSTEM (RCS)

~~3/4.4.10 REACTOR COOLANT SYSTEM~~ Pressurizer VENTS

~~LIMITING CONDITION FOR OPERATION~~

A.3

LCO 3.4.12
ITS 3.4.12
Relocated
ITS 3.4.12

~~3.4.10~~ Both ~~reactor coolant system~~ vent paths shall be operable ~~and closed at each of the following locations:~~

a. Reactor vessel head, and

~~b.~~ Pressurizer steam space.

APPLICABILITY: MODES 1, 2, 3 and 4 with RCS pressure ≥ 385 psia. L.1

A.2

ACTION:

ACT A
ACT B

~~a.~~ With only one of the above required reactor coolant system vent paths OPERABLE, ~~from either location~~ restore both paths at that location to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN with RCS pressure < 385 psia within the following 6 hours. M.1

ACT B
ACT C

~~b.~~ With none of the above required reactor coolant system vent paths OPERABLE, ~~from either location~~ restore at least one path at that location to OPERABLE status within the next 6 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN with RCS pressure < 385 psia within the following ~~6~~ 18 hours. A.2 M.1

SURVEILLANCE REQUIREMENTS

SR 3.4.12.1
SR 3.4.12.2

~~4.4.10~~ Each Reactor Coolant System vent path shall be demonstrated OPERABLE at least once per 18 months ~~when in MODES 5 or 6~~ by: LA.3

~~a.~~ Verifying all manual isolation valves in each vent path are locked in the open position. LA.1

SR 3.4.12.1

~~b.~~ Cycling each vent valve through at least one complete cycle ~~from the control room.~~ LA.2

SR 3.4.12.2

~~c.~~ Verifying flow through the reactor coolant system vent paths during venting.

DISCUSSION OF CHANGES
SPECIFICATION 3.4.12

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 CTS 3.4.10, Actions a and b, require the RCS vent function from both the pressurizer vent and reactor vessel head vents to be Operable. As discussed in the Split Report, the reactor vessel head vent requirements are being relocated from the ITS. Portions of the CTS LCO, Actions, and Surveillances that relate to having both vent locations within the TS (e.g., "from either location"), are being editorially revised. Therefore the removal of this information from ITS 3.4.12 is administrative in nature and consistent with NUREG-1432.

A.3 CTS LCO 3.4.10 requires the pressurizer vent paths to be "operable and closed." ITS 3.4.12 requires pressurizer vent paths to be Operable, but does not detail "and closed." The CTS 3.4.10 requirement for the pressurizer vent valves to be closed is not required to mitigate the SGTR with LOP design basis accident, does not fall under the criterion of 10 CFR 50.36(c)(2)(ii), and is therefore not required to be included in ITS LCO 3.4.12. Since the necessity for the closed vent paths is adequately addressed in the ITS LCO for "RCS LEAKAGE," this specific detail is not needed in ITS 3.4.12, Pressurizer Vents. Any open vent path would result in excessive RCS LEAKAGE. Duplicating requirements in multiple Specifications is not necessary or consistent with NUREG-1432 philosophy. Therefore the removal of this information from ITS 3.4.12 is administrative in nature. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 CTS 3.4.10 (Reactor Coolant System Vents) LCO is specified as applicable in MODES 1, 2, 3, and 4. However, the ACTIONS for CTS 3.4.10 require an end-state of MODE 4, which would not put the plant in a mode where the LCO is not applicable. This anomaly in CTS results in the need to justify the new ITS 3.4.12 (Pressurizer Vents) APPLICABILITY of Mode 1, 2, 3, and 4 with RCS pressure ≥385 psia as a less restrictive change to CTS, and the new ITS ACTION end-state of Mode 4 with RCS pressure <385 psia as a more restrictive change to CTS. The more restrictive change to the ACTIONS is discussed below, and the less restrictive change to the APPLICABILITY is discussed in DOC Section L.1.

The change to the required ACTION end-state mode in ITS 3.4.12 (Pressurizer Vents) of MODE 4 with RCS pressure <385 psia is more restrictive than the CTS 3.4.10 (RCS Vents) ACTION end-state of MODE 4. This change is acceptable because the ITS ACTION end-state to reduce RCS pressure to less than 385 psia would ensure that the plant is in a condition where the LCO is no longer applicable and the SGTR safety analysis requirement for pressurizer vent is no longer applicable. If the plant were only required to go to the CTS end-state of MODE 4, the RCS pressure may still be at or above 385 psia which would be above shutdown cooling entry conditions and not consistent with the SGTR safety analysis. The increase of 12 hours allowed to get to the new end-state of MODE 4 with RCS pressure less than 385 psia in ITS is consistent with the end-state change since the additional time is needed to perform an orderly cooldown and depressurization to the more restrictive end state (lower pressure) without challenging plant systems.

TECHNICAL CHANGES - RELOCATIONS

LA.1 CTS SR 4.4.10.a requires the verification of all manual isolation valves in the pressurizer vent path to be locked in the open position, while the ITS 3.4.12 does not specifically retain this Surveillance. This requirement is not required to determine the Operability of a system, component or structure and therefore is being relocated to a Licensee Controlled Document (Technical Requirements Manual [TRM]). The CTS 4.4.10 surveillance requirement to verify all manual isolation valves in each vent pathway are locked in the open position every 18 months is not required to mitigate the SGTR with LOP design basis accident, does not fall under the criterion of 10 CFR 50.36(c)(2)(ii), and is therefore not required to be included in ITS LCO 3.4.12. Maintaining the pressurizer vent path manual isolations open is an implicit requirement for Operability of the flow path, and is directly confirmed during the ITS SR 3.4.12.2 (same as CTS SR 4.4.10.c), which requires verifying flow through the pressurizer vent path. The requirement to "lock" the pressurizer vent path manual isolation valves is adequately controlled by plant procedures. This specific detail can be relocated from the Specification for pressurizer vent path Operability.

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 the ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

LA.2 CTS SR 4.4.10.b details that the method for cycling each vent valve be "from the control room." The ITS SRs do not typically detail methods for performing Surveillances. This information is not required to determine the OPERABILITY of a system, component or structure and therefore is being relocated to a Licensee Controlled Document (Bases Section). In addition, this requirement does not meet the criterion of 10 CFR 50.36 (c) (2) (ii) for inclusion into ITS.

Any changes to the Bases will be in accordance with Chapter 5.0 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 the ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS (continued)

LA.3 CTS SR 4.4.10 requires vent path Surveillances be performed "when in MODES 5 or 6." The ITS SRs do not detail any restrictions for performance of the Surveillances. This requirement is not required to determine the OPERABILITY of a system, component or structure and therefore is being relocated to a Licensee Controlled Document (Bases Section). This limitation is not necessary to ensure the OPERABILITY of the pressurizer vent paths, and can be adequately controlled in a Licensee Controlled Document. In addition, this requirement does not meet the criterion of 10 CFR 50.36 (c) (2) (ii) for inclusion into ITS.

Any changes to the Bases will be in accordance with Chapter 5.0 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 the ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 CTS 3.4.10 (Reactor Coolant System Vents) LCO is specified as applicable in MODES 1, 2, 3, and 4. However, the ACTIONS for CTS 3.4.10 require an end-state of MODE 4, which would not put the plant in a mode where the LCO is not applicable. This anomaly in CTS results in the need to justify the new ITS 3.4.12 (Pressurizer Vents) APPLICABILITY of Mode 1, 2, 3, and 4 with RCS pressure ≥385 psia as a less restrictive change to CTS, and the new ITS ACTION end-state of Mode 4 with RCS pressure <385 psia as a more restrictive change to CTS. The less restrictive change to the APPLICABILITY is discussed below, and the more restrictive change to the ACTIONS is discussed in DOC Section M.1.

The change to the pressurizer vent path LCO APPLICABILITY in ITS 3.4.12 will require the pressurizer vent path LCO to be APPLICABLE in Modes 1, 2, 3, and 4 with RCS pressure ≥385 psia. This is less restrictive than the CTS requirement for RCS vent paths to be OPERABLE in MODES 1, 2, 3, and 4, since the new ITS would not require RCS vent paths to be OPERABLE in MODE 4 below 385 psia. This change is acceptable since the safety analysis that credits the pressurizer vents for RCS depressurization (SGTR with LOP and failure of the APSS) considers the SGTR event terminated when shutdown cooling entry conditions are reached, which is in Mode 4 with RCS pressure <385 psia. This change does not impact safety and is consistent with the PVNGS safety analysis.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.12

ADMINISTRATIVE CHANGES
(ITS 3.4.12 Discussion of Changes Labeled A.1, A.2 and A.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, "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 Section/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 Section/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 3.4.12 Discussion of Changes Labeled (A.1, A.2 and A.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 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 - MORE RESTRICTIVE
(ITS 3.4.12 Discussion of Changes Labeled M.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. 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 in the specific Discussion of Changes listed 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 3.4.12 Discussion of Changes Labeled M.1) (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 3.4.12 Discussion of Changes Labeled LA.1, LA.2, and LA.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 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 3.4.12 Discussion of Changes Labeled LA.1, LA.2, and LA.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 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 submittal, 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.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.12 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 CTS 3.4.10 (Reactor Coolant System Vents) LCO is specified as applicable in MODES 1, 2, 3, and 4. However, the ACTIONS for CTS 3.4.10 require an end-state of MODE 4, which would not put the plant in a mode where the LCO is not applicable. This anomaly in CTS results in the need to justify the new ITS 3.4.12 (Pressurizer Vents) APPLICABILITY of Mode 1, 2, 3, and 4 with RCS pressure ≥385 psia as a less restrictive change to CTS, and the new ITS ACTION end-state of Mode 4 with RCS pressure <385 psia as a more restrictive change to CTS. The less restrictive change to the APPLICABILITY is discussed below, and the more restrictive change to the ACTIONS is discussed in DOC Section M.1.

The change to the pressurizer vent path LCO APPLICABILITY in ITS 3.4.12 will require the pressurizer vent path LCO to be APPLICABLE in Modes 1, 2, 3, and 4 with RCS pressure ≥385 psia. This is less restrictive than the CTS requirement for RCS vent paths to be OPERABLE in MODES 1, 2, 3, and 4, since the new ITS would not require RCS vent paths to be OPERABLE in MODE 4 below 385 psia. This change is acceptable since the safety analysis that credits the pressurizer vents for RCS depressurization (SGTR with LOP and failure of the APSS) considers the SGTR event terminated when shutdown cooling entry conditions are reached, which is in Mode 4 with RCS pressure <385 psia. This change does not impact safety and is consistent with the PVNGS safety analysis.

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 3.4.12 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 proposed change will reduce the applicability of the requirement to have operable RCS pressurizer vent paths from Modes 1, 2, 3, and 4, in CTS, to Modes 1, 2, 3, and 4 with RCS pressure >385 psia in ITS. This change would not impact safety since it would make the TS requirement consistent with the safety analysis. The requirement to maintain operable pressurizer vent paths is based on the safety analysis for SGTR with LOP and failure of the APSS. The SGTR safety analysis considers the SGTR event terminated when shutdown cooling entry conditions are reached, which is in Mode 4 with RCS pressure <385 psia. Therefore, the pressurizer vent paths are no longer credited in the safety analysis when the plant is in Mode 4 with RCS pressure <385 psia.

This change does not impact safety and is consistent with the PVNGS safety analysis. This change will not alter assumptions in the safety analysis or licensing basis. 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 will reduce the applicability of the requirement to have operable RCS pressurizer vent paths from Modes 1, 2, 3, and 4, in CTS, to Modes 1, 2, 3, and 4 with RCS pressure >385 psia in ITS. This change would not impact safety since it would make the TS requirement consistent with the safety analysis. The requirement to maintain operable pressurizer vent paths is based on the safety analysis for SGTR with LOP and failure of the APSS. The SGTR safety analysis considers the SGTR event terminated when shutdown cooling entry conditions are reached, which is in Mode 4 with RCS pressure <385 psia. Therefore, the pressurizer vent paths are no longer credited in the safety analysis when the plant is in Mode 4 with RCS pressure <385 psia.

This change does not impact safety and is consistent with the PVNGS safety analysis. This change will not alter assumptions in the safety analysis or licensing basis. Therefore, this change will not create the possibility of a new or different kind of accident from any previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.12 Discussion of Changes Labeled L.1) (continued)

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

The proposed change will reduce the applicability of the requirement to have operable RCS pressurizer vent paths from Modes 1, 2, 3, and 4, in CTS, to Modes 1, 2, 3, and 4 with RCS pressure >385 psia in ITS. This change would not impact safety since it would make the TS requirement consistent with the safety analysis. The requirement to maintain operable pressurizer vent paths is based on the safety analysis for SGTR with LOP and failure of the APSS. The SGTR safety analysis considers the SGTR event terminated when shutdown cooling entry conditions are reached, which is in Mode 4 with RCS pressure <385 psia. Therefore, the pressurizer vent paths are no longer credited in the safety analysis when the plant is in Mode 4 with RCS pressure <385 psia.

This change does not impact safety and is consistent with the PVNGS safety analysis. This change will not alter assumptions in the safety analysis or licensing basis. Therefore, this change will not involve a significant reduction in the margin of safety.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.13
MARK UP

<DOC>
<CTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.~~12~~ 13 Low Temperature Overpressure Protection (LTOP) System 1

<CO 3.4.8.3>

LCO 3.4.~~12~~ 13 An LTOP System shall be OPERABLE consisting of: with a maximum of one high pressure safety injection (HPSI) pump and one charging pump capable of injecting into the RCS and the safety injection tanks (SITs) isolated, and: 2

a. Two OPERABLE Shutdown Cooling System suction line relief valves 4 power operated relief valves (PORVs) with lift settings ≤ ~~[450]~~ 467 psig; or 7

b. The RCS depressurized and an RCS vent of aligned to provide overpressure protection for the RCS 3 ≥ ~~[1.3]~~ 7. 116 square inches. Insert 2 13

APPLICABILITY: MODE 4 when any RCS cold leg temperature is ≤ 514°F during cooldown, 5
MODE 4 when any RCS cold leg temperature is ≤ ~~[285]°F~~ 291 during heatup,
MODE 5,
MODE 6 when the reactor vessel head is on. 13

~~NOTE~~
~~SIT isolation is only required when SIT pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR.~~ 2

Insert 1 9

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~A. Two or more HPSI pumps capable of injecting into the RCS.~~	~~A.1 Initiate action to verify a maximum of one HPSI pump capable of injecting into the RCS.~~	~~Immediately~~ 2

(continued)

INSERT FOR ITS 3.4.13
APPLICABILITY NOTE
(Units 1, 2, and 3)
INSERT 1

----------NOTE----------
When one or more cold legs reach 214°F, this LCO remains applicable during periods of steady state temperature conditions until all RCS cold leg temperatures reach 291°F. If a cooldown is terminated prior to reaching 214°F and a heatup is commenced, this LCO is applicable until all RCS cold leg temperatures reach 291°F. ← 9

LCO NOTE
INSERT 2

----------NOTE----------
No RCP shall be started unless the secondary side water temperature in each steam generator (SG) is ≤100°F above each of the RCS cold leg temperatures. ← 13

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Two or more charging pumps capable of injecting into the RCS.	----------NOTE---------- Two charging pumps may be capable of injecting into the RCS during pump swap operation for ≤ 15 minutes. ---------- B.1 Initiate action to verify a maximum of one charging pump capable of injecting into the RCS.	Immediately
C. A SIT not isolated when SIT pressure is greater than or equal to the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	C.1 Isolate affected SIT.	1 hour
D. Required Action and associated Completion Time of Condition C not met.	D.1 Increase RCS cold leg temperature to > [175]°F. OR D.2 Depressurize affected SIT to less than the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	12 hours 12 hours
~~E.~~ A.1. One required ~~PORV~~ Shutdown Cooling System suction line relief valve inoperable in MODE 4.	---NOTE--- LCO 3.0.4 is not applicable E.1 Restore required ~~PORV~~ to OPERABLE status.	7 days

3.4.8.3 ACT a)

(continued)

Shutdown Cooling System suction line relief valve

LTOP System 3.4.~~12~~ 13

4

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.4.8.3 ACT b)	~~X~~ D. One required ~~PORV~~ inoperable in MODE 5 or 6.	~~A~~ B.1 Restore required ~~PORV~~ to OPERABLE status.	24 hours
3.4.8.3 ACT c)	~~X~~ E. Two required ~~PORVs~~ inoperable. OR Required Action and associated Completion Time of Condition A ~~or~~ ~~X~~B, ~~X~~ ~~D, E, or F~~ not met.	~~A~~ C.1 Depressurize RCS and establish RCS vent of ≥ ~~1.63~~ square inches. 16 7 Shutdown Cooling System suction line relief valves	8 hours
3.4.8.3 ACT a) 3.4.8.3 ACT b) 3.4.8.3 ACT c)			
DOC L.1	~~OR~~ ~~LTOP System inoperable for any reason other than Condition A, [B,] C, D, E, or F.~~		

4

11

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
~~SR 3.4.12.1~~	~~Verify a maximum of one HPSI pump is capable of injecting into the RCS.~~	~~12 hours~~
~~SR 3.4.12.2~~	~~Verify a maximum of one charging pump is capable of injecting into the RCS.~~	~~12 hours~~

2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.12.3	----------NOTE---------- Required to be performed when complying with LCO 3.4.12b. ---------- Verify each SIT is isolated.	12 hours
3.4.8.3 Act d SR 3.4.~~12~~.~~X~~ 13.1 1	Verify RCS vent ≥ ~~[1.3]~~ square inches is open. 7. 16 not sealed, or otherwise not secured	12 hours for unlocked open ~~vent valve(s)~~ vent pathway 12 6 AND 31 days for locked open ~~vent valve(s)~~ vent pathway 12 sealed, or otherwise secured
SR 3.4.12.5	Verify PORV block valve is open for each required PORV.	72 hours
SR 3.4.12.6	----------NOTE---------- Not required to be performed until [12] hours after decreasing RCS cold leg temperature to ≤ [285]°F. ---------- Perform CHANNEL FUNCTIONAL TEST on each required PORV, excluding actuation.	31 days
SR 3.4.12.7	Perform CHANNEL CALIBRATION on each required PORV actuation channel.	[18] months

2 4 6 4

Insert 1

INSERT FOR ITS 3.4.13
SURVEILLANCE REQUIREMENTS
(Units 1, 2, and 3)
INSERT 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.13.2	Verify each Shutdown Cooling System suction line relief valve aligned to provide overpressure protection for the RCS.	12 hours for unlocked, not sealed, or otherwise not secured open pathway vent valve(s) AND 31 days for locked, sealed, or otherwise secured open pathway vent valve(s).
SR 3.4.13.3	Verify each Shutdown Cooling System suction line relief valve OPERABLE with the required setpoint.	In accordance with the Inservice Testing Program

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.13
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.~~12~~ 13 Low Temperature Overpressure Protection (LTOP) System

BASES 1

BACKGROUND

The LTOP System controls RCS pressure at low temperatures so the integrity of the reactor coolant pressure boundary (RCPB) is not compromised by violating the pressure and temperature (P/T) limits of 10 CFR 50, Appendix G (Ref. 1). The reactor vessel is the limiting RCPB component for demonstrating such protection. LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," provides the allowable combinations for operational pressure and temperature during cooldown, shutdown, and heatup to keep from violating the Reference 1 requirements during the LTOP MODES.

The reactor vessel material is less tough at low temperatures than at normal operating temperatures. As the vessel neutron exposure accumulates, the material toughness decreases and becomes less resistant to pressure stress at low temperatures (Ref. 2). RCS pressure, therefore, is maintained low at low temperatures and is increased only as temperature is increased.

The potential for vessel overpressurization is most acute when the RCS is water solid, occurring only while shutdown; a pressure fluctuation can occur more quickly than an operator can react to relieve the condition. Exceeding the RCS P/T limits by a significant amount could cause brittle cracking of the reactor vessel. LCO 3.4.3 requires administrative control of RCS pressure and temperature during heatup and cooldown to prevent exceeding the P/T limits.

This LCO provides RCS overpressure protection by having ~~a minimum coolant input capability and having adequate pressure relief capacity.~~ Limiting coolant input capability requires all but one high pressure safety injection (HPSI) pump and one charging pump incapable of injection into the RCS and isolating the safety injection tanks (SITs). The pressure relief capacity requires either two OPERABLE redundant power operated relief valves (PORVs) or the RCS depressurized and an RCS vent of sufficient size. One PORV or the RCS vent is the overpressure protection device that acts to terminate an increasing pressure event. 2

Shutdown Cooling System suction line relief valve 4

Shutdown Cooling System suction line relief valves

(continued)

BASES

BACKGROUND (continued)

~~With minimum coolant input capability, the ability to provide core coolant addition is restricted. The LCO does not require the makeup control system deactivated or the safety injection (SI) actuation circuits blocked. Due to the lower pressures in the LTOP MODES and the expected core decay heat levels, the makeup system can provide adequate flow via the makeup control valve. If conditions require the use of more than one [HPI or] charging pump for makeup in the event of loss of inventory, then pumps can be made available through manual actions.~~ 2

4 Shutdown Cooling System suction line relief valves

The LTOP System for pressure relief consists of two PORVs with reduced lift settings or an RCS vent of sufficient size. Two relief valves are required for redundancy. One ~~PORV~~ has adequate relieving capability to prevent overpressurization for the required coolant input capability.

Shutdown Cooling System suction line relief valve 4

~~PORV~~ Requirements

~~As designed for the LTOP System, each PORV is signaled to open if the RCS pressure approaches a limit determined by the LTOP actuation logic. The actuation logic monitors RCS pressure and determines when the LTOP overpressure setting is approached. If the indicated pressure meets or exceeds the calculated value, a PORV is signaled to open.~~

~~The LCO presents the PORV setpoints for LTOP. The setpoints are normally staggered so only one valve opens during a low temperature overpressure transient. Having the setpoints of both valves within the limits of the LCO ensures the P/T limits will not be exceeded in any analyzed event.~~ 2

~~When a PORV is opened in an increasing pressure transient, the release of coolant causes the pressure increase to slow and reverse. As the PORV releases coolant, the system pressure decreases until a reset pressure is reached and the valve is signaled to close. The pressure continues to decrease below the reset pressure as the valve closes.~~

Insert 1

(continued)

INSERT FOR BASES 3.4.13
BACKGROUND SECTION
(Units 1, 2, and 3)
INSERT 1

BACKGROUND

Shutdown Cooling System Suction Line Relief Valve Requirements

As designed for the LTOP System, each Shutdown Cooling System suction line relief valve is designed to lift and relieve RCS pressure if RCS pressure approaches the Shutdown Cooling System suction line relief valve lift setpoint.

Each Shutdown Cooling System suction line relief valve is designed to protect the reactor vessel given a single failure in addition to a failure that initiated the pressure transient. No single failure of a Shutdown Cooling system suction line relief valve isolation valve (SI-651, 652, 653, or 654) will prevent one Shutdown Cooling System suction line relief valve from performing its intended function (Ref. 7).

The OPERABILITY of two Shutdown Cooling System suction line relief valves, while maintaining the limits imposed on the RCS heatup and cooldown rates, ensures that the RCS will be protected from analyzed pressure transients. Either Shutdown Cooling System suction line relief valve provides overpressure protection for the RCS due to the most limiting transients initiated by a single operator or equipment failure.

a. The start of an idle RCP with secondary water temperature of the SG $\leq$ 100°F above RCS cold leg temperatures

b. An inadvertent SIAS with two HPSI pumps injecting into a water solid RCS, three charging pumps injecting, and letdown isolated.

These events are the most limiting energy and mass addition transients, respectively, when the RCS is at low temperatures (Refs. 7, 8, and 9).

When a Shutdown Cooling System suction line relief valve lifts due to an increasing pressure transient, the release of coolant causes the pressure increase to slow and reverse. As the Shutdown Cooling System suction

BACKGROUND (continued)

Shutdown Cooling System Suction Line Relief Valve Requirements

line relief valve releases coolant. the system pressure decreases until valve reseat pressure is reached and the Shutdown Cooling system suction line relief valve closes.

At low temperatures with the Shutdown Cooling System suction line relief valves aligned to the RCS, it is necessary to restrict heatup and cooldown rates to assure that P-T limits are not exceeded. These P-T limits are usually applicable to a finite time period such a one cycle, 5 EFPY, etc. and are based upon irradiation damage prediction by the end of the period. Accordingly, each time P-T limits change, the LTOP System needs to be re-analyzed and modified, if necessary, to continue its function.

BASES

BACKGROUND (continued)

RCS Vent Requirements

Once the RCS is depressurized, a vent exposed to the containment atmosphere will maintain the RCS at containment ambient pressure in an RCS overpressure transient, if the relieving requirements of the transient do not exceed the capabilities of the vent. Thus, the vent path must be capable of relieving the flow resulting from the limiting LTOP mass or heat input transient and maintaining pressure below the P/T limits. The required vent capacity may be provided by one or more vent paths.

For an RCS vent to meet the specified flow capacity, it requires removing ~~a~~ all pressurizer safety valves, removing a PORV's internals, and disabling its block valve in the open position, or similarly establishing a vent by opening an RCS vent valve. The vent path(s) must be above the level of reactor coolant, so as not to drain the RCS when open. 8

the pressurizer manway (Ref. 11).

APPLICABLE SAFETY ANALYSES

Safety analyses (Ref. 3) demonstrate that the reactor vessel is adequately protected against exceeding the Reference 1 P/T limits during shutdown. In MODES 1, 2, and 3, and in MODE 4 with any RCS cold leg temperature exceeding ~~[285] °F~~ 214 °F during cooldown or 291 °F during heatup, the pressurizer safety valves prevent RCS pressure from exceeding the Reference 1 limits. At about ~~[285]~~ 214 °F and below, overpressure prevention falls to the OPERABLE ~~PORVs~~ or to a depressurized RCS and a sufficient sized RCS vent. Each of these means has a limited overpressure relief capability. Shutdown Cooling System suction line relief valves 5

The actual temperature at which the pressure in the P/T limit curve falls below the pressurizer safety valve setpoint increases as the reactor vessel material toughness decreases due to neutron embrittlement. Each time the P/T limit curves are revised, the LTOP System will be re-evaluated to ensure its functional requirements can still be satisfied using the ~~PORV~~ Shutdown Cooling System suction line relief valve method or the depressurized and vented RCS condition. A

Reference 3 contains the acceptance limits that satisfy the LTOP requirements. Any change to the RCS must be evaluated against these analyses to determine the impact of the change on the LTOP acceptance limits.

during cooldown or 291°F and below during heatup 5

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

Transients that are capable of overpressurizing the RCS are categorized as either mass or heat input transients, examples of which follow:

Mass Input Type Transients

a. Inadvertent safety injection; or

b. Charging/letdown flow mismatch.

Heat Input Type Transients

a. Inadvertent actuation of pressurizer heaters;

b. Loss of shutdown cooling (SDC); or

c. Reactor coolant pump (RCP) startup with temperature asymmetry within the RCS or between the RCS and steam generators.

~~The following are required during the LTOP MODES to ensure that mass and heat input transients do not occur, which either of the LTOP overpressure protection means cannot handle:~~

~~a. Rendering all but one HPSI pump, and all but one charging pump incapable of injection; and~~

~~b. Deactivating the SIT discharge isolation valves in their closed positions.~~

2

~~The~~ Reference 3 analyses demonstrate that either one ~~PORV or~~ the RCS vent can maintain RCS pressure below limits when only one HPSI pump and one charging pump are actuated. Thus, the LCO allows only one HPSI pump and one charging pump OPERABLE during the LTOP MODES. Since neither the PORV nor the RCS vent can handle the pressure transient produced from accumulator injection, when RCS temperature is low, the LCO also requires the SITs isolation when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR.

7, 8 & 9

Shutdown Cooling System suction line relief valve

4

2

The isolated SITs must have their discharge valves closed and the valve power supply breakers fixed in their open positions. The analyses show the effect of SIT discharge is

Insert 1

(continued)

INSERT FOR BASES 3.4.13
APPLICABLE SAFETY ANALYSIS SECTION
(Units 1, 2, and 3)
INSERT 1

for the two most limiting analyzed events:

a. The start of an idle RCP with secondary water temperature of the SG $\leq$ 100°F above RCS cold leg temperatures
b. An inadvertent SIAS with two HPSI pumps injecting into a water solid RCS, three charging pumps injecting, and letdown isolated.

BASES

APPLICABLE SAFETY ANALYSES

Heat Input Type Transients (continued)

~~over a narrower RCS temperature range ([175]°F and below) than that of the LCO ([285]°F and below).~~ 2

Fracture mechanics analyses established the temperature of LTOP Applicability at ~~[285]~~ 214°F and below. Above ~~this~~ these temperatures the pressurizer safety valves provide the reactor vessel pressure protection. The vessel materials were assumed to have a neutron irradiation accumulation equal to ~~21~~ 32 effective full power years of operation, during cooldown, and 291°F and below during heatup. 5 The consequences of a small break loss of coolant accident (LOCA) in LTOP MODE 4 conform to 10 CFR 50.46 and 10 CFR 50, Appendix K (Refs. 4 and 5), ~~requirements by having a maximum of one HPSI pump and one charging pump OPERABLE and SI actuation enabled for these pumps.~~ 2

Shutdown Cooling System suction line relief valve 4

~~PORV~~ Performance

Shutdown Cooling System suction line relief valves

The fracture mechanics analyses show that the vessel is protected when the PORVs are set to open at or below ~~[450]~~ 467 psig. The setpoint is derived by modeling the performance of the LTOP System, assuming the limiting allowed LTOP transient, ~~of one HPSI pump and one charging pump injecting into the RCS. These analyses consider pressure overshoot and undershoot beyond the PORV opening and closing setpoints, resulting from signal processing and valve stroke times. The PORV setpoints at or below the derived limit ensure the Reference 1 limits will be met.~~ 2

The PORV setpoints will be re-evaluated for compliance when the revised P/T limits conflict with the LTOP analysis limits. The P/T limits are periodically modified as the reactor vessel material toughness decreases due to embrittlement caused by neutron irradiation. Revised P/T limits are determined using neutron fluence projections and the results of examinations of the reactor vessel material irradiation surveillance specimens. The Bases for LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," discuss these examinations.

Shutdown Cooling System suction line relief valves 4

The ~~PORVs~~ are considered active components. Thus, the failure of one ~~PORV~~ represents the worst case, single active failure.

Shutdown Cooling System suction line relief valve

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

RCS Vent Performance

With the RCS depressurized, analyses show a vent size of ~~[1.3]~~ 16 square inches is capable of mitigating the limiting allowed LTOP overpressure transient. In that event, this size vent maintains RCS pressure less than the ~~minimum~~ maximum RCS pressure on the P/T limit curve. 1

The RCS vent size will also be re-evaluated for compliance each time the P/T limit curves are revised based on the results of the vessel material surveillance.

The RCS vent is passive and is not subject to active failure.

LTOP System satisfies Criterion 2 of ~~the NRC Policy Statement.~~ 10CFR50.36(c)(2)(ii)

LCO

This LCO is required to ensure that the LTOP System is OPERABLE. The LTOP System is OPERABLE when the ~~minimum coolant input and~~ pressure relief capabilities are OPERABLE. Violation of this LCO could lead to the loss of low temperature overpressure mitigation and violation of the Reference 1 limits as a result of an operational transient. 2

~~To limit the coolant input capability, the LCO requires only one HPSI pump and one charging pump capable of injecting into the RCS and the SITs isolated when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR.~~

The elements of the LCO that provide overpressure mitigation through pressure relief are:

a. Two OPERABLE ~~PORVs~~ Shutdown Cooling System suction line relief valves; or 4

b. The depressurized RCS and an RCS vent. 7

~~A PORV~~ Shutdown Cooling System suction line relief valve is OPERABLE for LTOP when ~~its block valve is~~ isolation valves are open, its lift setpoint is set at ~~[450]~~ 467 psig or less and testing has proven its ability to open at that setpoint ~~and motive power is available to the two valves and their control circuits.~~ 4

(continued)

For an RCS vent to meet the specified flow capacity, it requires removing all pressurizer safety valves, or similarly establishing a vent by opening the pressurizer manway (Ref. 11). The vent path(s) must be above the level of reactor coolant, so as not to drain the RCS when open. (7)

BASES

LCO (continued)

An RCS vent is OPERABLE when open with an area ≥ ~~[1.3]~~ (16) square inches. (7)

Each of these methods of overpressure prevention is capable of mitigating the limiting LTOP transient.

(13) → Insert 2

APPLICABILITY

This LCO is applicable in MODE 4 when the temperature of any RCS cold leg is ≤ ~~[285]°F~~ 214°F during cooldown or ≤ 291°F during heatup (5) in MODE 5, and in MODE 6 when the reactor vessel head is on. The pressurizer safety valves provide overpressure protection that meets the Reference 1 P/T limits above ~~[285]°F and below.~~ When the reactor vessel head is off, overpressurization cannot occur.

(15) The requirements for overpressure protection in MODES 1, 2 and 3, and in MODE 4 above LTOP System temperatures are covered by LCO 3.4.10, "Pressurizer Safety Valves - MODES 1, 2 and 3," and LCO 3.4.11, "Pressurizer Safety Valves - MODE 4."

LCO 3.4.3 provides the operational P/T limits for all MODES.

~~LCO 3.4.10, "Pressurizer Safety Valves," requires the OPERABILITY of the pressurizer safety valves that provide overpressure protection during MODES 1, 2, and 3, and MODE 4 above [285]°F.~~ (15)

Low temperature overpressure prevention is most critical during shutdown when the RCS is water solid, and a mass or heat input transient can cause a very rapid increase in RCS pressure when little or no time allows operator action to mitigate the event.

Insert 1 (9)

~~The Applicability is modified by a Note stating that SIT isolation is only required when the SIT pressure is greater than or equal to the RCS pressure for the existing temperature, as allowed by the P/T limit curves provided in the PTLR. This Note permits the SIT discharge valve surveillance performed only under these pressure and temperature conditions.~~ (2)

ACTIONS

~~A.1 and B.1~~

~~With two or more HPSI pumps capable of injecting into the RCS, overpressurization is possible.~~

~~The immediate Completion Time to initiate actions to restore restricted coolant input capability to the RCS reflects the importance of maintaining overpressure protection of the RCS.~~ (2)

(continued)

INSERT FOR BASES 3.4.13
APPLICABILITY SECTION
(Units 1, 2, and 3)

INSERT 1

stating when one or more cold legs reach 214°F, this LCO remains applicable during periods of steady state temperature conditions until all RCS cold leg temperatures reach 291°F. Also, if a cooldown is terminated prior to reaching 214°F and a heatup is commenced, this LCO is applicable until all RCS cold leg temperatures reach 291°F. This Note provides clarification about Applicability intent. Since PVNGS uses two different temperatures at which the Shutdown Cooling System suction line relief valves must be placed in service there is some possibility of confusion. This Note clarifies those circumstances where the Shutdown Cooling System suction line relief valves must be placed in service.

LCO SECTION

INSERT 2

Note 2 requires that, before an RCP may be started, the secondary side water temperature (saturation temperature corresponding to SG pressure) in each SG is $\leq$100°F above each of the RCS cold leg temperatures. Satisfying this condition will preclude a large pressure surge in the RCS when the RCP is started.

BASES

ACTIONS

A.1 and B.1 (continued)

Required Action B.1 is modified by a Note that permits two charging pumps capable of RCS injection for ≤ 15 minutes to allow for pump swaps.

C.1, D.1, and D.2

An unisolated SIT requires isolation within 1 hour. This is only required when the SIT pressure is greater than or equal to the maximum RCS pressure for the existing cold leg temperature allowed in the PTLR.

If isolation is needed and cannot be accomplished within 1 hour, Required Action D.1 and Required Action D.2 provide two options, either of which must be performed within 12 hours. By increasing the RCS temperature to > [175]°F, a SIT pressure of [600] psig cannot exceed the LTOP limits if the tanks are fully injected. Depressurizing the SIT below the LTOP limit stated in the PTLR also protects against such an event.

The Completion Times are based on operating experience that these activities can be accomplished in these time periods and on engineering evaluations indicating that an event requiring LTOP is not likely in the allowed times.

The required ACTION is modified by a Note stating that LCO 3.0.4 is not applicable

E.1

Shutdown Cooling System suction line relief valves

In MODE 4 when any RCS cold leg temperature is ≤ ~~[285]~~ 214°F during cooldown or ≤ 291°F during heatup with one ~~PORV~~ inoperable, two ~~PORVs~~ must be restored to OPERABLE status within a Completion Time of 7 days. Two valves are required to meet the LCO requirement and to provide low temperature overpressure mitigation while withstanding a single failure of an active component.

Shutdown Cooling System suction line relief valve

The Completion Time is based on the facts that only one ~~PORV~~ is required to mitigate an overpressure transient and that the likelihood of an active failure of the remaining valve path during this time period is very low.

(continued)

BASES

ACTIONS (continued)

~~F.1~~ 1

The consequences of operational events that will overpressure the RCS are more severe at lower temperature (Ref. 6). Thus, one required ~~PORV~~ inoperable in MODE 5 or in MODE 6 with the head on, the Completion Time to restore ~~two~~ valve~~s~~ to OPERABLE status is 24 hours. inoperable 1

Shutdown Cooling System suction line relief valves

The 24 hour Completion Time to restore two ~~PORVs~~ OPERABLE in MODE 5 or in MODE 6 when the vessel head is on is a reasonable amount of time to investigate and repair several types of ~~PORV~~ failures without exposure to a lengthy period with only one ~~PORV~~ OPERABLE to protect against overpressure events. 4

Shutdown Cooling System suction line relief valve

1 ~~G~~ ~~H~~.1

14

For personnel safety considerations, the RCS cold leg temperature must be reduced to less than 200°F prior to venting.

If two required ~~PORVs~~ are inoperable, or if a Required ~~G~~ Action and the associated Completion Time of Condition A, B, ~~D, E, or F~~ are not met, or if the LTOP System is inoperable for any reason other than Condition A through Condition E, the RCS must be depressurized and a vent established within 8 hours. The vent must be sized at least ~~[1.3]~~ 160 square 7 inches to ensure the flow capacity is greater than that required for the worst case mass input transient reasonable during the applicable MODES. This action protects the RCPB from a low temperature overpressure event and a possible brittle failure of the reactor vessel.

The Completion Time of 8 hours to depressurize and vent the RCS is based on the time required to place the plant in this condition and the relatively low probability of an overpressure event during this time period due to increased operator awareness of administrative control requirements.

SURVEILLANCE REQUIREMENTS

~~SR 3.4.12.1, SR 3.4.12.2, and SR 3.4.12.3~~

~~To minimize the potential for a low temperature overpressure event by limiting the mass input capability, only one HPSI pump and all but [one] charging pump are verified OPERABLE with the other pumps locked out with power removed and the SIT discharge incapable of injecting into the RCS. The [HPI] pump[s] and charging pump[s] are rendered incapable~~ 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.12.1, SR 3.4.12.2, and SR 3.4.12.3 (continued)

of injecting into the RCS through removing the power from the pumps by racking the breakers out under administrative control. An alternate method of LTOP control may be employed using at least two independent means to prevent a pump start such that a single failure or single action will not result in an injection into the RCS. This may be accomplished through the pump control switch being placed in [pull to lock] and at least one valve in the discharge flow path being closed.

The 12 hour interval considers operating practice to regularly assess potential degradation and to verify operation within the safety analysis.

2

SR 3.4.~~10.1~~ 12.1 and SR 3.4.12.2 or that the Shutdown Cooling System suction line relief valves be aligned to provide overpressure protection for the RCS

4

SR 3.4.~~10.1~~ 12.1 requires verifying that the RCS vent is open ≥ ~~[1.3]~~ square inches is proven OPERABLE by verifying its open condition either:

7 1 16

Shutdown Cooling System suction relief valves

a. Once every 12 hours for a valve that is unlocked, open; pathway in the vent pathway

or unsealed, or otherwise unsecured

b. Once every 31 days for a valve that is locked, open. in the vent pathway

sealed, or otherwise secured

6

1 12

The passive vent arrangement must only be open to be OPERABLE. ~~This~~ Those Surveillances need only be performed if the vent pathway exists vent ~~is~~ being used to satisfy the requirements of this LCO.

1 1

The Frequencies consider operating experience with mispositioning of unlocked and locked vent valves, respectively and passive vent pathway obstructions or the Shutdown Cooling System suction line relief valves are

pathway 6 12

Insert 1 1 12

SR 3.4.12.5

The PORV block valve must be verified open every 72 hours to provide the flow path for each required PORV to perform its function when actuated. The valve can be remotely verified open in the main control room.

The block valve is a remotely controlled, motor operated valve. The power to the valve motor operator is not required to be removed, and the manual actuator is not required

4

(continued)

INSERT FOR BASES 3.4.13
SURVEILLANCE REQUIREMENTS SECTION
(Units 1, 2, and 3)

INSERT 1

RCS Vent

a. Once every 12 hours for a vent pathway that is unlocked, not sealed, or otherwise not secured open, or

b. Once every 31 days for a vent pathway that is locked, sealed, or otherwise secured open.

For an RCS vent to meet the specified flow capacity, it requires removing all pressurizer safety valves, or similarly establishing a vent by opening the pressurizer manway (Ref. 11). The vent path(s) must be above the level of reactor coolant, so as not to drain the RCS when open.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.12.5 (continued)

locked in the inactive position. Thus, the block valve can be closed in the event the PORV develops excessive leakage or does not close (sticks open) after relieving an overpressure event.

The 72 hour Frequency considers operating experience with accidental movement of valves having remote control and position indication capabilities available where easily monitored. These considerations include the administrative controls over main control room access and equipment control.

SR 3.4.12.6

Performance of a CHANNEL FUNCTIONAL TEST is required every 31 days to verify and, as necessary, adjust the PORV open setpoints. The CHANNEL FUNCTIONAL TEST will verify on a monthly basis that the PORV lift setpoints are within the LCO limit. PORV actuation could depressurize the RCS and is not required. The 31 day Frequency considers experience with equipment reliability.

A Note has been added indicating this SR is required to be performed [12] hours after decreasing RCS cold leg temperature to ≤ [285]°F. The test cannot be performed until the RCS is in the LTOP MODES when the PORV lift setpoint can be reduced to the LTOP setting. The test must be performed within 12 hours after entering the LTOP MODES.

4

SR 3.4.12.7

Performance of a CHANNEL CALIBRATION on each required PORV actuation channel is required every [18] months to adjust the whole channel so that it responds and the valve opens within the required LTOP range and with accuracy to known input.

The [18] month Frequency considers operating experience with equipment reliability and matches the typical refueling outage schedule.

Insert 2

4

(continued)

INSERT FOR BASES 3.4.13
SURVEILLANCE REQUIREMENTS SECTION
(Units 1, 2, and 3)
INSERT 2

SR 3.4.13.3

SRs are specified in the Inservice testing Program. Shutdown Cooling System suction line relief valves are to be tested in accordance with the requirements of Section Xl of the ASME Code (Ref. 10), which provides the activities and Frequency necessary to satisfy the SRs. The Shutdown Cooling System suction line relief valve set point is 467 psig.

BASES (continued)

REFERENCES

1. 10 CFR 50, Appendix G.
2. Generic Letter 88-11.
3. FSAR, Section ~~15~~ 7 U.
4. 10 CFR 50.46.
5. 10 CFR 50, Appendix K.
6. Generic Letter 90-06.
7. UFSAR, Section 5.2
8. V-PSAC-009, Pressure Transient Analysis 2
9. V-PSAC-010, Mass Input Pressure Transient in Water Solid RCS
10. ASME, Boiler and Pressure Vessel Code, Section XI. 4
11. 13-CCO-93-016, Sensitivity study on Pressurizer Vent Paths vs. Days Post Shutdown. 8

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.13

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

2. NUREG-1432, 3.4.13 has various restrictions on operation of HPSI pumps, charging pumps, and SITs to prevent exceeding the relief capacity of the LTOP System and, thus, overpressurize the RCS. ITS 3.4.13 has no such restrictions. The only limitation concerns cold leg temperature versus SG temperature for RCP operation which is restricted by the note under ITS LCO 3.4.13 (as described in Exception No. 13). UFSAR Section 5.2 provides the analysis that supports these statements. This is acceptable because operation of this equipment is either controlled via plant procedures (Licensee Controlled Document) or within the design relief capacity of the PVNGS LTOP System. Plant procedures contain direction to remove from service both HPSI pumps in Mode 5, restrict RCP operation based on cold leg temperature versus SG temperature differential, and to depressurize and isolate the SITs.

   References in ITS 3.4.13 in the LCO, Applicability Note, Actions, SRs, and Bases to HPSI pumps, charging pumps, or SITs that are not applicable to PVNGS based on the preceding discussion have been have been removed. This change is consistent with PVNGS licensing basis. The bases has also been revised to be consistent with the LCO.

3. ITS 3.4.13 contains additional information stating that the Shutdown Cooling System suction line relief valves must be aligned to provide overpressure protection for the RCS. This additional requirement does not exist in NUREG-1432. In NUREG-1432 low temperature overpressure protection is provided by PORVs with reduced settings that have no isolation valves from the RCS. At PVNGS this function is performed by Shutdown Cooling System suction relief valves that are isolable from the RCS via valves SI-651, 652, 653, and 654. Therefore, for the Shutdown Cooling System suction line relief valves to be OPERABLE they must also be aligned to provide overpressure protection for the RCS as well as having lift setting $\leq$ 467 psig. This change is consistent with PVNGS licensing bases. The bases has also been revised to be consistent with the LCO.

4. NUREG-1432, 3.4.13 specifically references PORVs throughout the Specification. ITS 3.4.13 makes no references to PORVs because PVNGS does not have PORVs. PVNGS uses Shutdown Cooling System suction line relief valves to perform the function of low temperature overpressure protection. The Shutdown Cooling System suction line relief valves are spring-loaded liquid relief valves that are isolable from the RCS via SI-651, 652, 653, and 654. ITS 3.4.13 is modified throughout (LCO, Actions, SRs, and Bases) to reflect PVNGS licensing basis. This change is consistent with PVNGS licensing basis. The bases has also been revised to be consistent with the LCO.

5. NUREG-1432, 3.4.13 uses Mode 4 when any RCS temperature is ≤ [285]°F as part of the Applicability. ITS 3.4.13 uses Mode 4 when any RCS cold leg temperature ≤ 214°F during cooldown and MODE 4 when any RCS cold leg temperature ≤ 291°F during heatup as part of the Applicability. This change is acceptable because PVNGS uses two temperatures for LTOP System Applicability in MODE 4 dependent on whether a cooldown or heatup was in progress. This is acceptable because these temperatures reflect the metallurgical characteristics of the PVNGS reactor vessel. Because of the different thermal/hydraulic stresses applied to the reactor vessel, depending whether a cooldown or heatup is occurring, two different temperatures are used to reflect the transition point from ductile to brittle failure. Hence, there are two different temperatures, depending whether a cooldown or heatup is occurring, where L-TOPs are required to be OPERABLE and in service. This change provides plant specific information that is dependent on reactor vessel neutron embrittlement. This change is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

6. ITS SRs 3.4.13.1 and 3.4.13.2 provide additional descriptive information, "not sealed, or otherwise not secured", about the "vent pathway" that more clearly defines intent of the surveillance. This information does not exist in the NUREG-1432. The additional information serves to clarify the intent of the SR by emphasizing the importance of an open pathway in order to provide overpressure protection for the RCS. This is especially important for Shutdown Cooling System suction line relief valves because they can be physically isolated from the RCS via valves SI-651, 652, 653, and 654. This change is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

7. 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 are directly transferred from the CTS to the ITS.

8. NUREG-1432, 3.4.13 Bases states that for an RCS vent to meet the specified flow capacity, it requires removing a pressurizer safety valve, removing a PORV's internals and disabling its block valve in the open position, or similarly establishing a vent by opening an RCS vent valve. ITS 3.4.13 requires the removal of all four pressurizer safety valves or removal of the pressurizer manway to meet the required 16 sq. in. RCS vent requirement. Calculation and Sensitivity Study on Pressurizer Vent Paths vs. Days Post Shutdown and Hot Leg Path FME Device Requirements, provide this plant specific information. This change is consistent with PVNGS licensing basis.

9. ITS 3.4.13 uses an Applicability Note that clarifies usage and intent of Mode 4 Applicability. NUREG-1432, 3.4.13 has no such Note. Because PVNGS uses two different temperatures to place the Shutdown Cooling System suction line relief valves in service, there exists the possibility of confusion in interpreting Mode 4 Applicability. This Note clarifies those circumstances where the Shutdown Cooling System suction line relief valves must be placed in service. This change is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

10. NOT USED

11. NUREG-1432, 3.4.13, uses an Action that states, "LTOP System inoperable for any reason other than Condition ..." ITS 3.4.13 does not use this Action. Realistically, there are no conditions where this Action will be of use to PVNGS. PVNGS uses mechanical relief valves rather than PORVs that have electronically modified setpoints. PVNGS Shutdown Cooling System suction line relief valves are adequately addressed by ITS 3.4.13 Actions. This change is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

12. ITS SR 3.4.13.1 removes all references to "valves" in the SR and Surveillance Bases. The RCS vent path used at PVNGS has no valves in the vent pathway. Instead the Surveillance requires that the vent pathway be checked open. This is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

13. ITS LCO 3.4.13 Applicability Note 2 specifies that no RCP shall be started unless the secondary side water temperature in each steam generator is < 100°F above each of the RCS cold leg temperatures. NUREG-1432 does not contain this restriction. This restriction is necessary to preclude a large pressure surge in the RCS when the RCP is started. This restriction is in CTS 3.4.8.3, Actions a, b, and c, and is consistent with the restrictions in ITS 3.4.6, Note 2, and 3.4.7, Note 3. The Bases has also been revised to be consistent with this note. The requirement in this Note is consistent with the PVNGS licensing basis.

14. ITS 3.4.13 Action C.1 Bases contains guidance to reduce RCS cold leg temperature to less than 200°F prior to venting for personnel safety considerations. NUREG-1432 does not contain this guidance. This is relocated from CTS 3.4.8.3. actions b and c, as addressed in the Discussion of Changes (DOC) for ITS 3.4.13, LA.2. This is consistent with PVNGS licensing basis.

15. NUREG-1432 Bases 3.4.12 Applicability provides an unnecessarily complex level of detail to describe when LCO 3.4.12 is not applicable. ITS Bases 3.4.13 (developed from NUREG Bases 3.4.12) uses a more simple approach used elsewhere in the NUREG Bases (e.g., 3.9.4 and 3.9.5 Bases) to describe that the requirements for overpressure protection in other MODES are covered by LCOs 3.4.10 and 3.4.11.

16. ITS 3.4.13 Action A.1 contains a Note stating that LCO 3.04 is not applicable. NUREG-1432 (source for ITS 3.4.13) does not contain this exception. This exception is included in CTS 3.4.8.3, Action f, and is therefore consistent with PVNGS licensing basis.

PVNGS CTS
SPECIFICATION 3.4.13
MARK UP

An LTOP System shall be OPERABLE consisting of: (A.1)

3.4 REACTOR COOLANT SYSTEM (RCS)

~~OVERPRESSURE PROTECTION SYSTEMS~~

3.4.13 Low Temperature Overpressure Protection (LTOP) System

LIMITING CONDITION FOR OPERATION

LCO 3.4.13

~~3.4.8.3~~ Both shutdown cooling system (SCS) suction line relief valves with a lift settings of less than or equal to 467 psig shall be OPERABLE and aligned to provide overpressure protection for the Reactor Coolant System.

b. The RCS depressurized and an RCS vent of 2 16 square inches (L.2)

APPLICABILITY: When the reactor vessel head is installed and the temperature of one or more of the RCS cold legs is less than or equal to:

X. ≤ 214°F during cooldown (MODE 4 when any RCS cold leg temperature is) — MODE 5

X. ≤ 291°F during heatup (MODE 4 when any RCS cold leg temperature is) — MODE 6 when the reactor vessel head is on.

Applicability NOTE: ~~In addition, once~~ When one or more cold legs reach 214°F, this LCO remains applicable during periods of steady state temperature conditions until all RCS cold legs reach 291°F. If a cooldown is terminated prior to reaching 214°F and a heatup is commenced, this LCO is applicable until all RCS cold legs reach 291°F. (A.2)

ACTION:

ACT A — X. With one SCS relief valve inoperable in MODE 4, restore the inoperable valve to OPERABLE status within 7 days or depressurize and vent the RCS through at least a 16 square inch vent(s) within the next 8 hours. ~~Do not start a~~ No reactor coolant pump ~~if~~ the steam generator water temperature is ~~greater than~~ ≤ 100°F above any RCS cold leg temperature (A.4)

ACT C — LCO Note: shall be started unless

ACT B — X. With one SCS relief valve inoperable in MODES 5 or 6, either (1) restore the inoperable valve to OPERABLE status within 24 hours or (2) ~~reduce T_{cold} to less than 200°F and,~~ complete depressurization and venting of the RCS through at least a 16 square inch vent(s) within a total of 32 hours. ~~Do not start a~~ No reactor coolant pump ~~if~~ the steam generator secondary water temperature is ~~greater than~~ ≤ 100°F above any RCS cold leg temperature. (A.4) (LA.2)

Req Act C — LCO Note: shall be started unless

ACT C — X. With both SCS relief valves inoperable, ~~reduce T_{cold} to less than 200°F and,~~ depressurize and vent the RCS through a greater than or equal to 16 square inch vent(s) within eight hours. ~~Do not start a~~ No reactor coolant pump ~~if~~ the steam generator secondary water temperature is ~~greater than~~ ≤ 100°F above any RCS cold leg temperature. (A.4) (LA.2)

LCO Note: shall be started unless

SR 3.4.12.1 — X. ~~With the RCS vented per ACTIONS a, b, or c,~~ verify the vent pathway at least once per 31 days when the pathway ~~is provided by a valve(s) that~~ is locked, sealed, or otherwise secured in the open position; otherwise, verify the vent pathway every 12 hours. (L.1)

Specification 3.4.10
(3.4.13 / 5.6.4)

3.4 REACTOR COOLANT SYSTEM (RCS)

A.1

~~OVERPRESSURE PROTECTION SYSTEMS~~

3.4.13 Low Temperature Overpressure Protection (LTOP) System

~~LIMITING CONDITION FOR OPERATION (Continued)~~

ITS 3.4.13

ITS 5.6.4 e. In the event either the SCS suction line relief valves or an RCS vent(s) are used to mitigate an RCS pressure transient, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days. The report shall describe the circumstances initiating the transient, the effect of the SCS suction line relief valves or RCS vent(s) on the transient and any corrective action necessary to prevent recurrence.

ITS 5.6.4

ITS 3.4.13 f. The provisions of Specification 3.0.4 are not applicable.

A.3

SURVEILLANCE REQUIREMENTS

SR 3.4.13.2 ~~4.4.8.3.1~~ Each SCS suction line relief valve shall be verified to be aligned to provide overpressure protection for the RCS at least once per 31 days when the pathway is provided by a valve(s) that is locked, sealed, or otherwise secured in the open position; otherwise verify alignment every 12 hours.

SR 3.4.13.3 ~~4.4.8.3.2~~ The SCS suction line relief valves shall be verified OPERABLE with the required setpoints ~~at least once per 18 months~~.

in accordance with the Inservice Testing Program

LA.3

DISCUSSION OF CHANGES
SPECIFICATION 3.4.13

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 CTS 3.4.8.3 uses two different temperatures to place the Shutdown Cooling System suction line relief valves in service, therefore, there exists the possibility of confusion in interpreting Mode 4 Applicability. CTS 3.4.8.3 clarifies those circumstances of when the Shutdown Cooling System suction line relief valves must be placed in service with additional information in the Applicability Statement. ITS 3.4.13 will retain this information in the format of a Note. This information does not add any additional requirements or delete any existing requirements. Therefore, addition of this information in the format of a Note to ITS 3.4.13 is administrative in nature. This is consistent with PVNGS licensing basis.

A.3 CTS 3.4.8.3 states that the provisions of 3.0.4 are not applicable to this Specification. ITS has no such statement in 3.4.13. ITS 3.0.4 has an exclusion that states Mode 5 and Mode 6 are not applicable. CTS 3.0.4 has no such exclusion within its definition. CTS 3.0.4 is applicable in all Modes unless specifically excluded within the LCO (e.g. CTS 3.4.8.3) itself. Therefore, it is not necessary to state 3.0.4 exclusion in ITS 3.4.13 since, within the definition of ITS 3.0.4, Mode 5 and Mode 6 are excluded. This change is consistent with NUREG-1432.

ADMINISTRATIVE CHANGES (continued)

A.4 CTS 3.4.8.3 Actions a, b and c prohibit starting an RCP if the SG secondary water temperature is greater than 100°F above any RCS cold leg temperature. This requirement is specified in ITS 3.4.12 LCO Note with editorial rewording to be consistent with NUREG-1432 wording preferences and Notes for ITS LCO 3.4.6 and 3.4.7. This is consistent with the PVNGS licensing basis.

TECHNICAL CHANGES - MORE RESTRICTIVE

None

TECHNICAL CHANGES - RELOCATIONS

LA.1 NOT USED

LA.2 CTS 3.4.8.3, Actions b and c, states that with one Shutdown Cooling System suction line relief valve not Operable in Modes 5 or 6, either (1) restore the valve to Operable status within 24 hours or reduce cold leg temperature to less than 200°F, and complete depressurization and venting the RCS through at least 16 sq. in. vent(s) within a total of 32 hours. ITS does not include the requirement to reduce cold leg temperature below 200°F. This requirement is a personnel safety issue rather than directly relating to any safety analysis. This requirement is not required to determine the Operability of a system, component or structure and therefore is being relocated to the ITS Bases 3.4.13, Action C.1. In addition, this information does not meet the 10 CFR 50.36 (c) (2) (ii) criterion for inclusion in the ITS.

Any changes to the Bases Section will be in accordance with ITS 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 the ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS (continued)

LA.3 CTS 3.4.8.3 requires that the Shutdown Cooling System suction line relief valves be verified Operable every 18 months. ITS 3.4.13 requires that Operability be verified in accordance with the Inservice Testing Program. Information concerning Frequency performance for this type of valve is better located in the Inservice Testing Program. Other safety valves, pressurizer safety valves and main steam safety valves, have their frequencies located in the Inservice Testing Program as well. Frequency performance is not required to determine the OPERABILITY of a system, component or structure and therefore is being relocated to a Licensee Controlled Document (Inservice Test Program).

Any technical changes to the Inservice Test Program will be in accordance with the 10 CFR 50.55a. 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 the ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 CTS does not address the fact that there are no valves in the RCS vent pathway. CTS requires verification of the RCS vent pathway every 12 hours if the pathway is not provided by a valve that is locked, sealed, or otherwise secured in the open position. ITS 3.4.13 would require that the vent pathway be locked, sealed, or otherwise secured in the open position. This allows compliance with ITS SR 3.4.13.1 on a 31 day Frequency vs. 12 hour Frequency. This is not possible in CTS because there do not exist any valves in the RCS vent pathway, hence, the SR is performed on a 12 hour Frequency. The 12 hour Frequency is based on operating experience with mispositioning of unlocked vent valves. As stated earlier, PVNGS has no valves in the RCS vent pathway. Allowing the RCS vent pathway to be locked, sealed, or otherwise secured in the open position is a less restrictive change. This change is acceptable because the intent is to verify an RCS vent pathway open to atmosphere for overpressure protection. Whether there is a valve open in the vent pathway or the vent pathway is unobstructed the result is the same. Also, the SR frequencies are the same as though a valve existed in the vent pathway. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.2 The purpose of CTS LCO 3.4.8.3, according to CTS Bases 3/4.4.8, is to ensure that the RCS will be protected from pressure transients which could exceed the limits of 10 CFR 50, Appendix G, "Fracture Toughness Requirements." Although CTS 3.4.8.3 does not have the provision for a depressurized RCS and a 16 square-inch vent in the LCO, CTS 3.4.8.3 ACTIONS a, b, and c result in relying on a depressurized and vented RCS for overpressure prevention with SCS relief valve(s) inoperable. ITS LCO 3.4.13 ACTION C.1 also results in relying on a depressurized and vented RCS for overpressure prevention with SCS relief valve(s) inoperable. As stated in ITS Bases B3.4.13, LCO, this overpressure prevention is provided by either the SCS suction line relief valves or a depressurized RCS with a 16 square-inch RCS vent. By including the provision for a depressurized RCS with a 16 square-inch RCS vent in ITS LCO 3.4.13, compliance with the ACTIONS when the SCS relief valves are inoperable will result in a plant condition where the plant is in compliance with the TS, without requiring the unnecessary removal of the reactor vessel head. Also, including the provision for a depressurized RCS with a 16 square-inch RCS vent in ITS LCO 3.4.13 will allow entry into a MODE of Applicability of ITS LCO 3.4.13 with one or more SCS relief valves inoperable, as long as the RCS is depressurized and the required vent is established. This is acceptable because the depressurized and vented RCS (in accordance with the ITS LCO) will be prevented from exceeding P/T limits. This change is consistent with NUREG-1432.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.13

ADMINISTRATIVE CHANGES
(ITS 3.4.13 Discussion of Changes Labeled A.1, A.2 and A.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, "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 Section/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 Section/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 3.4.13 Discussion of Changes Labeled (A.1, A.2 and A.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 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 3.4.13 Discussion of Changes Labeled LA.2, and LA.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 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 3.4.13 Discussion of Changes Labeled LA.2, and LA.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 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 submittal, 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.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.13 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 CTS does not address the fact that there are no valves in the RCS vent pathway. CTS requires verification of the RCS vent pathway every 12 hours if the pathway is not provided by a valve that is locked, sealed, or otherwise secured in the open position. ITS 3.4.13 would require that the vent pathway be locked, sealed, or otherwise secured in the open position. This allows compliance with ITS SR 3.4.13.1 on a 31 day Frequency vs. 12 hour Frequency. This is not possible in CTS because there do not exist any valves in the RCS vent pathway, hence, the SR is performed on a 12 hour Frequency. The 12 hour Frequency is based on operating experience with mispositioning of unlocked vent valves. As stated earlier, PVNGS has no valves in the RCS vent pathway. Allowing the RCS vent pathway to be locked, sealed, or otherwise secured in the open position is a less restrictive change. This change is acceptable because the intent is to verify an RCS vent pathway open to atmosphere for overpressure protection. Whether there is a valve open in the vent pathway or the vent pathway is unobstructed the result is the same. Also, the SR frequencies are the same as though a valve existed in the vent pathway. 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 3.4.13 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 proposed change allows the verification that the RCS vent pathway is secured in the open position as opposed to verifying that a vent valve is secured in the open position. The opening must be greater than or equal to 16 square inches to ensure that the RCS is protected from over pressurization. This change does not alter the verification that the RCS will be vented adequately. This change does not affect the probability of an accident. This change does not alter assumptions relative to mitigation of an accident or transient event. This change does not impact an initiator of any analyzed event. The consequences of an accident are not significantly affected by this change. 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 allows the verification that the RCS vent pathway is secured in the open position as opposed to verifying that a vent valve is secured in the open position. The opening must be greater than or equal to 16 square inches to ensure that the RCS is protected from over pressurization. This change does not alter the verification that the RCS will be vented adequately. This change does not physically alter the plant and there is no new or different type of equipment 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 3.4.13 Discussion of Changes Labeled L.1) (continued)

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

The proposed change allows the verification that the RCS vent pathway is secured in the open position as opposed to verifying that a vent valve is secured in the open position. The opening must be greater than or equal to 16 square inches to ensure that the RCS is protected from over pressurization. The margin of safety is not affected by this change. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.13 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 the conversion to NUREG 1432.

L.2 The purpose of CTS LCO 3.4.8.3, according to CTS Bases 3/4.4.8, is to ensure that the RCS will be protected from pressure transients which could exceed the limits of 10 CFR 50, Appendix G, "Fracture Toughness Requirements." Although CTS 3.4.8.3 does not have the provision for a depressurized RCS and a 16 square-inch vent in the LCO, CTS 3.4.8.3 ACTIONS a, b, and c result in relying on a depressurized and vented RCS for overpressure prevention with SCS relief valve(s) inoperable. ITS LCO 3.4.13 ACTION C.1 also results in relying on a depressurized and vented RCS for overpressure prevention with SCS relief valve(s) inoperable. As stated in ITS Bases B3.4.13, LCO, this overpressure prevention is provided by either the SCS suction line relief valves or a depressurized RCS with a 16 square-inch RCS vent. By including the provision for a depressurized RCS with a 16 square-inch RCS vent in ITS LCO 3.4.13, compliance with the ACTIONS when the SCS relief valves are inoperable will result in a plant condition where the plant is in compliance with the TS, without requiring the unnecessary removal of the reactor vessel head. Also, including the provision for a depressurized RCS with a 16 square-inch RCS vent in ITS LCO 3.4.13 will allow entry into a MODE of Applicability of ITS LCO 3.4.13 with one or more SCS relief valves inoperable, as long as the RCS is depressurized and the required vent is established. This is acceptable because the depressurized and vented RCS (in accordance with the ITS LCO) will be prevented from exceeding P/T limits. 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 3.4.13 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 allows the provision for a depressurized RCS and a 16 square-inch vent as an alternative to two OPERABLE SCS system suction line relief valves to provide overpressure protection for the RCS in ITS LCO 3.4.13. The purpose of the OPERABLE SCS suction line relief valves is to ensure that the RCS will be protected from pressure transients which could exceed the limits of 10 CFR 50, Appendix G, "Fracture Toughness Requirements." The requirement to depressurize and vent the RCS ensures the same protection. With the RCS depressurized, analyses show a vent size of 16 square inches is capable of mitigating the limiting allowed LTOP overpressure transient. In that event, this size vent maintains RCS pressure less than the maximum RCS pressure on the P/T limit curve. This change does not impact an initiator of any analyzed event. The consequences of an accident are not significantly affected by this change. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.13 Discussion of Changes Labeled L.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 change allows the provision for a depressurized RCS and a 16 square-inch vent as an alternative to two OPERABLE SCS system suction line relief valves to provide overpressure protection for the RCS in ITS LCO 3.4.13. The purpose of the OPERABLE SCS suction line relief valves is to ensure that the RCS will be protected from pressure transients which could exceed the limits of 10 CFR 50, Appendix G, "Fracture Toughness Requirements." The requirement to depressurize and vent the RCS ensures the same protection. With the RCS depressurized, analyses show a vent size of 16 square inches is capable of mitigating the limiting allowed LTOP overpressure transient. In that event, this size vent maintains RCS pressure less than the maximum RCS pressure on the P/T limit curve. Although CTS 3.4.8.3 does not have the provision for a depressurized RCS and a 16 square-inch vent in the LCO, CTS 3.4.8.3 ACTIONS a, b, and c result in relying on a depressurized and vented RCS for overpressure prevention with SCS relief valve(s) inoperable. ITS LCO 3.4.13 ACTION C.1 also results in relying on a depressurized and vented RCS for overpressure prevention with SCS relief valve(s) inoperable. As stated in ITS Bases B3.4.13, LCO, this overpressure prevention is provided by either the SCS suction line relief valves or a depressurized RCS with a 16 square-inch RCS vent. This change does not physically alter the plant and there is no new or different type of structures, systems or components installed. The change does not require any new or different operator actions. Therefore, this proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.13 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 allows the provision for a depressurized RCS and a 16 square-inch vent as an alternative to two OPERABLE SCS system suction line relief valves to provide overpressure protection for the RCS in ITS LCO 3.4.13. The purpose of the OPERABLE SCS suction line relief valves is to ensure that the RCS will be protected from pressure transients which could exceed the limits of 10 CFR 50, Appendix G, "Fracture Toughness Requirements." The requirement to depressurize and vent the RCS ensures the same protection. With the RCS depressurized, analyses show a vent size of 16 square inches is capable of mitigating the limiting allowed LTOP overpressure transient. In that event, this size vent maintains RCS pressure less than the maximum RCS pressure on the P/T limit curve. The margin of safety is not affected by this change. Therefore, the proposed change does not involve a significant reduction in the margin of safety.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.14
MARK UP

<DOC>
<CTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.~~13~~ 14 RCS Operational LEAKAGE

LCO 3.4.~~13~~ 14 RCS operational LEAKAGE shall be limited to:

<3.4.5.2.a> a. No pressure boundary LEAKAGE;

<3.4.5.2.b> b. 1 gpm unidentified LEAKAGE;

<3.4.5.2.d> c. 10 gpm identified LEAKAGE;

<3.4.5.2.C> d. 1 gpm total primary to secondary LEAKAGE through all steam generators (SGs); and

<3.4.5.2.c> e. ~~720~~ 1 gallons per day primary to secondary LEAKAGE through any one SG.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<Act b.> A. RCS LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE.	A.1 Reduce LEAKAGE to within limits.	4 hours
<Act b.> B. Required Action and associated Completion Time of Condition A not met. OR <Act a.> Pressure boundary LEAKAGE exists.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

Insert 1

INSERT FOR ITS 3.4.14
ACTION C
(Units 1, 2, and 3)
INSERT 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more SGs inoperable.	C.1 Enter 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
4.4.5.2 FOOTNOTE **	SR 3.4.~~13~~.1 14 3	----------NOTE---------- Not required to be performed in MODE 3 or 4 until 12 hours of steady state operation. ----------	-----NOTE------ Only required to be performed during steady state operation ----------
4.4.5.2.1.c		Perform RCS water inventory balance.	72 hours
4.4.4.0	SR 3.4.~~13~~.2 14 3	Verify SG tube integrity is in accordance with the Steam Generator Tube Surveillance Program.	In accordance with the Steam Generator Tube Surveillance Program

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.14
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.~~13~~ 14 RCS Operational LEAKAGE

BASES 3

BACKGROUND

Components that contain or transport the coolant to or from the reactor core make up the RCS. Component joints are made by welding, bolting, rolling, or pressure loading, and valves isolate connecting systems from the RCS.

During plant life, the joint and valve interfaces can produce varying amounts of reactor coolant LEAKAGE, through either normal operational wear or mechanical deterioration. The purpose of the RCS Operational LEAKAGE LCO is to limit system operation in the presence of LEAKAGE from these sources to amounts that do not compromise safety. This LCO specifies the types and amounts of LEAKAGE.

10 CFR 50, Appendix A, GDC 30 (Ref. 1), requires means for detecting and, to the extent practical, identifying the source of reactor coolant LEAKAGE. Regulatory Guide 1.45 (Ref. 2) describes acceptable methods for selecting leakage detection systems.

The safety significance of RCS LEAKAGE varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring reactor coolant LEAKAGE into the containment area is necessary. Quickly separating the identified LEAKAGE from the unidentified LEAKAGE is necessary to provide quantitative information to the operators, allowing them to take corrective action should a leak occur detrimental to the safety of the facility and the public.

A limited amount of leakage inside containment is expected from auxiliary systems that cannot be made 100% leaktight. Leakage from these systems should be detected, located, and isolated from the containment atmosphere, if possible, to not interfere with RCS LEAKAGE detection.

This LCO deals with protection of the Reactor Coolant Pressure Boundary (RCPB) from degradation and the core from inadequate cooling, in addition to preventing the accident analysis radiation release assumptions from being exceeded. The consequences of violating this LCO include the possibility of a Loss of Coolant Accident (LOCA). 1

BASES (continued)

APPLICABLE SAFETY ANALYSES

Except for primary to secondary LEAKAGE, the safety analyses do not address operational LEAKAGE. However, other operational LEAKAGE is related to the safety analyses for LOCA; the amount of leakage can affect the probability of such an event. The safety analysis for an event resulting in steam discharge to the atmosphere assumes a 1 gpm primary to secondary LEAKAGE as the initial condition.

Primary to secondary LEAKAGE is a factor in the dose releases outside containment resulting from a ~~s~~team ~~l~~ine ~~b~~reak (SLB) accident. To a lesser extent, other accidents or transients involve secondary steam release to the atmosphere, such as a ~~s~~team ~~g~~enerator ~~t~~ube ~~r~~upture (SGTR). The leakage contaminates the secondary fluid. 1

The FSAR (Ref. 3) analysis for SGTR assumes the contaminated secondary fluid is only briefly released via safety valves and the majority is steamed to the condenser. The 1 gpm primary to secondary LEAKAGE is relatively inconsequential.

The SLB is more limiting for site radiation releases. The safety analysis for the SLB accident assumes 1 gpm primary to secondary LEAKAGE in one generator as an initial condition. The dose consequences resulting from the SLB accident are well within the limits defined in 10 CFR 50 or the staff approved licensing basis (i.e., a small fraction of these limits).

RCS operational LEAKAGE satisfies Criterion 2 of ~~the NRC Policy Statement~~. 10 CFR 50.36(c)(2)(ii) 1

LCO

RCS operational LEAKAGE shall be limited to:

a. Pressure Boundary LEAKAGE

No pressure boundary LEAKAGE is allowed, being indicative of material deterioration. LEAKAGE of this type is unacceptable as the leak itself could cause further deterioration, resulting in higher LEAKAGE. Violation of this LCO could result in continued degradation of the RCPB. LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.

(continued)

BASES

LCO (continued)

b. Unidentified LEAKAGE

One gallon per minute (gpm) of unidentified LEAKAGE is allowed as a reasonable minimum detectable amount that the containment air monitoring and containment sump level monitoring equipment can detect within a reasonable time period. Violation of this LCO could result in continued degradation of the RCPB, if the LEAKAGE is from the pressure boundary.

c. Identified LEAKAGE

Up to 10 gpm of identified LEAKAGE is considered allowable because LEAKAGE is from known sources that do not interfere with detection of identified LEAKAGE and is well within the capability of the RCS makeup system. Identified LEAKAGE includes LEAKAGE to the containment from specifically known and located sources, but does not include pressure boundary LEAKAGE or controlled reactor coolant pump (RCP) seal leakoff (a normal function not considered LEAKAGE). Violation of this LCO could result in continued degradation of a component or system.

LCO 3.4.14, "RCS Pressure Isolation Valve (PIV) Leakage," measures leakage through each individual PIV and can impact this LCO. Of the two PIVs in series in each isolated line, leakage measured through one PIV does not result in RCS LEAKAGE when the other is leaktight. If both valves leak and result in a loss of mass from the RCS, the loss must be included in the allowable identified LEAKAGE.

d. Primary to Secondary LEAKAGE through All Steam Generators (SGs)

Total primary to secondary LEAKAGE amounting to 1 gpm through all SGs produces acceptable offsite doses in the SLB accident analysis. Violation of this LCO could exceed the offsite dose limits for this accident analysis. Primary to secondary LEAKAGE must be included in the total allowable limit for identified LEAKAGE.

(continued)

BASES

LCO (continued)

e. Primary to Secondary LEAKAGE through Any One SG

The 720 gallon per day limit on primary to secondary LEAKAGE through any one SG allocates the total 1 gpm allowed primary to secondary LEAKAGE equally between the two generators. 3

APPLICABILITY

In MODES 1, 2, 3, and 4, the potential for RCPB LEAKAGE is greatest when the RCS is pressurized.

In MODES 5 and 6, LEAKAGE limits are not required because the reactor coolant pressure is far lower, resulting in lower stresses and reduced potentials for LEAKAGE.

ACTIONS

A.1

Unidentified LEAKAGE, identified LEAKAGE, or primary to secondary LEAKAGE in excess of the LCO limits must be reduced to within limits within 4 hours. This Completion Time allows time to verify leakage rates and either identify unidentified LEAKAGE or reduce LEAKAGE to within limits before the reactor must be shut down. This action is necessary to prevent further deterioration of the RCPB.

B.1 and B.2

If any pressure boundary LEAKAGE exists or if unidentified, identified, or primary to secondary LEAKAGE cannot be reduced to within limits within 4 hours, the reactor must be brought to lower pressure conditions to reduce the severity of the LEAKAGE and its potential consequences. The reactor must be brought to MODE 3 within 6 hours and to MODE 5 within 36 hours. This action reduces the LEAKAGE and also reduces the factors that tend to degrade the pressure boundary.

The allowed Completion Times are reasonable, based on operating experience, to reach the required conditions from full power conditions in an orderly manner and without challenging plant systems. In MODE 5, the pressure stresses

(continued)

C.1
If one or more SGs are inoperable due to SR 3.4.14.2, the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately (2)

BASES

ACTIONS

B.1 and B.2 (continued)

acting on the RCPB are much lower, and further deterioration is much less likely.

SURVEILLANCE REQUIREMENTS

SR 3.4.~~13~~ 14.1 (3)

Verifying RCS LEAKAGE to be within the LCO limits ensures the integrity of the RCPB is maintained. Pressure boundary LEAKAGE would at first appear as unidentified LEAKAGE and can only be positively identified by inspection. Unidentified LEAKAGE and identified LEAKAGE are determined by performance of an RCS water inventory balance. Primary to secondary LEAKAGE is also measured by performance of an RCS water inventory balance in conjunction with effluent monitoring within the secondary steam and feedwater systems.

The RCS water inventory balance must be performed with the reactor at steady state operating conditions and near operating pressure. Therefore, this SR is not required to be performed in MODES 3 and 4, until 12 hours of steady state operation near operating pressure have elapsed. (1)

This means that once steady state operating conditions are established, 12 hours is allowed for completing the Surveillance if the Surveillance Frequency interval was exceeded in MODE 5 or 6. Further discussion of SR Note format is found in Section 1.4, Frequency.

The Note in the Frequency column allows for SR 3.4.14.1 non performance due to planned or unplanned power manipulations. This Note is not intended to allow power manipulations solely for the purpose of avoiding SR 3.4.14.1 performance

Steady state operation is required to perform a proper water inventory balance; calculations during maneuvering are not useful and a Note requires the Surveillance to be met when steady state is established. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

An early warning of pressure boundary LEAKAGE or unidentified LEAKAGE is provided by the automatic systems that monitor the containment atmosphere radioactivity and the containment sump level. These leakage detection systems are specified in LCO 3.4.~~15~~ 16, "RCS Leakage Detection Instrumentation." (1)

The 72 hour Frequency is a reasonable interval to trend LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents. A Note under the Frequency column states that this SR is required to be performed during steady state operation.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.~~13~~14.2 3

This SR provides the means necessary to determine SG OPERABILITY in an operational MODE. The requirement to demonstrate SG tube integrity in accordance with the Steam Generator Tube Surveillance Program emphasizes the importance of SG tube integrity, even though this Surveillance cannot be performed at normal operating conditions.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 30.
2. Regulatory Guide 1.45, May 1973.
3. UFSAR, Section ~~X~~15~~X~~. 3

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.14

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

2. ITS 3.4.14 contains Action C which directs immediate entry into LCO 3.0.3 when one or more SGs are inoperable, due to SR 3.4.14.2, in Mode 1, 2, 3, or 4. NUREG-1432, LCO 3.4.13, contains no such action. This is acceptable because NUREG-1432, LCO 3.4.13, contains no explicit Actions for an inoperable SG, due to SR 3.4.13.2, in Mode 1, 2, 3, or 4, therefore, LCO 3.0.3 would apply. Since both ITS and NUREG-1432 Actions result in identical Actions (LCO 3.0.3 entry) there is no technical change. ITS 3.4.14, Action C, is added to provide clarification to ensure the correct Action is applied and the correct LCO is entered. This change is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

3. 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 are directly transferred from the CTS to the ITS.

PVNGS CTS
SPECIFICATION 3.4.14
MARK UP

Specification 3.4.14

(3.4.14 / 3.4.15)

A.1

3.4. REACTOR COOLANT SYSTEM (RCS)

3.4.14 RCS OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

LCO 3.4.14

3.4.5.2 Reactor Coolant System leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 gpm UNIDENTIFIED LEAKAGE,

c. 1 gpm total primary-to-secondary leakage through all steam generators, and 720 gallons per day through any one steam generator,

TS 3.4.14

d. 10 gpm IDENTIFIED LEAKAGE from the Reactor Coolant System, and

ITS 3.4.15

e. 1 gpm leakage at a Reactor Coolant System pressure of 2250 ± 20 psia from any Reactor Coolant System pressure isolation valve specified in Table 3.4-1.

ITS 3.4.15

TS 3.4.14

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

ACTION:

ACT B

a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACT A

b. With any Reactor Coolant System leakage greater than any one of the limits, excluding PRESSURE BOUNDARY LEAKAGE and leakage from Reactor Coolant System pressure isolation valves, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ITS 3.4.14 ACT B

ITS 3.4.15

c. With any Reactor Coolant System pressure isolation valve leakage greater than the above limit, isolate the high pressure portion of the affected system from the low pressure portion within 4 hours by use of at least one closed manual or deactivated automatic valve, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TS 3.4.15

TS 3.4.14

d. With RCS leakage alarmed and confirmed in a flow path with no flow rate indicators, commence an RCS water inventory balance within 1 hour to determine the leak rate.

L.1

SURVEILLANCE REQUIREMENTS

SR 3.4.14.1

4.4.5.2.1 Reactor Coolant System ~~leakages~~ Operational LEAKAGE shall be demonstrated to be within ~~each of the above~~ limits by:

a. Monitoring the containment atmosphere gaseous and particulate radioactivity monitor at least once per 12 hours.

A.3

Specification 3.4.14
(3.4.14/3.4.15)

A.1

~~REACTOR COOLANT SYSTEM~~

SURVEILLANCE REQUIREMENTS (Continued)

b. Monitoring the containment sump inventory and discharge at least once per 72 hours. LA.1

Insert 1

SR 3.4.14.1

c. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours**. during steady state operation L.2

d. Monitoring the reactor head flange leakoff system at least once per 24 hours. LA.1

TS 3.4.14

TS 3.4.15

4.4.5.2.2 Each Reactor Coolant System pressure isolation valve specified in Table 3.4-1 shall be demonstrated OPERABLE by verifying leakage to be within its limit**:

a. At least once per 18 months,

b.* Prior to entering MODE 2 whenever the plant has been in COLD SHUTDOWN for 7 days or more and if leakage testing has not been performed in the previous 9 months,

c. Prior to returning the valve to service following maintenance, repair or replacement work on the valve,

d.* Within 24 hours following valve actuation due to automatic or manual action or flow through the valve,

e.* Within 72 hours following a system response to an Engineered Safety Feature actuation signal.

TS 3.4.15

*The provisions of Specifications 4.4.5.2.2.b, 4.4.5.2.2.d, and 4.4.5.2.2.e are not applicable for valves UV 651, UV 652, UV 653 and UV 654 due to position indication of valves in the control room.

TS 3.4.14

SR 3.4.14.1 NOTE

**The provisions of Specification 4.0.4 are not applicable for entry into MODE 3 or 4. Until 12 hours of steady state operation A.4 L.2

INSERT FOR CTS 3.4.5.2
SR 4.4.5.2.1. C NOTE
(Units 1, 2, and 3)
INSERT 1

----------NOTES----------
Not required to be performed in MODES 3 and 4 until 12 hours of steady state operation
---

Specification 3.4.14
(3.4.15)

CTS 3.4.5.2 has been moved to ITS 3.4.15
Ref. ITS 3.4.15 DOC
for discussion

TABLE 3.4-1

REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVES

VALVE	DESCRIPTION
1) SIE-V237	LOOP 1A RC/SI CHECK
2) SIE-V247	LOOP 1B RC/SI CHECK
3) SIE-V217	LOOP 2A RC/SI CHECK
4) SIE-V227	LOOP 2B RC/SI CHECK
5) SIE-V235	LOOP 1A SIT CHECK
6) SIE-V245	LOOP 1B SIT CHECK
7) SIE-V215	LOOP 2A SIT CHECK
8) SIE-V225	LOOP 2B SIT CHECK
9) SIE-V542	LOOP 1A SI HEADER CHECK
10) SIE-V543	LOOP 1B SI HEADER CHECK
11) SIE-V540	LOOP 2A SI HEADER CHECK
12) SIE-V541	LOOP 2B SI HEADER CHECK
13) SIA-V522	LOOP 1 HP LONG TERM RECIRCULATION CHECK
14) SIA-V523	LOOP 1 HP LONG TERM RECIRCULATION CHECK
15) SIB-V532	LOOP 2 HP LONG TERM RECIRCULATION CHECK
16) SIB-V533	LOOP 2 HP LONG TERM RECIRCULATION CHECK
17) SIA-UV651*,#	LOOP 1 SHUTDOWN COOLING ISOLATION
18) SIB-UV652*,#	LOOP 2 SHUTDOWN COOLING ISOLATION
19) SIC-UV653*,#	LOOP 1 SHUTDOWN COOLING ISOLATION
20) SID-UV654*,#	LOOP 2 SHUTDOWN COOLING ISOLATION

*Testing per Specification 4.4.5.2.2.d is not applicable due to positive indication of valve position in the control room.

#1. Leakage rates greater than 1.0 gpm but less than or equal to 5.0 gpm are considered acceptable if the latest measured rate has not exceeded the rate determined by previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.

2. Leakage rates greater than 1.0 gpm but less than or equal to 5.0 gpm are considered unacceptable if the latest measured rate exceeded the rate determined by the previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.

3. Leakage rates greater than 5.0 gpm are considered unacceptable.

Specification 3.T.14
(3.4.14 / 5.0)

3.4

REACTOR COOLANT SYSTEM (RCS)

A.1

3.4.14

~~3/4.4.4 STEAM GENERATORS~~

RCS Operational LEAKAGE

LIMITING CONDITION FOR OPERATION

SR 3.4.14.2

~~3.4.4~~ Each steam generator shall be OPERABLE.

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

ACTION:

With one or more steam generators inoperable, restore the inoperable generator(s) to OPERABLE status prior to increasing T_{cold} above 210°F.

A.2

ACT C

With one or more SGs inoperable, enter LCO 3.0.3 immediately

SURVEILLANCE REQUIREMENTS

SR.3.4.14.2

~~4.4.4.0~~ Each steam generator shall be demonstrated OPERABLE by performance of the following augmented inservice inspection program.

ITS 3.4.14

ITS 5.0

4.4.4.1 Steam Generator Sample Selection and Inspection - Each steam generator shall be determined OPERABLE during shutdown by selecting and inspecting at least the minimum number of steam generators specified in Table 4.4-1.

4.4.4.2 Steam Generator Tube Sample Selection and Inspection - The steam generator tube minimum sample size, inspection result classification, and the corresponding action required shall be as specified in Table 4.4-2. The inservice inspection of steam generator tubes shall be performed at the frequencies specified in Specification 4.4.4.3 and the inspected tubes shall be verified acceptable per the acceptance criteria of Specification 4.4.4.4. The tubes selected for each inservice inspection shall include at least 3% of the total number of tubes in all steam generators; the tubes selected for these inspections shall be selected on a random basis except:

a. Where experience in similar plants with similar water chemistry indicates critical areas to be inspected, then at least 50% of the tubes inspected shall be from these critical areas.

b. The first sample of tubes selected for each inservice inspection (subsequent to the preservice inspection) of each steam generator shall include:

Specification 3.4.14
(5.0)

CTS 3.4.4 has been moved to ITS 5.0. Ref. ITS 5.0 DOC for discussion

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

1. All nonplugged tubes that previously had detectable wall penetrations (greater than 20%).

2. Tubes in those areas where experience has indicated potential problems.

3. A tube inspection (pursuant to Specification 4.4.4.4a.8.) shall be performed on each selected tube. If any selected tube does not permit the passage of the eddy current probe for a tube inspection, this shall be recorded and an adjacent tube shall be selected and subjected to a tube inspection.

c. The tubes selected as the second and third samples (if required by Table 4.4-2) during each inservice inspection may be subjected to a partial tube inspection provided:

1. The tubes selected for these samples include the tubes from those areas of the tube sheet array where tubes with imperfections were previously found.

2. The inspections include those portions of the tubes where imperfections were previously found.

The results of each sample inspection shall be classified into one of the following three categories:

Category	Inspection Results
C-1	Less than 5% of the total tubes inspected are degraded tubes and none of the inspected tubes are defective.
C-2	One or more tubes, but not more than 1% of the total tubes inspected are defective, or between 5% and 10% of the total tubes inspected are degraded tubes.
C-3	More than 10% of the total tubes inspected are degraded tubes or more than 1% of the inspected tubes are defective.

Note: In all inspections, previously degraded tubes must exhibit significant (greater than 10%) further wall penetrations to be included in the above percentage calculations.

Specification 3.4.14
(5.0)

CTS 3.4.4 has been
moved to ITS 5.0
Ref. ITS 5.0 DOC
for discussion

REACTOR COOLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.4.4.3 Inspection Frequencies - The above required inservice inspections of steam generator tubes shall be performed at the following frequencies:

a. The first inservice inspection shall be performed after 6 Effective Full Power Months but within 24 calender months of initial criticality. Subsequent inservice inspections shall be performed at intervals of not less than 12 nor more than 24 calendar months after the previous inspection.* If two consecutive inspections following service under AVT conditions, not including the preservice inspection, result in all inspection results falling into the C-1 category or if two consecutive inspections demonstrate that previously observed degradation has not continued and no additional degradation has occurred, the inspection interval may be extended to a maximum of once per 40 months.

b. If the results of the inservice inspection of a steam generator conducted in accordance with Table 4.4-2 at 40 month intervals fall into Category C-3, the inspection frequency shall be increased to at least once per 20 months. The increase in inspection frequency shall apply until the subsequent inspections satisfy the criteria of Specification 4.4.4.3a.; the interval may then be extended to a maximum of once per 40 months.

c. Additional, unscheduled inservice inspections shall be performed on each steam generator in accordance with the first sample inspection specified in Table 4.4-2 during the shutdown subsequent to any of the following conditions:

1. Primary-to-secondary tubes leaks (not including leaks originating from tube-to-tube sheet welds) in excess of the limits of Specification 3.4.5.2.

2. A seismic occurrence greater than the Operating Basis Earthquake.

3. A loss-of-coolant accident requiring actuation of the engineered safeguards.

4. A main steam line or feedwater line break.

*Except that the inservice inspection due not later than July 1991 may be deferred until the end of fuel Cycle 3, but not beyond March 1992.

Specification 3.4.14
(5.0)

CTS 3.4.4 has been moved to ITS 5.0 Ref. ITS 5.0 DOC for discussion

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

4.4.4.4 Acceptance Criteria

a. As used in this Specification

1. Imperfection means an exception to the dimensions, finish, or contour of a tube from that required by fabrication drawings or specifications. Eddy-current testing indications below 20% of the nominal tube wall thickness, if detectable, may be considered as imperfections.

2. Degradation means a service-induced cracking, wastage, wear, or general corrosion occurring on either inside or outside of a tube.

3. Degraded Tube means a tube containing imperfections greater than or equal to 20% of the nominal wall thickness caused by degradation.

4. % Degradation means the percentage of the tube wall thickness affected or removed by degradation.

5. Defect means an imperfection of such severity that it exceeds the plugging limit. A tube containing a defect is defective.

6. Plugging Limit means the imperfection depth at or beyond which the tube shall be removed from service and is equal to 40% of the nominal tube wall thickness.

7. Unserviceable describes the condition of a tube if it leaks or contains a defect large enough to affect its structural integrity in the event of an Operating Basis Earthquake, a loss-of-coolant accident, or a steam line or feedwater line break as specified in 4.4.4 3c., above.

8. Tube Inspection means an inspection of the steam generator tube from the point of entry (hot leg side) completely around the U-bend to the top support of the cold leg.

9. Preservice Inspection means an inspection of the full length of each tube in each steam generator performed by eddy current techniques prior to service to establish a baseline.

Specification 3.4.14 (5.0)

ITS 3.4.4, Table 4.4-2 has been moved to ITS 5.0. Ref. ITS 5.0 DOC for discussion

TABLE 4.4-2

STEAM GENERATOR TUBE INSPECTION

1ST SAMPLE INSPECTION			2ND SAMPLE INSPECTION		3RD SAMPLE INSPECTION	
Sample Size	Result	Action Required	Result	Action Required	Result	Action Required
A minimum of S Tubes per S. G.	C–1	None	N. A.	N. A.	N. A.	N. A.
	C–2	Plug defective tubes and inspect additional 2S tubes in this S. G.	C–1	None	N. A.	N. A.
			C–2	Plug defective tubes and inspect additional 4S tubes in this S. G.	C–1	None
					C–2	Plug defective tubes
					C–3	Perform action for C–3 result of first sample
			C–3	Perform action for C–3 result of first sample	N. A.	N. A.
	C–3	Inspect all tubes in this S. G., plug defective tubes and inspect 2S tubes in each other S. G. Notification to NRC pursuant to §50.72 (b)(2) of 10 CFR Part 50	All other S. G.s are C–1	None	N. A.	N. A.
			Some S. G.s C–2 but no additional S. G. are C–3	Perform action for C–2 result of second sample	N. A.	N. A.
			Additional S. G. is C–3	Inspect all tubes in each S. G. and plug defective tubes. Notification to NRC pursuant to §50.72 (b)(2) of 10 CFR Part 50	N. A.	N. A.

$S = 3\frac{N}{n}\%$ Where N is the number of steam generators in the unit, and n is the number of steam generators inspected during an inspection

DISCUSSION OF CHANGES
SPECIFICATION 3.4.14

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 CTS LCO 3.4.4 Action requires restoration of inoperable steam generator(s) "prior to increasing T-cold above 210°F." If a steam generator is discovered inoperable while operating above 210°F, CTS LCO 3.0.3 would apply. This would occur because CTS, LCO 3.4.4, contains no explicit Actions for Modes 1, 2, 3, or 4. ITS LCO 3.4.14 Actions also do not explicitly contain Actions for an inoperable steam generator in Modes 1, 2, 3, or 4; therefore ITS LCO 3.0.3 would apply to inoperable steam generator(s). ITS LCO 3.0.4 would also preclude increasing T-cold above 210°F (i.e., entering Mode 4) with inoperable steam generator(s). Since both the CTS and ITS Actions result in identical limitations with no technical changes, the conversion represents an administrative change only. This change is consistent with NUREG-1432.

ADMINISTRATIVE CHANGES (continued)

A.3 CTS SR 4.4.5.2.1 requires "monitoring the containment atmospheric gaseous and particulate radioactivity monitor at least once per 12 hours." This requirement is essentially redundant to CTS SR 4.4.5.1.a, which requires a Channel Check (the Channel Check requires a qualitative assessment, which involves "monitoring") on these monitors shiftly (every 12 hours). ITS SR 3.4.16.1 requires the CHANNEL CHECK of the atmospheric monitor (gaseous and particulate). Duplicating requirements in multiple Specifications is not necessary. Since the requirement for a CHANNEL CHECK is addressed in ITS SR 3.4.16.1, eliminating this duplicative Surveillance is solely an administrative change. This change is consistent with NUREG-1432.

A.4 CTS 4.4.5.2.1.c is modified by Footnote ** which excludes "The provisions of Specification 4.0.4." ITS does not make specific exceptions to SR 3.0.4, which is the CTS 4.0.4 equivalent. The related issue is clarified in the ITS by specifying the precise requirements for performance of SR such that an explicit exception is not necessary. The ITS SR Note modifies the Frequency such that it is not "due" until after the necessary conditions are met. Elimination of specific reference to an exception is solely a presentation preference, and therefore, is administrative only. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

None

TECHNICAL CHANGES - RELOCATIONS

LA.1 CTS 4.4.5.2.1.b requires monitoring the containment sump inventory and discharge every 12 hours. CTS 4.4.5.2.1.d requires the reactor head flange leakoff system to be monitored every 24 hours. The ITS does not explicitly retain these requirements. These requirements, at 24 hour Frequencies, are not required to determine the Operability of a system, component, or structure and, therefore, are being relocated to a Licensee Controlled Document (Technical Requirements Manual [TRM]). In addition, these requirements do not meet the 10 CFR 50.36 (c) (2) (ii) criteria for inclusion into the ITS. The sump inventory and discharge, and the reactor head flange leakoff are part of the unidentified and identified LEAKAGE, which are controlled by ITS LCO 3.4.14 and SR 3.4.14.1. Furthermore, the containment sump system is required Operable by ITS LCO 3.4.16. The actual periodicity for monitoring these systems are relocated as stated above. ITS still retains the requirement for a periodic inventory balance, which necessitates monitoring of these systems.

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 a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 CTS LCO 3.4.5.2, Action d, requires an RCS inventory balance to determine the leak rate within 1 hour after both of the following:

1. Receiving an alarm indicating RCS LEAKAGE,

2. Confirming that the RCS LEAKAGE is in a flow path with no flow rate indicator.

The inventory balance to determine leakage is therefore required only after leakage is known. Furthermore, the inventory balance is required in conjunction with other Actions for excessive leakage, which separately require commencing a reactor shutdown within 4 hours if leakage is not restored to within limits. Inherent in this restoration would be proving leakage to be within limit (most commonly by an inventory balance).

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

ITS LCO 3.4.14 does not contain explicit requirements for early inventory balance performance, under any set of conditions. This detail is relegated to plant operational considerations: if an inventory balance is desired to confirm LEAKAGE limits are within limits, then the operator can choose to perform one; if LEAKAGE is not restored to the point where the operator believes it is within limits, an inventory balance is not required to be performed. This choice is acceptable in lieu of an explicit requirement to perform the inventory balance since the plant actions, which provide adequate protection of the public health and safety, remain unchanged; if LEAKAGE is not restored within 4 hours, the plant will commence a TS required shutdown. Also, this prevents unnecessary performance of an RCS inventory balance, when leakage is obviously below limits, and allows the operator to focus on the event in progress. This change is consistent with NUREG-1432.

L.2 CTS SR 4.4.5.2.1.c requires an RCS inventory balance every 72 hours, with provisions (CTS footnote **) to allow entry into Mode 4 or 3 without prior surveillance performance. CTS 4.0.4 allows entry into Mode 4 or 3 without completion of the RCS inventory balance. ITS SR 3.4.14.1 requires performance of the RCS inventory balance every 72 hours and provides similar exceptions for entry into Mode 4 or 3 (Note to SR 3.4.14.1); however, ITS SR 3.4.14.1 explicitly details the limitations for completing the inventory balance. ITS SR 3.4.14.1 requires inventory balance performance within 12 hours after reaching steady state operation, if the surveillance Frequency interval was exceeded (every 72 hours) in Mode 5 or 6, and only requires subsequent performance if steady state operation is established.

The RCS water inventory balance must be performed with the reactor at steady state operating conditions and near operating pressure. Steady state operation is required to perform a proper inventory balance; calculations during maneuvering are not useful. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined in the Bases as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

The change that requires RCS inventory balance performance within 12 hours after achieving steady state operation, if the surveillance Frequency interval is exceeded (every 72 hours) while in Mode 5 or 6, is conservatively classified as a less restrictive change. This is because achieving steady state may require a period of time greater than 72 hours. However, in many cases the ITS requirement represents a more restrictive change. Overall, the change reflects more appropriate limitations for the performance of the RCS inventory balance, which adequately assures appropriate surveillance for RCS LEAKAGE. This change is consistent with NUREG-1432.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.14

ADMINISTRATIVE CHANGES
(ITS 3.4.14 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 Section/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 Section/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 3.4.14 Discussion of Changes Labeled (A.1, A.2, A.3 and A.4) (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, 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 3.4.14 Discussion of Changes Labeled LA.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 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 3.4.14 Discussion of Changes Labeled LA.1) (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 submittal, 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.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.14 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 CTS LCO 3.4.5.2, Action d, requires an RCS inventory balance to determine the leak rate within 1 hour after both of the following:

1. Receiving an alarm indicating RCS LEAKAGE,

2. Confirming that the RCS LEAKAGE is in a flow path with no flow rate indicator.

The inventory balance to determine leakage is therefore required only after leakage is known. Furthermore, the inventory balance is required in conjunction with other Actions for excessive leakage, which separately require commencing a reactor shutdown within 4 hours if leakage is not restored to within limits. Inherent in this restoration would be proving leakage to be within limit (most commonly by an inventory balance).

ITS LCO 3.4.14 does not contain explicit requirements for early inventory balance performance, under any set of conditions. This detail is relegated to plant operational considerations: if an inventory balance is desired to confirm LEAKAGE limits are within limits, then the operator can choose to perform one; if LEAKAGE is not restored to the point where the operator believes it is within limits, an inventory balance is not required to be performed. This choice is acceptable in lieu of an explicit requirement to perform the inventory balance since the plant actions, which provide adequate protection of the public health and safety, remain unchanged; if LEAKAGE is not restored within 4 hours, the plant will commence a TS required shutdown. Also, this prevents unnecessary performance of an RCS inventory balance, when leakage is obviously below limits, and allows the operator to focus on the event in progress. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.14 Discussion of Changes Labeled L.1) (continued)

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 revises the requirements to perform RCS inventory balance to determine RCS leakage. If the leakage is not restored within the prescribed limits, an inventory balance is no longer required. However, the plant actions that are required if the leakage is not restored within limits remain the same and include a plant shutdown. This prevents unnecessary performance of the RCS inventory balance when leakage is obviously below the limits and allows the operator to focus on the plant event in progress. This change does not affect the probability of an accident since the plant actions that need to be taken if the leakage is unacceptable are not changed. This change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change will not involve a significant increase in the probability or consequence of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.14 Discussion of Changes Labeled L.1) (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 revises the requirements to perform RCS inventory balance to determine RCS leakage. If the leakage is not restored within the prescribed limits, an inventory balance is no longer required. However, the plant actions that are required if the leakage is not restored within limits remain the same and include a plant shutdown. This prevents unnecessary performance of the RCS inventory balance when leakage is obviously below the limits and allows the operator to focus on the plant event in progress. This change does not physically alter the plant and no new or different kind 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 of 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 revises the requirements to perform RCS inventory balance to determine RCS leakage. If the leakage is not restored within the prescribed limits, an inventory balance is no longer required. However, the plant actions that are required if the leakage is not restored within limits remain the same and include a plant shutdown. This prevents unnecessary performance of the RCS inventory balance when leakage is obviously below the limits and allows the operator to focus on the plant event in progress. The margin of safety is not affected by this change. Therefore, the change does not involve a significant reduction in the margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.14 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 CTS SR 4.4.5.2.1.c requires an RCS inventory balance every 72 hours, with provisions (CTS footnote **) to allow entry into Mode 4 or 3 without prior surveillance performance. CTS 4.0.4 allows entry into Mode 4 or 3 without completion of the RCS inventory balance. ITS SR 3.4.14.1 requires performance of the RCS inventory balance every 72 hours and provides similar exceptions for entry into Mode 4 or 3 (Note to SR 3.4.14.1); however, ITS SR 3.4.14.1 explicitly details the limitations for completing the inventory balance. ITS SR 3.4.14.1 requires inventory balance performance within 12 hours after reaching steady state operation, if the surveillance Frequency interval was exceeded (every 72 hours) in Mode 5 or 6, and only requires subsequent performance if steady state operation is established.

The RCS water inventory balance must be performed with the reactor at steady state operating conditions and near operating pressure. Steady state operation is required to perform a proper inventory balance; calculations during maneuvering are not useful. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined in the Bases as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

The change that requires RCS inventory balance performance within 12 hours after achieving steady state operation, if the surveillance Frequency interval is exceeded (every 72 hours) while in Mode 5 or 6, is conservatively classified as a less restrictive change. This is because achieving steady state may require a period of time greater than 72 hours. However, in many cases the ITS requirement represents a more restrictive change. Overall, the change reflects more appropriate limitations for the performance of the RCS inventory balance, which adequately assures appropriate surveillance for RCS LEAKAGE. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.14 Discussion of Changes Labeled L.2) (continued)

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 identifies that an RCS inventory balance is not required until 12 hours after achieving a steady state condition, if the 72 hour surveillance frequency has been exceeded. Proper RCS inventory balance is obtained only when the RCS is at steady state conditions which include the following parameters being in a stable condition: RCS pressure, temperature, power level, pressurizer and makeup tank level, makeup and letdown, and RCP injections and return flows. Performing an RCS inventory balance when the RCS is not stable will only require subsequent performance when the conditions have stabilized. This change does not affect the probability of an accident since the plant actions that need to be taken if the leakage is unacceptable are not changed. This change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change will not involve a significant increase in the probability or consequence of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.14 Discussion of Changes Labeled L.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 change identifies that an RCS inventory balance is not required until 12 hours after achieving a steady state condition, if the 72 hour surveillance frequency has been exceeded. Proper RCS inventory balance is obtained only when the RCS is at steady state conditions which include the following parameters being in a stable condition: RCS pressure, temperature, power level, pressurizer and makeup tank level, makeup and letdown, and RCP injections and return flows. Performing an RCS inventory balance when the RCS is not stable will only require subsequent performance when the conditions have stabilized. This change does not physically alter the plant and no new or different kind 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 of 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 identifies that an RCS inventory balance is not required until 12 hours after achieving a steady state condition, if the 72 hour surveillance frequency has been exceeded. Proper RCS inventory balance is obtained only when the RCS is at steady state conditions which include the following parameters being in a stable condition: RCS pressure, temperature, power level, pressurizer and makeup tank level, makeup and letdown, and RCP injections and return flows. Performing an RCS inventory balance when the RCS is not stable will only require subsequent performances when the conditions have stabilized. The margin of safety is not affected by this change. Therefore, the change does not involve a significant reduction in the margin of safety.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.15
MARK UP

<DOC>
<CTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.~~14~~ 15 RCS Pressure Isolation Valve (PIV) Leakage

<3.4.5.2.e> LCO 3.4.~~14~~ 15 5 Leakage from each RCS PIV shall be within limits.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4, except valves in the shutdown cooling (SDC) flow path when in, or during the transition to or from, the SDC mode of operation.

<DOC L.2>

ACTIONS

<DOC A.2>
<DOC A.3>

----------NOTES----------
1. Separate Condition entry is allowed for each flow path.
2. Enter applicable Conditions and Required Actions for systems made inoperable by an inoperable PIV.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<ACT C> <DOC M.3> A. One or more flow paths with leakage from one or more RCS PIVs not within limit.	----------NOTE---------- Each valve used to satisfy Required Action A.1 and Required Action A.2 must have been verified to meet SR 3.4.~~14~~ 15 1 and be on the RCS pressure boundary ~~or the high pressure portion of the system~~. 1 ----------	15 5 (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.1 Isolate the high pressure portion of the affected system from the low pressure portion by use of one closed manual, deactivated automatic, or check valve.	4 hours
	~~AND~~	
	~~A.2 Isolate the high pressure portion of the affected system from the low pressure portion by use of a second closed manual, deactivated automatic, or check valve.~~	~~72 hours~~
	~~or~~	
	~~A.2 Restore RCS PIV to within limits.~~	~~72 hours~~
B. Required Action and associated Completion Time for Condition A not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Be in MODE 5.	36 hours
~~C. Shutdown Cooling (SDC) System autoclosure interlock function inoperable.~~	~~C.1 Isolate the affected penetration by use of one closed manual or deactivated automatic valve.~~	~~4 hours~~

<ACT C>

<DOC M.1>

<ACT C>

1

2

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.4.5.2 FOOTNOTE **	SR 3.4.~~14~~.1 15 5	
DOC L2	----------NOTES---------- 1. Not required to be performed in MODES 3 and 4.	
	2. Not required to be performed on the RCS PIVs located in the SDC flow path when in the shutdown cooling mode of operation.	
DOC L.5	3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided. ----------	
4.4.5.2.2.a LCO 3.4.5.2.e	Verify leakage from each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ ~~[2215]~~ psia and ≤ ~~[2255]~~ 2270 psia. 2230 5	~~In accordance with the Inservice Testing Program or 18~~ 9 months AND Prior to entering MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months, except for SDC PIVs 4 AND (continued)
4.4.5.2.2.b		

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.~~14~~ 15.1 (continued)	Within 24 hours following valve actuation due to automatic or manual action or flow through the valve, except for SDC PIVs
SR 3.4.~~14~~ 15.2 ~~----------NOTE----------~~ ~~Not required to be met when the SDC System autoclosure interlock is disabled in accordance with SR 3.4.12.7.~~ ~~----------~~ Verify SDC System ~~autoclosure interlock~~ open permissive interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ ~~[425]~~ 410 psi~~g~~a.	~~18~~ months
~~SR 3.4.14.3~~ ~~----------NOTE----------~~ ~~Not required to be met when the SDC System autoclosure interlock is disabled in accordance with SR 3.4.12.7.~~ ~~----------~~ ~~Verify SDC System autoclosure interlock causes the valves to close automatically with a simulated or actual RCS pressure signal ≥ [600] psig.~~	~~[18] months~~

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.15
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.~~14~~ 15 RCS Pressure Isolation Valve (PIV) Leakage

BASES 5

BACKGROUND

10 CFR 50.2, 10 CFR 50.55a(c), and GDC 55 of 10 CFR 50, Appendix A (Refs. 1, 2, and 3), define RCS PIVs as any two normally closed valves in series within the RCS pressure boundary that separate the high pressure RCS from an attached low pressure system. During their lives, these valves can produce varying amounts of reactor coolant leakage through either normal operational wear or mechanical deterioration. The RCS PIV LCO allows RCS high pressure operation when leakage through these valves exists in amounts that do not compromise safety.

The PIV leakage limit applies to each individual valve. Leakage through both PIVs in series in a line must be included as part of the identified LEAKAGE, governed by LCO 3.4.~~13~~ 14, "RCS Operational LEAKAGE." This is true during operation only when the loss of RCS mass through two valves in series is determined by a water inventory balance (SR 3.4.~~13~~ 14.1). A known component of the identified LEAKAGE before operation begins is the least of the two individual leakage rates determined for leaking series PIVs during the required surveillance testing; leakage measured through one PIV in a line is not RCS operational LEAKAGE if the other is leaktight.

Although this specification provides a limit on allowable PIV leakage rate, its main purpose is to prevent overpressure failure of the low pressure portions of connecting systems. The leakage limit is an indication that the PIVs between the RCS and the connecting systems are degraded or degrading. PIV leakage could lead to overpressure of the low pressure piping or components. Failure consequences could be a loss of coolant accident (LOCA) outside of containment, an unanalyzed condition that could degrade the ability for low pressure injection. 5

The basis for this LCO is the 1975 NRC "Reactor Safety Study" (Ref. 4) that identified potential intersystem LOCAs as a significant contributor to the risk of core melt. A subsequent study (Ref. 5) evaluated various PIV configurations to determine the probability of intersystem LOCAs.

(continued)

BASES

BACKGROUND (continued)

PIVs are provided to isolate the RCS from the following typically connected systems:

a. Shutdown Cooling (SDC) System;

b. Safety Injection System; and

c. Chemical and Volume Control System.

The PIVs are listed in FSAR section (Ref. 6).

Violation of this LCO could result in continued degradation of a PIV, which could lead to overpressurization of a low pressure system and the loss of the integrity of a fission product barrier.

APPLICABLE SAFETY ANALYSES

Reference 4 identified potential intersystem LOCAs as a significant contributor to the risk of core melt. The dominant accident sequence in the intersystem LOCA category is the failure of the low pressure portion of the SDC System outside of containment. The accident is the result of a postulated failure of the PIVs, which are part of the reactor coolant pressure boundary (RCPB), and the subsequent pressurization of the SDC System downstream of the PIVs from the RCS. Because the low pressure portion of the SDC System is typically designed for [600] psig, overpressurization failure of the SDC low pressure line would result in a LOCA outside containment and subsequent risk of core melt.

Reference 5 evaluated various PIV configurations, leakage testing of the valves, and operational changes to determine the effect on the probability of intersystem LOCAs. This study concluded that periodic leakage testing of the PIVs can substantially reduce the probability of an intersystem LOCA.

RCS PIV leakage satisfies Criterion 2 of the NRC Policy Statement.

LCO

RCS PIV leakage is identified LEAKAGE into closed systems connected to the RCS. Isolation valve leakage is usually on the order of drops per minute. Leakage that increases

(continued)

BASES

LCO (continued)

significantly suggests that something is operationally wrong and corrective action must be taken.

The LCO PIV leakage limit is 0.5 gpm per nominal inch of valve size, with a maximum limit of 5 gpm. The previous criterion of 1 gpm for all valve sizes imposed an unjustified penalty on the larger valves without providing information on potential valve degradation and resulted in higher personnel radiation exposures. A study concluded a leakage rate limit based on valve size was superior to a single allowable value.

Reference 7 permits leakage testing at a lower pressure differential than between the specified maximum RCS pressure and the normal pressure of the connected system during RCS operation (the maximum pressure differential) in those types of valves in which the higher service pressure will tend to diminish the overall leakage channel opening. In such cases, the observed rate may be adjusted to the maximum pressure differential by assuming leakage is directly proportional to the pressure differential to the one half power.

APPLICABILITY

In MODES 1, 2, 3, and 4, this LCO applies because the PIV leakage potential is greatest when the RCS is pressurized. In MODE 4, valves in the SDC flow path are not required to meet the requirements of this LCO when in, or during the transition to or from, the SDC mode of operation.

In MODES 5 and 6, leakage limits are not provided because the lower reactor coolant pressure results in a reduced potential for leakage and for a LOCA outside the containment.

ACTIONS

The Actions are modified by two Notes. Note 1 is added to provide clarification that each flow path allows separate entry into a Condition. This is allowed based on the functional independence of the flow path. Note 2 requires an evaluation of affected systems if a PIV is inoperable. The leakage may have affected system operability or isolation of a leaking flow path with an alternate valve may

(continued)

BASES

ACTIONS (continued)

have degraded the ability of the interconnected system to perform its safety function.

A.1 and A.2

The flow path must be isolated by two valves. Required Actions A.1 and A.2 are modified by a Note stating that the valves used for isolation must meet the same leakage requirements as the PIVs and must be in the RCPB ~~[or the high pressure portion of the system]~~. 1

Required Action A.1 requires that the isolation with one valve must be performed within 4 hours. Four hours provides time to reduce leakage in excess of the allowable limit and to isolate if leakage cannot be reduced. The 4 hours allows the actions and restricts the operation with leaking isolation valves.

~~Required Action A.2 specifies that the double isolation barrier of two valves be restored by closing some other valve qualified for isolation or restoring one leaking PIV. The 72 hour Completion Time after exceeding the limit considers the time required to complete the action and the low probability of a second valve failing during this time period.~~ 1

~~or~~

The 72 hour Completion Time after exceeding the limit allows for the restoration of the leaking PIV to OPERABLE status. This timeframe considers the time required to complete this Action and the low probability of a second valve failing during this period. ~~[(Reviewer Note: Two options are provided for Required Action A.2. The second option (72 hour restoration) is appropriate if isolation of a second valve would place the unit in an unanalyzed condition.)]~~

B.1 and B.2

If leakage cannot be reduced, the system isolated, or other Required Actions accomplished, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours

(continued)

BASES

ACTIONS

B.1 and B.2 (continued)

and to MODE 5 within 36 hours. This Action reduces the leakage and also reduces the potential for a LOCA outside the containment. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

~~C.1~~

~~The inoperability of the SDC autoclosure interlock renders the SDC suction isolation valves incapable of: isolating in response to a high pressure condition and preventing inadvertent opening of the valves at RCS pressures in excess of the SDC systems design pressure. If the SDC autoclosure interlock is inoperable, operation may continue as long as the affected SDC suction penetration is closed by at least one closed manual or deactivated automatic valve within 4 hours. This Action accomplishes the purpose of the autoclosure function.~~ 2

SURVEILLANCE REQUIREMENTS

SR 3.4.~~14~~ 15.1

Performance of leakage testing on each RCS PIV or isolation valve used to satisfy Required Action A.1 or A.2 is required to verify that leakage is below the specified limit and to identify each leaking valve. The leakage limit of 0.5 gpm per inch of nominal valve diameter up to 5 gpm maximum applies to each valve. Leakage testing requires a stable pressure condition.

For the two PIVs in series, the leakage requirement applies to each valve individually and not to the combined leakage across both valves. If the PIVs are not individually leakage tested, one valve may have failed completely and not be detected if the other valve in series meets the leakage requirement. In this situation, the protection provided by redundant valves would be lost.

Testing is to be performed every 9 months, but may be extended up to ~~a maximum of~~ 18 months, a typical refueling cycle, if the plant does not go into MODE 5 for at least 7

(continued)

BASES

SURVEILLANCE REQUIREMENTS

4

The SDC PIVs excepted in two of the three FREQUENCIES are UV-651, UV-652, UV-653, and UV-654 due to position indication of the valves in the control room.

Although not explicitly required by SR 3.4.15.1, performance of leakage testing to verify the leakage is below the specified limit must be performed prior to returning a valve to service following maintenance, repair, or replacement work on the valve in order to demonstrate operability.

9

SR 3.4.~~14~~ 15.1 (continued)

7 days. The ~~[18]~~ 18 month Frequency is consistent with 10 CFR 50.55a(g) (Ref. 8), ~~as contained in the Inservice Testing Program~~ is within frequency allowed by the American Society of Mechanical Engineers (ASME) Code, Section XI (Ref. 7), and is based on the need to perform the Surveillance under conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. 5

In addition, testing must be performed once after the valve has been opened by flow or exercised to ensure tight reseating. PIVs disturbed in the performance of this Surveillance should also be tested unless documentation shows that an infinite testing loop cannot practically be avoided. Testing must be performed within 24 hours after the valve has been reseated. Within 24 hours is a reasonable and practical time limit for performing this test after opening or reseating a valve.

The leakage limit is to be met at the RCS pressure associated with MODES 1 and 2. This permits leakage testing at high differential pressures with stable conditions not possible in the MODES with lower pressures.

Entry into MODES 3 and 4 is allowed to establish the necessary differential pressures and stable conditions to allow for performance of this Surveillance. The Note that allows this provision is complimentary to the Frequency of prior to entry into MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months. In addition, this Surveillance is not required to be performed on the SDC System when the SDC System is aligned to the RCS in the shutdown cooling mode of operation. PIVs contained in the SDC shutdown cooling flow path must be leakage rate tested after SDC is secured and stable unit conditions and the necessary differential pressures are established.

SR 3.4.~~14~~ 15.2 ~~and SR 3.4.14.3~~ 2

Verifying that the SDC ~~autoclosure~~ open permissive interlocks are OPERABLE ensures that RCS pressure will not pressurize the SDC system beyond 125% of its design pressure of ~~[600]~~ 485 psig. The 5

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.~~14~~ 15.2 ~~and SR 3.4.14.3~~ (continued)

interlock setpoint that prevents the valves from being opened is set so the actual RCS pressure must be < ~~425 psig~~ 410 psia to open the valves. This setpoint ensures the SDC design pressure will not be exceeded and the SDC relief valves will not lift. The 18 month Frequency is based on the need to perform ~~those~~ this Surveillance~~s~~ under conditions that apply during a plant outage. The 18 month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment.

~~The SRs are modified by Notes allowing the SDC autoclosure function to be disabled when using the SDC System suction relief valves for cold overpressure protection in accordance with SR 3.4.12.7.~~

REFERENCES

1. 10 CFR 50.2.
2. 10 CFR 50.55a(c).
3. 10 CFR 50, Appendix A, Section V, GDC 55.
4. WASH-1400 (NUREG-75/014), Appendix V, October 1975.
5. NUREG-0677, May 1980.
6. ~~Document containing List of PIVs.~~ UFSAR, section 3.9.6.2
7. ASME, Boiler and Pressure Vessel Code, Section XI.
8. 10 CFR 50.55a(g).

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.15

1. NUREG-1432, 3.4.14, Action A.2 offers two options:

   a. Isolate the high pressure portion of the affected system from the low pressure portion by use of a second closed manual, deactivated automatic, or check valve within 72 hours,

   or

   b. Restore RCS PIV to within limits within 72 hours.

   ITS 3.4.15 uses the second A.2 Required Actions option. The first A.2 Required Actions option is not applicable to PVNGS under existing licensing basis. ITS requires, for systems with an inoperable PIV, the isolation of the high pressure portion from the low pressure portion of the system with a PIV. PVNGS UFSAR, Section 3.9.2, states, "Where pressure isolation is provided by two valves, both will be leak tested. When three or more valves provide isolation, only two of the valves will be leak tested."" PVNGS does not test other isolations (the second closed manual, deactivated automatic, or check valve) to PIV requirements that are in-line with the PIVs. PVNGS complies with its licensing basis by leak testing two isolations. Therefore, the second A.2 option is used. This is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

2. NUREG-1432, 3.4.14, allows the licensee to perform Action C, if applicable. ITS 3.4.15 will not use Action C. The Shutdown Cooling System (SDC) autoclosure feature has been disabled at PVNGS. TS Amendments 66, 52, and 39 for units 1, 2, and 3, respectively, document the basis for this change. The change removed the feature which causes the SDC system isolation valves to automatically close on rising RCS pressure. This change is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

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

4. ITS, SR 3.4.15.1 Frequency, contains the phrase "except for SDC PIVs." NUREG-1432 has no such exclusion for SDC PIVs. This is allowed because position indication is available for these valves in the control room. This exclusion is allowed in CTS 4.4.5.2.2.b, d, and e by footnote "*" for valves UV-651, UV-652, UV-653 and UV-654, which are the SDC PIVs. PVNGS will continue use of this exclusion in ITS, SR 3.4.15.1, Frequency. This change is consistent with PVNGS licensing basis, the CTS.

5. 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 are directly transferred from the CTS to the ITS.

6. NUREG-1432 SR 3.4.14.2 (Model for ITS SR 3.4.15.2) contains a Note that allows the open permissive interlock for the SDC system suction isolation valves to be disabled in accordance with SR 3.4.12.7. This Surveillance (NUREG-1432, SR 3.4.12.7) is not performed at PVNGS because this Surveillance is for PORVs of which PVNGS has none. This change is consistent with PVNGS Licensing basis. The Bases has also been revised to be consistent with the LCO.

7. NUREG-1432, SR 3.4.14.1, Bases uses the phrase "up to a maximum of 18 months." ITS SR 3.4.15.1 Bases removes the words "a maximum." These words imply that the Surveillance can not be extended beyond 18 months. The Surveillance can be extended per SR 3.0.4 or with an extension granted by the NRC. Removal of these words enhances clarity. This is consistent with PVNGS licensing basis.

8. NUREG-1432 Bases makes reference to the CVCS as a system with PIVs. ITS 3.4.15 Bases deletes references to the CVCS as a connected system with PIVs provided to isolate from the RCS. PVNGS has no valves tested to PIV requirements in the CVCS system as shown in UFSAR, Section 3.9.6.2. This change is consistent with PVNGS licensing basis.

9. ITS Bases SR 3.4.15.1 states that the performance of leakage testing to verify leakage is below the specified limit must be performed prior to returning a valve to service following maintenance, repair or replacement work on the valve in order to demonstrate operability. NUREG-1432 Bases does not contain this statement. CTS 4.4.5.2.2 contains this requirement which will be relocated to ITS Bases SR 3.4.15.1. This change is consistent with PVNGS licensing bases.

PVNGS CTS
SPECIFICATION 3.4.15
MARK UP

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(3.4.14 / 3.4.15)

is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm (L.1)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 ~~OPERATIONAL LEAKAGE~~ RCS PIV Leakage

LIMITING CONDITION FOR OPERATION

3.4.5.2 Reactor Coolant System leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 gpm UNIDENTIFIED LEAKAGE,

c. 1 gpm total primary-to-secondary leakage through all steam generators, and 720 gallons per day through any one steam generator,

ITS 3.4.14

d. 10 gpm IDENTIFIED LEAKAGE from the Reactor Coolant System, and

ITS 3.4.15

SR 3.4.15.1 ~~1 gpm~~ leakage at a Reactor Coolant System pressure of 2250 ± 20 psia from any Reactor Coolant System pressure isolation valve ~~specified in Table 3.4-1.~~ (L.1) (A.1) (LA.1)

APPLICABILITY: MODES 1, 2, 3, and 4, except valves in the shutdown cooling (SDC) flowpath when in, or during the transition to or from, the SDC mode of operation. (L.2)

ITS 3.4.15

ITS 3.4.14

ACTION:

a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With any Reactor Coolant System leakage greater than any one of the limits, excluding PRESSURE BOUNDARY LEAKAGE and leakage from Reactor Coolant System pressure isolation valves, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (A.1)

ITS 3.4.14

ITS 3.4.15

Insert 3 With any Reactor Coolant System pressure isolation valve leakage greater than the above limit, isolate the high pressure portion of the affected system from the low pressure portion within 4 hours by use of at least one closed manual or deactivated automatic valve, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (M.3) ACTION A ACTION B (Insert 1: ACTIONS NOTE 1 ACTIONS NOTE 2) (A.2) (M.2) (or check valve) (L.3) (Insert 2)

ITS 3.4.15

ITS 3.4.14

d. With RCS leakage alarmed and confirmed in a flow path with no flow rate indicators, commence an RCS water inventory balance within 1 hour to determine the leak rate. (M.1)

SURVEILLANCE REQUIREMENTS

4.4.5.2.1 Reactor Coolant System leakages shall be demonstrated to be within each of the above limits by:

a. Monitoring the containment atmosphere gaseous and particulate radioactivity monitor at least once per 12 hours.

INSERT FOR CTS 3.4.5.2
ACTION NOTE 1 AND 2
(Units 1, 2, and 3)
INSERT 1

----------NOTES----------

1. Separate Condition entry is allowed for each flow path.

2. Enter applicable Conditions and Required Actions for systems made inoperable by an inoperable PIV.

INSERT FOR CTS 3.4.5.2
ACTION A
(Units 1, 2, and 3)
INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	AND A.2 Restore RCS PIV to within limits	 72 hours

INSERT FOR CTS 3.4.5.2
ACTION A
(Units 1, 2, and 3)
INSERT 3

----------NOTE----------
Each valve used to satisfy Required Action A.1 and Required Action A.2 must have been verified to meet SR 3.4.15.1 and be on the RCS pressure boundary.

Specification 3.4.15
(3.4.14 / 3.4.15)

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

b. Monitoring the containment sump inventory and discharge at least once per 12 hours.

c. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours**.

ITS 3.4.14

d. Monitoring the reactor head flange leakoff system at least once per 24 hours.

ITS 3.4.15

SR 3.4.15.1 ~~4.4.5.2.2~~ Each Reactor Coolant System pressure isolation valve ~~specified in Table 3.4-1~~ shall be demonstrated OPERABLE by verifying leakage to be within its limit**. (A.1) (LA.1)

Insert 1: SR 3.4.14.1 NOTE 1 and NOTE 2 and 3 (L5)

SR 3.4.15.1 ~~X~~ At least once per 18 months.

SR 3.4.15.1 ~~X~~.* Prior to entering MODE 2 whenever the plant has been in COLD SHUTDOWN for 7 days or more and if leakage testing has not been performed in the previous 9 months. (L.2)

~~X~~. ~~Prior to returning the valve to service following maintenance, repair or replacement work on the valve.~~ (LA.2)

SR 3.4.15.1 ~~X~~.* Within 24 hours following valve actuation due to automatic or manual action or flow through the valve.

~~X~~.* ~~Within 72 hours following a system response to an Engineered Safety Feature actuation signal.~~ (LA.4)

SR 3.4.15.1 2nd & 3rd Paragraphs *The provisions of Specifications 4.4.5.2.2.b, 4.4.5.2.2.d, and 4.4.5.2.2.e are not applicable for valves UV 651, UV 652, UV 653 and UV 654 due to position indication of valves in the control room. (LA.1)

SR 3.4.15.1 NOTE 1 **The provisions of Specification 4.0.4 are not applicable for entry into MODE 3 or 4. (L.4)

INSERT FOR CTS 3.4.5.2
SR 3.4.14.1 NOTES 1 AND 2
(Units 1, 2, and 3)
INSERT 1

----------NOTES----------

1. Not required to be performed in MODES 3 and 4.

2. Not required to be performed on the RCS PIVs located in the SDC flow path when in the shutdown cooling mode of operation.

3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided.

Specification 3.4.15

TABLE 3.4-1

REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVES

VALVE	DESCRIPTION
1) SIE-V237	LOOP 1A RC/SI CHECK
2) SIE-V247	LOOP 1B RC/SI CHECK
3) SIE-V217	LOOP 2A RC/SI CHECK
4) SIE-V227	LOOP 2B RC/SI CHECK
5) SIE-V235	LOOP 1A SIT CHECK
6) SIE-V245	LOOP 1B SIT CHECK
7) SIE-V215	LOOP 2A SIT CHECK
8) SIE-V225	LOOP 2B SIT CHECK
9) SIE-V542	LOOP 1A SI HEADER CHECK
10) SIE-V543	LOOP 1B SI HEADER CHECK
11) SIE-V540	LOOP 2A SI HEADER CHECK
12) SIE-V541	LOOP 2B SI HEADER CHECK
13) SIA-V522	LOOP 1 HP LONG TERM RECIRCULATION CHECK
14) SIA-V523	LOOP 1 HP LONG TERM RECIRCULATION CHECK
15) SIB-V532	LOOP 2 HP LONG TERM RECIRCULATION CHECK
16) SIB-V533	LOOP 2 HP LONG TERM RECIRCULATION CHECK
17) SIA-UV651*,#	LOOP 1 SHUTDOWN COOLING ISOLATION
18) SIB-UV652*,#	LOOP 2 SHUTDOWN COOLING ISOLATION
19) SIC-UV653*,#	LOOP 1 SHUTDOWN COOLING ISOLATION
20) SID-UV654*,#	LOOP 2 SHUTDOWN COOLING ISOLATION

LA.1

SR 3.4.15.1 2nd & 3rd frags

*Testing per Specification 4.4.5.2.2.d is not applicable due to positive indication of valve position in the control room.

#1. Leakage rates greater than 1.0 gpm but less than or equal to 5.0 gpm are considered acceptable if the latest measured rate has not exceeded the rate determined by previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.

2. Leakage rates greater than 1.0 gpm but less than or equal to 5.0 gpm are considered unacceptable if the latest measured rate exceeded the rate determined by the previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.

L.1

SR.3.4.15.1

3. Leakage rates greater than 5.0 gpm are considered unacceptable.

Specification 3.4.15

(3.5.3/3.4.15)

3.4 Reactor Coolant System (RCS)

~~PLANT SYSTEMS~~

3.4.15 ~~3/4.7.11 SHUTDOWN COOLING SYSTEM~~ RCS Pressure Isolation Valve (PIV) leakage

ITS 3.4.15

ITS 3.5.3

LIMITING CONDITION FOR OPERATION

3.7.11 Two independent shutdown cooling subsystems shall be OPERABLE, with each subsystem comprised of:

a. One OPERABLE low pressure safety injection pump, and

b. An independent OPERABLE flow path capable of taking suction from the RCS hot leg and discharging coolant through the shutdown cooling heat exchanger and back to the RCS through the cold leg injection lines.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

a. With one shutdown cooling subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in at least HOT STANDBY within 1 hour, be in at least HOT SHUTDOWN within the next 6 hours and be in COLD SHUTDOWN within the next 30 hours and continue action to restore the required subsystem to OPERABLE status.

b. With both shutdown cooling subsystems inoperable, restore one subsystem to OPERABLE status within 1 hour or be in at least HOT STANDBY within 1 hour and be in HOT SHUTDOWN within the next 6 hours and continue action to restore the required subsystems to OPERABLE status.

c. With both shutdown cooling subsystems inoperable and both reactor coolant loops inoperable, initiate action to restore the required subsystems to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.7.11 Each shutdown cooling subsystem shall be demonstrated OPERABLE:

a. At least once per 18 months, during shutdown, by establishing shutdown cooling flow from the RCS hot legs, through the shutdown cooling heat exchangers, and returning to the RCS cold legs.

ITS 3.5.3

ITS 3.4.15 ☆. At least once per 18 months, ~~during shutdown,~~ by testing the open permissive interlock action of the shutdown cooling system ~~connections from the RCS~~. The shutdown cooling system suction valves shall not open when RCS pressure is greater than 410 psia.

SR 3.4.15.2

A.1

LA.3

DISCUSSION OF CHANGES
SPECIFICATION 3.4.15

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 The CTS 3.4.5.2 Action c for inoperable PIVs allows continued operation if the affected high/low pressure interface is isolated. The intent of the Action in the event of a subsequent inoperable PIV is to allow separate application of the Action to isolate, separate condition entry for each PIV. ITS LCO 3.4.15 Actions include a specific Note (Note 1) to provide this allowance for independent application of the Actions. This Note provides more clarification and explicit instructions for proper application of the Actions for TS compliance. In conjunction with the ITS Specification 1.3, "Completion Times," the Actions Note ("Separate Condition entry is allowed for each....") provides direction consistent with the intent of the CTS Action for an inoperable PIV. Since this provides more explicit direction of the intent of the CTS, the change is considered administrative. This is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 ITS 3.4.15 contains direction to restore the RCS PIV to within limits within 72 hours. CTS 3.4.5.2 contains no such requirement. CTS 3.4.5.2 does not allow use of the second in-line PIV to fulfill isolation requirements. PVNGS operating practice is to use the ECCS injection isolations to provide isolation when a PIV is inoperable. This causes the ECCS train for the affected injection header to become inoperable. The Action Statement associated with an inoperable ECCS train in Modes 1, 2, and 3 requires restoration of the affected ECCS train within 72 hours. ECCS inoperability would eventually require placing the plant in a lower operational Mode. ITS 3.4.15 allows use of the second in-line PIV to fulfill isolation requirements. This allows the associated ECCS train to remain Operable. Therefore, unless there is another Action, entry into this LCO would be indefinite which is not the intent. Hence, NUREG-1432 introduces a requirement to restore the RCS PIV to within limits within 72 hours. The inability to restore the RCS PIV to within limits would require placing the plant in a lower operational Mode. The addition of this requirement constitutes a more restrictive change to PVNGS plant operation. This change is consistent with NUREG-1432.

M.2 The ITS 3.4.15 Actions include Note 2 which requires entry into applicable Conditions and Required Actions for systems made inoperable by an inoperable PIV. The addition of this requirement constitutes a more restrictive change to PVNGS plant operation. Although PVNGS complies with the intent of Note 2, its inclusion as a Note is a more restrictive change. This change is consistent with NUREG-1432.

M.3 ITS 3.4.15, Required Action A, states, "Each valve used to satisfy Required Action A.1 and Required Action A.2 must have been verified to meet SR 3.4.15.1 and be on the RCS pressure boundary." CTS 3.4.5.2 has no such stated requirement. The addition of this requirement constitutes a more restrictive change to PVNGS plant operation. This is acceptable because (1) it is the intent of this LCO to provide double valve protection, and (2) any valve used to satisfy leak protection requirements must be tested to those same requirements. Any valve used to satisfy LCO requirements should, naturally, be tested to LCO requirements, otherwise there is no assurance the credited pressure isolation valve will be able to perform its function. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS

LA.1 CTS Table 3.4-1, as referenced by CTS 3.4.5.2.e, contains a specific listing of the valves that constitute the PIVs. The ITS does not require these details relating to system design be listed within the TS. This information is not required to determine OPERABILITY of a system, component or structure and therefore is being relocated to a Licensee Controlled Document (UFSAR). The specific relocation of component lists from TS is consistent with the concepts of Generic Letter 91-08. The valves identified in CTS 4.4.5.2.2 footnote "*" will be relocated to ITS Bases SR 3.4.15.1.

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. Any changes to the UFSAR will be in accordance with the UFSAR Change Process. 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 a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

LA.2 CTS 4.4.5.2.2.c explicitly requires a demonstration of OPERABILITY following maintenance, repair, or replacement work. ITS 3.4.15 does not specify any such requirements. This information is not required to determine OPERABILITY of a system, component or structure and therefore is being relocated to a Licensee Controlled Document (ITS Bases SR 3.4.15.1). Any time the OPERABILITY of a system or component has been affected by maintenance, repair, or replacement of a component, post maintenance testing is required to demonstrate OPERABILITY of the system or component. Explicit post maintenance SRs are not required to be specifically detailed (one would have to add them to all Specifications if deemed necessary).

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. 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 ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS (continued)

LA.3 CTS SR 4.7.11 states that performance of the Surveillance is to be accomplished during shutdown. ITS SR 3.4.15.2 does not specify the plant condition under which the Surveillance is to be performed. This information is not required to determine OPERABILITY of a system, component or structure and therefore is being relocated to a Licensee Controlled Document (ITS Bases SR 3.4.15.2).

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. 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 ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

LA.4 CTS Surveillance 4.4.5.2.2.e requires testing of PIVs within 72 hours following a system response to an Engineered Safety Feature Actuation Signal (ESFAS). ITS 3.4.15 has no such requirement. This requirement addresses two possible conditions: ESFAS actuation < 1950 psia and ESFAS actuation ≥ 1950 psia. The 24 hour requirement to test affected PIVs (SR 3.4.15.1) addresses the condition of an ESFAS actuation below 1950 psia because flow (>1 gpm) is assumed to have occurred. The second condition (ESFAS actuation ≥ 1950 psia) is most appropriately addressed by CTS 4.4.5.2.2.e. CTS 4.4.5.2.2.e allows 72 hours to test PIVs because there is little chance that the PIVs were cycled from closed/seated position with RCS pressure ≥ 1950 psia. Also, CRDR 2-5-0223 has concluded that it would not be necessary to test PIVs following an inadvertent SIAS as long as RCS pressure was greater that HPSI pump discharge pressure because there would be no flow (>1 gpm). In simpler terms, pressurizing a line does not constitute flow through a valve for the purpose of CTS SR 4.4.5.2.2.e. This Surveillance is not required to determine OPERABILITY of a system, component or structure and therefore is being relocated to a Licensee Controlled Document (Technical Requirements Manual [TRM]).

TECHNICAL CHANGES - RELOCATIONS (continued)

Any changes to the TRM will be in accordance with 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 ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 CTS 3.4.5.2 (including Table 3.4-1 Notes 1 and 2) limit the leakage from each PIV to 1 gpm. ITS 3.4.15 provides a limit based on valve size: 0.5 gpm per nominal inch of valve size, up to a maximum of 5 gpm. The limit for leakage from any single pressure isolation valve is revised to be based on the size of the valve as identified in ASME/ANSI OM (Operation and Maintenance of Nuclear Power Plants) which is referenced in the 1988 Addenda to the 1986 Edition of Section XI of the ASME Boiler and Pressure Vessel Code. OMa-1988 (1988 addenda to OM-1987), Section 4.2.2.3(e), Analysis of Leakage Rates, identifies permissible leakage rates for water as 0.5 gpm or 5 gpm, whichever is less, at function differential pressure. The revised limits continue to provide overall assurance of valve integrity. This change is consistent with NUREG-1432.

L.2 CTS 3.4.5.2 includes leakage limitations for Shutdown Cooling (SDC) isolation valves in all of Mode 4. ITS LCO 3.4.15, Applicability, provides an exception to Mode 4 for Operability of the SDC PIVs "when in, or during the transition to or from, the SDC mode of operation." The SDC flow path is required to be open for the decay heat removal function. This change resolves a conflict in the CTS Specifications: if the PIV leakage is not within limits when SDC is required to be Operable and operating; the CTS requires both, SDC flow path isolation (CTS 3.4.5.2 Action c) and the SDC System be in service (CTS LCO 3.4.1.3). Although alternative methods of decay heat removal could be established, shutdown cooling is the preferred method. Further, its use with leakage through the pressure isolation valves poses minimal risk at low pressure since the piping is rated for this pressure. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.3 CTS 3.4.5.2, Action C, only allows the use of one manual or de-energized automatic valve. ITS 3.4.15, Required Action A.1, allows the use of one manual, de-energized automatic, or check valve to perform the function of isolation. Allowing the use of a check valve with no flow to perform the isolation function is a less restrictive change. This is acceptable because, in most cases, the next available isolation is the second in-line PIV, which is a check valve. This would allow PVNGS to use the 2nd PIV check valve to perform the isolation function required, whereas in the past this was not done. Other isolations were used that were not tested to PIV requirements. This change is consistent with NUREG-1432.

L.4 CTS 4.4.5.2.2 is modified by Footnote "**" which excludes "The provisions of Specification 4.0.4." ITS does not make specific exceptions to SR 3.0.4, which is the CTS 4.0.4 equivalent. The associated ITS SR Note states that performance of the SR is not required in Modes 3 and 4. The ITS SR Note modifies the Frequency such that it is not "due" until after the necessary conditions are met. Elimination of SR performance under certain conditions rather than use of a SR 3.0.4 exclusion is a less restrictive change. This is acceptable because this allows sufficient time to establish necessary differential pressures and stable conditions to allow performance of the Surveillance. This change is consistent with NUREG-1432.

L.5 ITS SR 3.4.15.1 contains a Note that states, "RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided ." CTS 3.4.5.2 has not such allowance for the performance of SR 4.4.5.2. " Providing an allowance that limits testing of PIVs actuated during performance of the Surveillance, providing the PIV actuation is unavoidable, constitutes a less restrictive change. This is acceptable because it prevents an infinite testing loop when PIVs already tested are unavoidably actuated. Also, the manner in which PVNGS performs this Surveillance precludes disturbing already tested PIVs. This change is consistent with NUREG-1432.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.15

ADMINISTRATIVE CHANGES
(ITS 3.4.15 Discussion of Changes Labeled A.1 and A.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, "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 Section/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 Section/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 3.4.15 Discussion of Changes Labeled (A.1 and A.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 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 - MORE RESTRICTIVE
(ITS 3.4.15 Discussion of Changes Labeled M.1, M.2 and M.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. 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 in the specific Discussion of Changes listed 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 3.4.15 Discussion of Changes Labeled M.1, M.2 and M.3) (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 3.4.15 Discussion of Changes Labeled LA.1, LA.2, LA.3 and LA.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 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 3.4.15 Discussion of Changes Labeled LA.1, LA.2, LA.3 and LA.4) (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 submittal, 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.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.15 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 CTS 3.4.5.2 (including Table 3.4-1 Notes 1 and 2) limit the leakage from each PIV to 1 gpm. ITS 3.4.15 provides a limit based on valve size: 0.5 gpm per nominal inch of valve size, up to a maximum of 5 gpm. The limit for leakage from any single pressure isolation valve is revised to be based on the size of the valve as identified in ASME/ANSI OM (Operation and Maintenance of Nuclear Power Plants) which is referenced in the 1988 Addenda to the 1986 Edition of Section XI of the ASME Boiler and Pressure Vessel Code. OMa-1988 (1988 addenda to OM-1987), Section 4.2.2.3(e), Analysis of Leakage Rates, identifies permissible leakage rates for water as 0.5 gpm or 5 gpm, whichever is less, at function differential pressure. The revised limits continue to provide overall assurance of valve integrity. 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 3.4.15 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 proposed change provides a limit on leakage from each PIV based on valve size: 0.5 gpm per nominal inch of valve size, up to a maximum of 5 gpm, rather than limit the leakage from each PIV to 1 gpm. The PIV leakage limits are not derived from design basis accidents. RCS PIV leakage limits are prescribed during normal operation to prevent overpressure failure of low pressure portions of connecting systems, an unanalyzed condition that could degrade the ability of low pressure injection. This change will not affect the probability of an accident. RCS PIV leakage limits are not an initiator of any analyzed event. The RCS PIV leakage limits are an indication that the PIVs between the RCS and the connecting systems is degraded or degrading. The consequences of an accident are not significantly affected by this change. Also, the previous criterion of 1 gpm for all valve sizes imposed an unjustified penalty on the larger valves without providing information on potential valve degradation.

A PIV leakage rate limit based on valve size is superior to a single allowable value. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change will not involve a significant increase in the probability or consequence of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.15 Discussion of Changes Labeled L.1) (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 provides a limit on leakage from each PIV based on valve size: 0.5 gpm per nominal inch of valve size, up to a maximum of 5 gpm, rather than limit the leakage from each PIV to 1 gpm. The previous criterion of 1 gpm for all valve sizes imposed an unjustified penalty on the larger valves without providing information on potential valve degradation. A PIV leakage rate limit based on valve size is superior to a single allowable value. Also, the 72 hour limitation to restore a PIV to within limits will not allow continued operation with a PIV leakage rate in excess of limits. 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 provides a limit on leakage from each PIV based on valve size: 0.5 gpm per nominal inch of valve size, up to a maximum of 5 gpm, rather than limit the leakage from each PIV to 1 gpm. The margin of safety is not affected by this change. The previous criterion of 1 gpm for all valve sizes imposed an unjustified penalty on the larger valves without providing information on potential valve degradation. A PIV leakage rate limit based on valve size is superior to a single allowable value. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.15 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 CTS 3.4.5.2 includes leakage limitations for Shutdown Cooling (SDC) isolation valves in all of Mode 4. ITS LCO 3.4.15 provides an exception to Mode 4 for Operability of the SDC PIVs "when in, or during the transition to or from, the SDC mode of operation." The SDC flow path is required to be open for the decay heat removal function. This change resolves a conflict in the CTS Specifications: if the PIV leakage is not within limits when SDC is required to be Operable and operating; the CTS requires both, SDC flow path isolation (CTS 3.4.5.2 Action c) and the SDC System be in service (CTS LCO 3.4.1.3). Although alternative methods of decay heat removal could be established, shutdown cooling is the preferred method. Further, its use with leakage through the pressure isolation valves poses minimal risk at low pressure since the piping is rated for this pressure. 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 3.4.15 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 provides an exception to Mode 4 for Operability of the SDC PIVs: "except valves in the shutdown cooling (SDC) flow path when in, or during the transition to or from, the SDC mode of operation", rather than including leakage limitations for SDC isolation valves in all of Mode 4. The SDC PIV leakage limits are not derived from design basis accidents. PIV leakage limits are an indication that the PIVs between the RCS and the connecting systems is degraded or degrading. This change will not affect the probability of an accident. SDC PIV leakage limits are not an initiator of any analyzed event. PIV leakage limits are prescribed during normal operation to prevent overpressure failure of low pressure portions of connecting systems, an unanalyzed condition that could degrade the ability of low pressure injection. Therefore, SDC system use with leakage through the SDC PIVs poses minimal risk at low pressure since the piping is rated for this pressure.

The consequences of an accident are not significantly affected by this change. SDC system use, as stated earlier, with leakage through the SDC PIVs poses minimal risk at low pressure since the piping is rated for this pressure. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change will not involve a significant increase in the probability or consequence of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.15 Discussion of Changes Labeled L.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 change provides an exception to Mode 4 for Operability of the SDC PIVs: "except valves in the shutdown cooling (SDC) flow path when in, or during the transition to or from, the SDC mode of operation", rather than including leakage limitations for SDC isolation valves in all of Mode 4. SDC system use with leakage through the SDC PIVs poses minimal risk at low pressure since the piping is rated for this pressure. Also, PIVs contained in the SDC flow path must be leakage rate tested after SDC is secured, stable unit conditions established, and necessary differential pressures are established. This ensures PIVs contained in the SDC flow path are tested to be within limits. 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 provides an exception to Mode 4 for Operability of the SDC PIVs: "except valves in the shutdown cooling (SDC) flow path when in, or during the transition to or from, the SDC mode of operation", rather than including leakage limitations for SDC isolation valves in all of Mode 4. The margin of safety is not affected by this change. PIV leakage limits are prescribed during normal operation to prevent overpressure failure of low pressure portions of connecting systems, an unanalyzed condition that could degrade the ability of low pressure injection. Therefore, SDC system use with leakage through the SDC PIVs poses minimal risk at low pressure since the piping is rated for this pressure. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.15 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 CTS 3.4.5.2, Action C, only allows the use of one manual or de-energized automatic valve. ITS 3.4.15, Required Action A.1, allows the use of one manual, de-energized automatic, or check valve to perform the function of isolation. Allowing the use of a check valve with no flow to perform the isolation function is a less restrictive change. This is acceptable because, in most cases, the next available isolation is the second in-line PIV, which is a check valve. This would allow PVNGS to use the 2nd PIV check valve to perform the isolation function required, whereas in the past this was not done. Other isolations were used that were not tested to PIV requirements. 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 3.4.15 Discussion of Changes Labeled L.3) (continued)

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

The proposed change provides allowance for the use of one manual, de-energized automatic, or check valve to perform the function of isolation rather than one manual or de-energized automatic valve. Use of a check valve with no flow to perform the PIV isolation function is not derived from design basis accidents. RCS PIV leakage limits are an indication that the PIVs between the RCS and the connecting systems is degraded or degrading. This change will not affect the probability of an accident. Use of a check valve with no flow to perform the isolation function is not an initiator of any analyzed event. Allowing the use of a check valve with no flow to perform the isolation function is acceptable because, in most cases, the next available isolation is the second in-line PIV, which is a check valve. The consequences of an accident are not significantly affected by this change.

RCS PIV leakage limits are prescribed during normal operation to prevent overpressure failure of low pressure portions of connecting systems, an unanalyzed condition that could degrade the ability of low pressure injection. Allowing the use of a check valve with no flow to perform the isolation function is acceptable because, in most cases, the next available isolation is the second in-line PIV, which is a check valve. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change will not involve a significant increase in the probability or consequence of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.15 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 provides allowance for the use of one manual, de-energized automatic, or check valve to perform the function of isolation rather than one manual or de-energized automatic valve. RCS PIV leakage limits are prescribed during normal operation to prevent overpressure failure of low pressure portions of connecting systems, an unanalyzed condition that could degrade the ability of low pressure injection. Allowing the use of a check valve with no flow to perform the isolation function is acceptable because, in most cases, the next available isolation is the second in-line PIV, which is a check valve. Also, use of check valve with no flow to perform the isolation function, when an associated in-line PIV is leaking beyond limits, is limited to 72 hours. The 72 hour limitation will not allow continued operation with a PIV leakage rate in excess of limits while relying on a second PIV to perform the isolation function. 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 provides allowance for the use of one manual, de-energized automatic, or check valve to perform the function of isolation rather than one manual or de-energized automatic valve. The margin of safety is not affected by this change. RCS PIV leakage limits are prescribed during normal operation to prevent overpressure failure of low pressure portions of connecting systems, an unanalyzed condition that could degrade the ability of low pressure injection. Allowing the use of a check valve with no flow to perform the isolation function is acceptable because, in most cases, the next available isolation is the second in-line PIV, which is a check valve. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.15 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 CTS 4.4.5.2.2 is modified by Footnote "**" which excludes "The provisions of Specification 4.0.4." ITS does not make specific exceptions to SR 3.0.4, which is the CTS 4.0.4 equivalent. The associated ITS SR Note states that performance of the SR is not required in Modes 3 and 4. The ITS SR Note modifies the Frequency such that it is not "due" until after the necessary conditions are met. Elimination of SR performance under certain conditions rather than use of a SR 3.0.4 exclusion is a less restrictive change. This is acceptable because this allows sufficient time to establish necessary differential pressures and stable conditions to allow performance of the Surveillance. 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 3.4.15 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 any reference to SR 3.0.4 exclusion (CTS 4.0.4) for the performance of the Surveillance, in Modes 3 and 4, that verifies PIV leakage within limits. Instead, an associated SR Note states that performance of the SR is not required in Modes 3 and 4. Replacement of the SR 3.0.4 (CTS 4.0.4) exclusion for SR performance with a Note that removes the requirement for SR performance is not derived from design basis accidents. Entry into Modes 3 and 4 is allowed to establish the necessary differential pressures and stable conditions to allow performance of the Surveillance. This permits leakage testing at high differential pressures with stable conditions not possible in Modes with lower pressures. This change will not affect the probability of an accident. Delaying performance of RCS PIV leakage testing in Mode 3 and 4 until necessary differential pressures and stable conditions are established is not an initiator of any analyzed event.

The consequences of an accident are not significantly affected by this change. Also, performance of leakage testing on each RCS PIV or isolation valve used for isolation, prior to entering Mode 2 or 1, is required to verify that leakage is below the specified limit and to identify each leaking valve. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change will not involve a significant increase in the probability or consequence of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.15 Discussion of Changes Labeled L.4) (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 removes any reference to SR 3.0.4 exclusion (CTS 4.0.4) for the performance of the Surveillance, in Modes 3 and 4, that verifies PIV leakage within limits. Instead, an associated SR Note states that performance of the SR is not required in Modes 3 and 4. Entry into Modes 3 and 4 is allowed to establish the necessary differential pressures and stable conditions to allow performance of the Surveillance. Performance of leakage testing on each RCS PIV or isolation valve used for isolation, prior to entering Mode 2 or 1, is required to verify that leakage is below the specified limit and to identify each leaking valve. As a result, Mode 2 or 1 entry is not allowed with PIV leakage not within limits. 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 removes any reference to SR 3.0.4 exclusion (CTS 4.0.4) for the performance of the Surveillance, in Modes 3 and 4, that verifies PIV leakage within limits. Instead, an associated SR Note states that performance of the SR is not required in Modes 3 and 4. The margin of safety is not affected by this change. While entry into Modes 3 and 4 is allowed, this is done to establish the necessary differential pressures and stable conditions to allow performance of the Surveillance. This permits leakage testing at high differential pressures with stable conditions not possible in Modes with lower pressures. Performance of leakage testing on each RCS PIV or isolation valve used for isolation, prior to entering Mode 2 or 1, is required to verify that leakage is below the specified limit and to identify each leaking valve. Requiring SR performance within 24 hours of entering test pressure, as required with only a SR 3.0.4 (CTS 4.0.4) exclusion, places stressful conditions on the operators. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.15 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 the conversion to NUREG 1432.

L.5 ITS SR 3.4.15.1 contains a Note that states, "RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided ." CTS 3.4.5.2 has not such allowance for the performance of SR 4.4.5.2. "Providing an allowance that limits testing of PIVs actuated during performance of the Surveillance, providing the PIV actuation is unavoidable, constitutes a less restrictive change." This is acceptable because it prevents an infinite testing loop when PIVs already tested are unavoidably actuated. Also, the manner in which PVNGS performs this Surveillance precludes disturbing already tested PIVs. 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 3.4.15 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 adds a Note to SR 3.4.15.1 that limits testing of PIVs actuated, during Surveillance performance, to once provided PIV actuation during Surveillance performance is unavoidable. Not requiring PIV retesting to avoid a repetitive testing loop is not derived from design basis accidents. This Note is prescribed to prevent repetitive testing of PIVs when a repetitive test loop cannot be avoided. This change will not affect the probability of an accident. Not requiring PIV retesting to avoid a repetitive testing loop is not an initiator of any analyzed event.

The consequences of an accident are not significantly affected by this change. Also, the manner in which PVNGS performs SR 3.4.15.1 precludes disturbing already tested PIVs. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change does 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 adds a Note to SR 3.4.15.1 that limits testing of PIVs actuated, during Surveillance performance, to once provided PIV actuation during Surveillance performance is unavoidable. RCS leakage through a satisfactorily tested PIV that has been unavoidably actuated after Surveillance performance poses minimal risk since (1) the PIV recently passed the Surveillance and (2) a second PIV exists in-line from the RCS. Also, the manner in which PVNGS performs this Surveillance precludes disturbing already tested PIVs. 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 previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.15 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 adds a Note to SR 3.4.15.1 that limits testing of PIVs actuated, during Surveillance performance, to once provided PIV actuation during Surveillance performance is unavoidable. The margin of safety is not affected by this change. While operation is allowed to continue under these conditions sufficient instrumentation exists to monitor for abnormal leakage. First, RCS leakage through a satisfactorily tested PIV that has been unavoidably actuated due to Surveillance testing is unlikely. Second, there also exists a second in-line PIV to protect low pressure systems. Finally, the manner in which PVNGS performs this Surveillance precludes disturbing already tested PIVs. Requiring that all PIVs not to be disturbed after Surveillance performance is an unreasonable requirement when a repetitive testing loop cannot be avoided. Therefore, the change does not involve a significant reduction in a margin of safety.

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.16
MARK UP

<DOC>
<CTS>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.~~15~~ 16 RCS Leakage Detection Instrumentation

<3.4.5.1>
<3.4.5.1.b>
<3.4.5.1.a>

LCO 3.4.~~15~~ 16 ~~[Two of]~~ Both of the following RCS leakage detection instrumentation shall be OPERABLE:

a. One containment sump monitor; ~~[and]~~

b. One containment atmosphere radioactivity monitor (gaseous ~~or~~ and particulate); ~~[and~~

~~c. One containment air cooler condensate flow rate monitor.]~~

<Table 3.3-6> APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

<Act b>
<DOC A.1>
<DOC M.1>

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required containment sump monitor inoperable.	----------NOTE---------- LCO 3.0.4 is not applicable. ----------	
~~[OR~~ ~~Required containment air cooler flow rate monitor inoperable.]~~	A.1 Perform SR 3.4.~~13~~ 14.1.	Once per 24 hours
	AND	
	A.2 Restore containment sump monitor to OPERABLE status.	30 days

(continued)

<DOC>
<CTS>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.4.5.1 Act a> <DOC.A1> <Table 3.3-6 Action 27> <DOC M.1> <Table 3.3-6 Action 27> B. Required containment atmosphere radioactivity monitor inoperable.	~~----------NOTE---------- LCO 3.0.4 is not applicable. ----------~~ 5	
	B.1.1 Analyze grab samples of the containment atmosphere.	Once per 24 hours
	OR 5 14	
	B.1.2 Perform SR 3.4.~~5~~.1.	Once per 24 hours
	AND	
	B.2~~.1~~ 1 Restore required containment atmosphere radioactivity monitor to OPERABLE status.	30 days
	~~OR~~	
	~~B.2.2 Verify containment air cooler condensate flow rate monitor is OPERABLE.~~	~~30 days~~
~~C. Required containment air cooler condensate flow rate monitor inoperable.~~	~~C.1 Perform SR 3.4.15.1.~~	~~Once per 8 hours~~
	~~OR~~	
	~~C.2 Perform SR 3.4.13.1.~~	~~Once per 24 hours~~

2

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~D. Required containment atmosphere radioactivity monitor inoperable.~~ ~~AND~~ ~~Required containment air cooler condensate flow rate monitor inoperable.~~	~~D.1 Restore required containment atmosphere radioactivity monitor to OPERABLE status.~~ ~~OR~~ ~~D.2 Restore required containment air cooler condensate flow rate monitor to OPERABLE status~~	~~30 days~~ ~~30 days~~
~~E.~~ Required Action and associated Completion Time not met.	~~E.1~~ C.1 Be in MODE 3. AND ~~E.2~~ C.2 Be in MODE 5.	6 ~~days~~ HOURS 36 ~~days~~ HOURS
~~D.1~~ D.1 All required monitors inoperable.	~~D.1~~ D.1 Enter LCO 3.0.3.	Immediately

<3.4.5.1 ACT B> 5 C 5 D.1 <DOC M.2>

2 3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.~~15~~.1 5 16	Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor.	~~[12]~~ hours 5

<4.4.5.1.a> <Table 4.3-3>

(continued)

<DOC>
<CTS>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
<4.4.5.1.a> <Table 4.3-3> SR 3.4.~~15~~.2 5 16	Perform CHANNEL FUNCTIONAL TEST of the required containment atmosphere radioactivity monitor.	92 days
<4.4.5.1.b> SR 3.4.~~15~~.3 5 16	Perform CHANNEL CALIBRATION of the required containment sump monitor.	~~[18]~~ months
<4.4.5.1.a> <Table 4.3-3> SR 3.4.~~15~~.4 5 16	Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.	~~[18]~~ months
~~[SR 3.4.15.5~~	~~Perform CHANNEL CALIBRATION of the required containment air cooler condensate flow rate monitor.~~	~~[18] months]~~ 2

CE STS
NUREG-1432 REV. 1
SPECIFICATION 3.4.16
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.~~18~~ 16 RCS Leakage Detection Instrumentation 5

BASES

BACKGROUND

GDC 30 of Appendix A to 10 CFR 50 (Ref. 1) requires means for detecting and, to the extent practical, identifying the location of the source of RCS LEAKAGE. Regulatory Guide 1.45 (Ref. 2) describes acceptable methods for selecting leakage detection systems.

1 Leakage detection systems must have the capability to detect significant reactor coolant pressure boundary (RCPB) degradation as soon after occurrence as practical to minimize the potential for propagation to a gross failure. Thus, an early indication or warning signal is necessary to permit proper evaluation of all unidentified LEAKAGE.

The containment sump monitor consists of instrumentation used to monitor containment sump level and flow (pump run time).

4

Industry practice has shown that water flow changes of 0.5 gpm to 1.0 gpm can readily be detected in contained volumes by monitoring changes in water level, in flow rate, or in the operating frequency of a pump. The containment sump used to collect unidentified LEAKAGE ~~is~~ and the containment air cooler condensate flow rate monitor [are] instrumented to alarm for increases of 0.5 gpm to 1.0 gpm ~~in the normal flow rates~~. This sensitivity is acceptable for detecting increases in unidentified LEAKAGE.

2

at

1

above normal flow for 1 hour (Ref. 3)

1

The reactor coolant contains radioactivity that, when released to the containment, can be detected by radiation monitoring instrumentation. Reactor coolant radioactivity levels will be low during initial reactor startup and for a few weeks thereafter until activated corrosion products have been formed and fission products appear from fuel element cladding contamination or cladding defects. Instrument sensitivities of 10^{-9} μCi/cc radioactivity for particulate monitoring and of 10^{-6} μCi/cc radioactivity for gaseous monitoring are practical for these leakage detection systems. Radioactivity detection systems are included for monitoring both particulate and gaseous activities, because of their sensitivities and ~~rapid~~ responses to RCS LEAKAGE.

1

An increase in humidity of the containment atmosphere would indicate release of water vapor to the containment. Dew point temperature measurements can thus be used to monitor humidity levels of the containment atmosphere as an

(continued)

BASES

BACKGROUND (continued)

indicator of potential RCS LEAKAGE. A 1°F increase in dew point is well within the sensitivity range of available instruments.

Since the humidity level is influenced by several factors, a quantitative evaluation of an indicated leakage rate by this means may be questionable and should be compared to observed increases in liquid flow into or from the containment sump ~~and condensate flow from air coolers~~. Humidity level monitoring is considered most useful as an indirect alarm or indication to alert the operator to a potential problem. Humidity monitors are not required by this LCO.

Air temperature and pressure monitoring methods may also be used to infer unidentified LEAKAGE to the containment. Containment temperature and pressure fluctuate slightly during plant operation, but a rise above the normally indicated range of values may indicate RCS LEAKAGE into the containment. The relevance of temperature and pressure measurements are affected by containment free volume and, for temperature, detector location. Alarm signals from these instruments can be valuable in recognizing ~~rapid and~~ sizable leakage to the containment. Temperature and pressure monitors are not required by this LCO.

APPLICABLE SAFETY ANALYSES

The need to evaluate the severity of an alarm or an indication is important to the operators, and the ability to compare and verify with indications from other systems is necessary. The ~~system response times and sensitivities are~~ described in the FSAR (Ref. 3). Multiple instrument locations are utilized, if needed, to ~~ensure the transport delay time of the LEAKAGE from its source to an instrument location yields an acceptable overall response time~~.

RCS leakage detection instrumentation

HELP IDENTIFY THE LOCATION

The safety significance of RCS LEAKAGE varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring RCS LEAKAGE into the containment area are necessary. Quickly separating the identified LEAKAGE from the unidentified LEAKAGE provides quantitative information to the operators, allowing them to take corrective action should leakage occur detrimental to the safety of the facility and the public.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

RCS leakage detection instrumentation satisfies Criterion 1 of ~~the NRC Policy Statement~~ 10CFR50.36(c)(2)(ii) 1

LCO

One method of protecting against large RCS LEAKAGE derives from the ability of instruments to rapidly detect extremely small leaks. This LCO requires instruments of diverse monitoring principles to be OPERABLE to provide a high degree of confidence that extremely small leaks are detected in time to allow actions to place the plant in a safe condition when RCS LEAKAGE indicates possible RCPB degradation. 1

6 (RU-1)

The LCO is satisfied when monitors of diverse measurement means are available. Thus, the containment sump monitor, in combination with a particulate ~~or~~ and gaseous radioactivity monitor ~~[and a containment air cooler condensate flow rate monitor]~~, provides an acceptable minimum. 2 4 Insert 1

APPLICABILITY

Because of elevated RCS temperature and pressure in MODES 1, 2, 3, and 4, RCS leakage detection instrumentation is required to be OPERABLE.

In MODE 5 or 6, the temperature is ≤ ~~200~~ 210°F and pressure is maintained low or at atmospheric pressure. Since the temperatures and pressures are far lower than those for MODES 1, 2, 3, and 4, the likelihood of leakage and crack propagation is much smaller. Therefore, the requirements of this LCO are not applicable in MODES 5 and 6. 5

Insert A From pg B.3.4-84 1

ACTIONS

A.1 and A.2

If the containment sump monitor is inoperable, no other form of sampling can provide the equivalent information.

However, the containment atmosphere radioactivity monitor will provide indications of changes in leakage. Together with the atmosphere monitor, the periodic surveillance for RCS water inventory balance, SR 3.4.~~13~~ 14.1, must be performed 5

(continued)

INSERT FOR ITS BASES 3.4.16
APPLICABILITY
(Units 1, 2, and 3)
INSERT 1

BASES

APPLICABILITY	It has been determined that it is acceptable to continue to call the containment sump monitor OPERABLE with one containment sump pump out of service.

BASES

ACTIONS

A.1 and A.2 (continued)

at an increased frequency of 24 hours to provide information that is adequate to detect leakage.

Restoration of the sump monitor to OPERABLE status is required to regain the function in a Completion Time of 30 days after the monitor's failure. This time is acceptable considering the frequency and adequacy of the RCS water inventory balance required by Required Action A.1.

INSERT A

~~Required Action A.1 and Required Action A.2~~ are modified by a Note that indicates the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when the containment sump monitor channel is inoperable. This allowance is provided because other ~~instrumentation is~~ available to monitor for RCS LEAKAGE.

AND REQUIRED CONTAINMENT ATMOSPHERE RADIOACTIVITY

B.1.1, B.1.2, ~~B.2.1, and B.2.2~~

MEANS ARE

With ~~both~~ gaseous ~~and~~ particulate containment atmosphere radioactivity monitoring instrumentation channels inoperable, alternative action is required. Either grab samples of the containment atmosphere must be taken and analyzed, or water inventory balances, in accordance with SR 3.4.~~13~~14.1, must be performed to provide alternate periodic information. With a sample obtained and analyzed or an inventory balance performed every 24 hours, the reactor may be operated for up to 30 days to allow restoration of ~~at least one~~ both of the radioactivity monitors.

~~Alternatively, continued operation is allowed if the air cooler condensate flow rate monitoring system is OPERABLE, provided grab samples are taken every 24 hours.~~

The 24 hour interval provides periodic information that is adequate to detect leakage. The 30 day Completion Time recognizes at least one other form of leakage detection is available.

Incorporated into Insert A

~~Required Actions B.1.1, B.1.2, B.2.1, and B.2.2 are modified by a Note that indicates that the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when the gaseous and particulate containment atmosphere radioactivity monitor channel is inoperable. This allowance~~

(continued)

BASES

ACTIONS (continued)

B.1.1, B.1.2, B.2.1, and B.2.2 (continued)

is provided because other instrumentation is available to monitor for RCS LEAKAGE.

C.1 and C.2

If the required containment air cooler condensate flow rate monitor is inoperable, alternative action is again required. Either SR 3.4.15.1 must be performed, or water inventory balances, in accordance with SR 3.4.13.1, must be performed to provide alternate periodic information. Provided a CHANNEL CHECK is performed every 8 hours or an inventory balance is performed every 24 hours, reactor operation may continue while awaiting restoration of the containment air cooler condensate flow rate monitor to OPERABLE status.

The 24 hour interval provides periodic information that is adequate to detect RCS LEAKAGE.

D.1 and D.2

If the required containment atmosphere radioactivity monitor and the containment air cooler condensate flow rate monitor are inoperable, the only means of detecting leakage is the containment sump monitor. This Condition does not provide the required diverse means of leakage detection. The Required Action is to restore either of the inoperable monitors to OPERABLE status within 30 days to regain the intended leakage detection diversity. The 30 day Completion Times ensure that the plant will not be operated in a reduced configuration for a lengthy time period.

E.1 and E.2

If any Required Action of Condition A, B, C, or D cannot be met within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full

(continued)

BASES

ACTIONS (continued)

~~E~~.1 and ~~E~~.2 (continued)

power conditions in an orderly manner and without challenging plant systems.

~~D~~.1

If all required monitors are inoperable, no automatic means of monitoring leakage are available and immediate plant shutdown in accordance with LCO 3.0.3 is required.

SURVEILLANCE REQUIREMENTS

SR 3.4.~~15~~16.1

SR 3.4.~~15~~16.1 requires the performance of a CHANNEL CHECK of the required containment atmosphere radioactivity monitors. The check gives reasonable confidence the channel is operating properly. The Frequency of ~~12~~ hours is based on instrument reliability and is reasonable for detecting off normal conditions.

The alarm setpoints for the containment building atmosphere monitor (RU-1) are: particulate $\leq 2.3 \times 10^{-6}$ uCi/cc CS-137

gaseous $\leq 6.6 \times 10^{-2}$ uCi/cc Xe-133

SR 3.4.~~15~~16.2

SR 3.4.~~15~~16.2 requires the performance of a CHANNEL FUNCTIONAL TEST of the required containment atmosphere radioactivity monitors. The test ensures that the monitor can perform its function in the desired manner. The test verifies the alarm setpoint and relative accuracy of the instrument string. The Frequency of 92 days considers instrument reliability, and operating experience has shown it proper for detecting degradation.

SR 3.4.~~15~~16.3, SR 3.4.~~15~~16.4, ~~[and SR 3.4.15.5]~~

These SRs require the performance of a CHANNEL CALIBRATION for each of the RCS leakage detection instrumentation channels. The calibration verifies the accuracy of the instrument string, including the instruments located inside containment. The Frequency of ~~18~~ months is a typical refueling cycle and considers channel reliability. Operating experience has shown this Frequency is acceptable.

(continued)

BASES ~~(continued)~~

REFERENCES

1. 10 CFR 50, Appendix A, Section IV, GDC 30.
2. Regulatory Guide 1.45.
3. 4 FSAR, Section ~~[ ]~~ 5.2.5 5

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.16

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

2. NUREG-1432 LCO 3.4.15 (ITS LCO 3.4.16) requires that either the gaseous or the particulate atmospheric radioactivity monitor be Operable. ITS 3.4.16 requires that both the gaseous and the particulate atmospheric radioactivity monitor be OPERABLE. Regulatory Guide (RG) 1.45, Section c.3 requires three methods of monitoring RCS leakage. RG 1.45 requires sump level and flow monitoring, airborne particulate radioactivity monitoring, and either monitoring of condensate flow rate from air coolers or monitoring of airborne gaseous activity. PVNGS does not have the capability to monitor condensate flow rate from air coolers, therefore, PVNGS is required to use the airborne gaseous activity monitor. The ITS was also revised to reflect present PVNGS plant configuration by deleting all Actions and Surveillances concerning the containment air cooler flow rate monitor. This change is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

3. NUREG-1432, 3.4.15 Action E (ITS 3.4.16 Action C), uses Completion Times of 6 days and 30 days. ITS 3.4.16, Action C, will use Completion Times of 6 hours and 30 hours. The use of days versus hours has been identified as a typographical error by the CEOG. NUREG-1432, 3.4.15, Action E Completion Time, will be changed from days to hours with a CEOG administrative change. This change is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

4. ITS 3.4.16 Bases contains additional information describing what constitutes a containment sump monitor. NUREG-1432 explicitly discusses the requirements but neglects to elaborate on what constitutes a containment sump monitor. Regulatory Guide 1.45 requires that at least three separate detection methods be employed. One of the methods employed should be sump level and flow monitoring. At PVNGS, monitoring containment sump levels and flows fulfills this requirement. Also, this change is consistent with PVNGS licensing basis.

5. 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 are directly transferred from the CTS to the ITS.

6. ITS Bases 3.4.16 identifies the containment building atmosphere monitor as RU-1 and provides the alarm setpoints for particulate and gaseous radiation levels. This information is being relocated from CTS Table 3.3-6 (See DOC 3.4.16, LA.1).

PVNGS CTS
SPECIFICATION 3.4.16
MARK UP

Specification 3.4.16
(3.3.16/3.3.11)

3.4 ~~INSTRUMENTATION~~ Reactor Coolant System (RCS)

~~3/4.3.3 MONITORING INSTRUMENTATION~~

3.4.16 ~~RADIATION MONITORING INSTRUMENTATION~~ Leakage Detection Instrumentation

ITS 3.4.16
ITS 3.3.11

LIMITING CONDITION FOR OPERATION

3.3.3.1 The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits.

APPLICABILITY: As shown in Table 3.3-6.

ACTION:

a. With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in Table 3.3-6, adjust the setpoint to within the limit within 4 hours or declare the channel inoperable.

b. With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement, take the ACTION shown in Table 3.3-6.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-3.

Specification 3.4.16
(3.3.8/3.3.9/3.3.10/3.3.11/3.3.16 split Report)

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	MEASUREMENT RANGE	ACTION	
1. Area Monitors						
A. Fuel Pool Area RU-31	1	**	≤15mR/hr	10^{-1} to 10^{4}mR/hr	22 & 24	ITS 3.3.10
B. New Fuel Area RU-19	1	*	≤15mR/hr	10^{-1} to 10^{4}mR/hr	22	Split Report
C. Containment RU-148 & RU-149	2	1,2,3,4	≤10R/hr	1R/hr to 10^{7}R/hr	27	ITS 3.3.11
D. Containment Power Access Purge Exhaust RU-37 & RU-38	1	#	≤2.5mR/hr	10^{-1} to 10^{4}mR/hr	25	ITS 3.3.8
E. Main Steam						
1) RU-139 A&B	1	1,2,3,4	##	10^{0} to 10^{5}mR/hr	27	
2) RU-140 A&B	1	1,2,3,4	##	10^{0} to 10^{5}mR/hr	27	Split Report
2. Process Monitors						ITS 3.4.16
A. Containment Building Atmosphere RU-1	2	1,2,3,4			23 & 27	A.1
1) Particulate			~~≤2.3x10^{-6}µCi/cc Cs-137~~	~~10^{-9} to 10^{-4}µCi/cc~~		LA.1
2) Gaseous			~~≤6.6x10^{-2}µCi/cc Xe-133~~	~~10^{-6} to 10^{-1}µCi/cc~~		ITS 3.4.16
B. Noble Gas Monitors Control Room Ventilation Intake RU-29 & RU-30	1	ALL MODES	≤2x10^{-5}µCi/cc	10^{-6} to 10^{-1}µCi/cc	26	ITS 3.3.9
3. Post Accident Sampling System	1###	1,2,3	N.A.	N.A.	28	Split Report

*With fuel in the storage pool or building.
**With irradiated fuel in the storage pool.
#When purge is being used.
##Three (3) times background in Rem/hour.
###The Minimum Channels Operable will be defined in the Preplanned Alternate Sampling Program.

Specification 3.4.16

(3.3.8/3.3.9/3.3.10/3.3.11/3.4.16/ split report)

TABLE 3.3-6 (Continued)

ACTION STATEMENTS

ITS 3.3.10

ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per 24 hours.

ITS 3.4.16

ACTION 23 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.4.5.1. A.2

ITS 3.4.16

ITS 3.3.10

ACTION 24 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.12 or operate the fuel building essential ventilation system while handling irradiated fuel.

ITS 3.3.8

ACTION 25 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, comply with the ACTION requirements of Specification 3.9.9.

ITS 3.3.9

ACTION 26 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, within 1 hour initiate and maintain operation of the control room emergency ventilation system in the essential filtration mode of operation.

ITS 3.4.16

~~ACTION 27~~ Cond B Req Act B.2 - With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirement, either restore the inoperable channel(s) to OPERABLE status within ~~72 hours~~ 30 days, or: A.1 L.3

Split Report

1. For area monitors RU-139 A and B, RU-140 A and B, RU-148 and RU-149, initiate a preplanned alternate program to monitor the appropriate parameters.

ITS 3.4.16

2. For process monitors, place moveable air monitor in-line. L.3 A.1

3. ~~Prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 30 days following the event outlining the action taken, the cause of the inoperability, and the plans and schedule for restoring the system to OPERABLE status.~~ LA.2

ITS 3.4.16

Split Report

ACTION 28 - With the number of OPERABLE Channels one less than required by the Minimum Channels OPERABLE requirement, either restore the inoperable channel(s) to OPERABLE status within 7 days, or:

1. Initiate the Preplanned Alternate Sampling Program to monitor the appropriate parameter(s).

2. Prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 30 days following the event outlining the action(s) taken, the cause of the inoperability, and the plans and schedule for restoring the system to OPERABLE status.

Specification: 3.4.16
(3.3.8/3.3.9/3.3.10/3.3.11/3.4.16/ split Report)

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED	
	1. Area Monitors					
ITS 3.3.10	A. Fuel Pool Area RU-31	S	R	Q	**	ITS 3.3.10
Split Report	B. New Fuel Area RU-19	S	R	Q	*	Split Report
ITS 3.3.8	C. Containment Power Access Purge Exhaust RU-37 & RU-38	P#	R	P###,W##	##	ITS 3.3.8
ITS 3.3.11	D. Containment RU-148 & RU-149	S	R	Q	1,2,3,4	ITS 3.3.11
Split Report	E. Main Steam RU-139 A&B RU-140 A&B	S	R	Q	1,2,3,4	Split Report
	2. Process Monitors	SR.3.4.16.1	SR3.4.16.2	SR3.4.16.3		ITS 3.4.16
	A. Containment Building Atmosphere RU-1					A.1
	1) Particulate	S	R	Q	1,2,3,4	
	2) Gaseous	S	R	Q	1,2,3,4	ITS 3.4.16
	B. Control Room Ventilation Intake RU-29 & RU-30	S	R	Q	All MODES	ITS 3.3.9
	3. Post Accident Sampling System	N.A.	R	M***	1,2,3	Split Report

*With fuel in the storage pool or building.
**With irradiated fuel in the storage pool.
***The functional test should consist of, but not be limited to, a verification of system sampling capabilities.
#If purge is in service for greater than 12 hours, perform once per 12-hour period.
##When purge system is in operation.
###The functional test should consist of, but not be limited to, a verification of system isolation capability by the insertion of a simulated alarm condition.

Specification 3.4.16

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 ~~3/4.4.5~~ REACTOR COOLANT SYSTEM ~~LEAKAGE~~

LEAKAGE DETECTION SYSTEMS

A.1

~~LIMITING CONDITION FOR OPERATION~~

LCO 3.4.16 ~~3.4.5.1~~ The following Reactor Coolant System leakage detection systems shall be OPERABLE:

1. ~~Either the~~ One containment atmosphere gaseous radioactivity ~~or~~ and containment atmosphere particulate radioactivity monitor~~ing system~~, and
2. ~~The~~ One containment sump ~~level and flow~~ monitor~~ing system~~.

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

ACTION: Required LCO 3.0.4 is not applicable — L.1

ACTB — 1. ~~With either/or both the~~ containment atmosphere ~~gaseous radioactivity and containment atmosphere particulate~~ radioactivity monitors INOPERABLE, operation may continue for up to 30 days provided the containment sump level and flow monitoring system is OPERABLE and gaseous and/or particulate grab samples of the containment atmosphere are obtained at least once per 24 hours and analyzed within the ~~subsequent 3~~ hours; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. — A.3, L.2, M.1

Insert 1 — the same 24

ACTC

ACTA — 2. With the containment sump ~~level and flow~~ monitor~~ing system~~ INOPERABLE, operation may continue for up to 30 days provided the containment atmosphere gaseous radioactivity monitoring and the containment atmosphere particulate radioactivity monitoring systems are OPERABLE; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. — A.3, M.1

ACTC

Insert 2

ACTD

SURVEILLANCE REQUIREMENTS — Insert 3 — M.2

~~4.4.5.1~~ The leakage detection systems shall be demonstrated OPERABLE by:

SR 3.4.16.1, SR 3.4.16.2, SR 3.4.16.4 — 1. Containment atmosphere ~~gaseous and particulate~~ radioactivity monitoring system performance of CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST at the frequencies specified ~~in Table 4.3-3~~.

SR 3.4.16.3 — 2. Containment sump ~~level and flow~~ monitor~~ing system~~ performance of CHANNEL CALIBRATION at least once per 18 months.

INSERT FOR CTS 3.4.5.1
ACTION A
(Units 1, 2, and 3)
INSERT 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
	OR	
	B.1.2 Perform SR 3.4.14.1	Once per 24 hours

INSERT FOR CTS 3.4.5.1
ACTION B
(Units 1, 2, and 3)
INSERT 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
	OR	
	A.1 Perform SR 3.4.14.1	Once per 24 hours

INSERT FOR CTS 3.4.5.1
REQUIRED ACTION D
(Units 1, 2, and 3)
INSERT 3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. All required monitors inoperable	D.1 Enter LCO 3.0.3	Immediately

DISCUSSION OF CHANGES
SPECIFICATION 3.4.16

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 CTS 3.3.3.1, Table 3.3-6, Action 23, references CTS 3.4.5.1. Cross references are not used in the ITS or NUREG-1432. Removing cross references does not alter the requirements of the referenced Specification. Therefore, this is an administrative change with no impact on safety. This change is consistent with NUREG-1432.

A.3 CTS 3.4.5.1, Action a, requires that when the containment atmosphere radioactivity monitor (gaseous and particulate) is inoperable that operation may continue provided the Containment Sump Monitoring System is Operable. The requirement for the containment sump monitor to be Operable is required by ITS 3.4.16. In addition, ITS Actions C and D provide the applicable shutdown requirements in the event both the containment atmosphere radioactivity monitor and containment sump monitor are inoperable. CTS 3.4.5.1, Action b, requires that when the containment sump monitor becomes inoperable, the containment atmosphere gaseous and particulate radioactivity monitoring systems be Operable. ITS LCO 3.4.16 provides the requirements concerning when monitoring systems are to be Operable and therefore do not need to be repeated in the Action Statements. These requirements are contained within other parts of this Specification. This change is considered to be administrative. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 ITS 3.4.16 Required Actions A.1 and B.1.2 have been added. These new Actions require that SR 3.4.14.1 be performed once per 24 hours when the required containment sump monitor or containment atmosphere radioactivity monitor are inoperable. SR 3.4.14.1 is the RCS water inventory balance that is only required to be performed when the unit is at steady-state conditions. The addition of these Actions constitute a more restrictive change to PVNGS plant operations. This is acceptable because the RCS water inventory balance provides periodic information that is adequate to detect leakage. This change is consistent with NUREG-1432.

M.2 ITS 3.4.16 contains an additional Action that requires LCO 3.0.3 entry when all required monitors are inoperable. CTS 3.4.5.1 does not contain any such explicit requirement. The addition of this requirement constitutes a more restrictive change to PVNGS plant operation. This is acceptable because if no required monitors are operable, no automatic means of monitoring leakage are available. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS

LA.1 CTS 3.3.3.1, Table 3.3-6, contains the particulate and gaseous radioactivity monitor alarm setpoint and measurement range. ITS 3.4.16 will not contain this detailed information. This information is not required to determine Operability of the system and therefore is being relocated to Licensee Controlled Documents. The radioactivity monitor alarm setpoints will be relocated to ITS Bases SR 3.4.16.2 and the radioactivity monitor measurement ranges will be relocated to the UFSAR.

Any changes to the Bases will be in accordance with ITS Chapter 5.0 Bases Control Program. Any technical changes to the UFSAR will be in accordance with the UFSAR Control Process. 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 a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS (continued)

LA.2 CTS 3.3.3.1, Table 3.3-6, Action 27, requires the preparation and submittal of a special report to the commission within 30 days outlining the action taken, cause of the inoperability, and the plans and schedule for restoring the system to OPERABLE status. ITS 3.4.16 does not contain this information. This information is not required to determine OPERABILITY of the system and therefore is being relocated to a Licensee Controlled Document (the Technical Requirements Manual [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 a Licensee Controlled Document is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 ITS 3.4.16 adds an LCO 3.0.4 exemption to the Action Statements A and B which allows changing Modes while RCS leakage detection instrumentation are inoperable. This change is acceptable because Mode changes do not affect the ability to detect RCS LEAKAGE, and other methods remain available to detect RCS LEAKAGE. Adding a requirement that allows Mode changes when previously Mode changes were not allowed constitutes a less restrictive change. This is consistent with NUREG-1432.

L.2 CTS 3.4.5.1, Action a, requires grab samples of the containment atmosphere to be obtained once per 12 hours and analyzed within the subsequent 3 hours when used as contingency action. ITS 3.4.16 increases the Completion Time for obtaining the grab sample and analyzing the grab sample to 24 hours. Increasing the Completion Time constitutes a less restrictive change. This change is acceptable because the 24 hour interval provides results that are adequate to detect LEAKAGE. Also, the 24 hour interval is satisfactory because one remaining RCS LEAKAGE detection instrument remains Operable along with other methods (i.e., containment temperature, pressure, and humidity, pressurizer level, and VCT level) to adequately detect RCS LEAKAGE. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.3 CTS 3.3.3.1, Action 27, requires that the inoperable containment atmosphere radioactivity monitor (gaseous and particulate) be returned to Operable status within 72 hours or place a moveable air monitor in-line. ITS 3.4.16 does not require this Action. Removing the requirement to restore containment atmosphere radioactivity monitor (gaseous and particulate) to Operable status within 72 hours or place a moveable air monitor in-line constitutes a less restrictive change. Also, increasing the Completion Time of restoring the required containment atmosphere radioactivity monitor to Operable status from 72 hours to 30 days constitutes a less restrictive change. This is acceptable because ITS 3.4.16, Action B, requires that once per 24 hours an RCS inventory balance be performed. Regulatory Guide 1.47, Reactor Coolant Pressure Boundary Leakage Detection Systems, states that another important method of obtaining indications of uncontrolled or undesirable intersystem flow would be the use of a water inventory balance. Also, the containment atmosphere monitor can only detect LEAKAGE located on systems inside the containment. The RCS water inventory balance would be able to detect LEAKAGE not only in containment but in all systems connected to the RCS, inside or outside containment. This change is consistent with NUREG-1432.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.16

ADMINISTRATIVE CHANGES
(ITS 3.4.16 Discussion of Changes Labeled A.1, A.2 and A.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, "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 Section/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 Section/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 3.4.16 Discussion of Changes Labeled (A.1, A.2 and A.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 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 - MORE RESTRICTIVE
(ITS 3.4.16 Discussion of Changes Labeled M.1 and M.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. 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 in the specific Discussion of Changes listed 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 3.4.16 Discussion of Changes Labeled M.1 and M.2) (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 3.4.16 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 3.4.16 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 submittal, 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.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.16 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 3.4.16 adds an LCO 3.0.4 exemption to the Action Statements, which allows changing Modes while RCS leakage detection instrumentation are inoperable. This change is acceptable because Mode changes do not affect the ability to detect RCS LEAKAGE, and other methods remain available to detect RCS LEAKAGE. Adding a requirement that allows Mode changes when previously Mode changes were not allowed constitutes a less restrictive change. This 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 3.4.16 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 proposed change adds an LCO 3.0.4 exemption which allows the changing of Modes within the Modes of Applicability while the RCS leakage detection instrumentation is inoperable. This is acceptable since Mode changes do not affect the ability to detect RCS leakage and other methods remain available to detect RCS leakage. Relaxing the CTS requirements will not result in operation that will increase the probability of initiating an analyzed event. This change will not alter assumptions relative to mitigation of an accident or transient event. This change does not alter assumptions relatived to the mitigation of an analyzed event. This change has been reviewed to ensure that no previously evaluated accident have been adversely affected. 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 adds an LCO 3.0.4 exemption which allows the changing of Modes within the Modes of Applicability while the RCS leakage detection instrumentation is inoperable. This is acceptable since Mode changes do not affect the ability to detect RCS leakage and other methods remain available to detect RCS leakage. Relaxing the requirement for Mode change based on RCS leakage will not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal plant operation. This change is consistent with the assumptions made in the safety analyses, licensing basis, and NUREG-1432. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.16 Discussion of Changes Labeled L.1) (continued)

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

This change will not result in operation that will increase the probability of initiating an analyzed event. The margin of safety is not affected by this change. Therefore, the proposed change does not involve a significant reduction in a margin of safety. The proposed change adds an LCO 3.0.4 exemption which allows the changing of Modes within the Modes of Applicability while the RCS leakage detection instrumentation is inoperable. This is acceptable since Mode changes do not affect the ability to detect RCS leakage and other methods remain available to detect RCS leakage.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.16 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 CTS 3.4.5.1, Action a, requires grab samples of the containment atmosphere to be obtained once per 12 hours and analyzed within the subsequent 3 hours when used as contingency action. ITS 3.4.16 increases the Completion Time for obtaining the grab sample and analyzing the grab sample to 24 hours. Increasing the Completion Time constitutes a less restrictive change. This change is acceptable because the 24 hour interval provides results that are adequate to detect LEAKAGE. Also, the 24 hour interval is satisfactory because one remaining RCS LEAKAGE detection instrument remains Operable along with other methods (i.e., containment temperature, pressure, and humidity, pressurizer level, and VCT level) to adequately detect RCS LEAKAGE. 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 3.4.16 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?

CTS requires a grab sample to be taken every 12 hours when used as a contingency Action when only one RCS leakage detection system remains Operable. The ITS relaxes this requirement by requiring a grab sample only once every 24 hours. This change is acceptable because the 24 hour interval provides results that are adequate to detect leakage and that the remaining detection system is still Operable. Relaxing the CTS requirements will not result in operation that will increase the probability of initiating an analyzed event. This change will not alter assumptions relative to mitigation of an accident or transient event. This change has been reviewed to ensure that no previously evaluated accident have been adversely affected. Therefore this change will not involve a significant increase in the probability or consequence of an accident evaluated.

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

Relaxing the requirement for obtaining a grab sample from 12 hours to 24 hours will not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal plant operation. This change is consistent with the assumptions made in the safety analyses, licensing basis, and NUREG-1432. Therefore, this change 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?

Relaxing the requirement of obtaining a grab sample from 12 hours to 24 hours is acceptable since the other detection system is Operable and will be able to detect any RCS leakage. The margin of safety is not affected by this change. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.16 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 CTS 3.3.3.1, Action 27, requires that the inoperable containment atmosphere radioactivity monitor (gaseous and particulate) be returned to Operable status within 72 hours or place a moveable air monitor in-line. ITS 3.4.16 does not require this Action. Removing the requirement to restore containment atmosphere radioactivity monitor (gaseous and particulate) to Operable status within 72 hours or place a moveable air monitor in-line constitutes a less restrictive change. Also, increasing the Completion Time of restoring the required containment atmosphere radioactivity monitor to Operable status from 72 hours to 30 days constitutes a less restrictive change. This is acceptable because ITS 3.4.16, Action B, requires that once per 24 hours an RCS inventory balance be performed. Regulatory Guide 1.47, Reactor Coolant Pressure Boundary Leakage Detection Systems, states that another important method of obtaining indications of uncontrolled or undesirable intersystem flow would be the use of a water inventory balance. Also, the containment atmosphere monitor can only detect LEAKAGE located on systems inside the containment. The RCS water inventory balance would be able to detect LEAKAGE not only in containment but in all systems connected to the RCS, inside or outside containment. 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 3.4.16 Discussion of Changes Labeled L.3)

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

The proposed change increases the amount of time, 72 hours to 30 days, to restore the containment atmosphere radioactivity monitor (gaseous and particulate) to Operable status, and removes the requirement to place a moveable air monitor in-line if the containment atmosphere radioactivity monitor (gaseous and particulate) can not be returned to Operable status. RCS leakage detection systems are not derived from design basis accidents. Leakage detection systems, as required by GDC 30 of Appendix A to 10 CFR 50, detect significant Reactor Coolant Pressure Boundary (RCPB) degradation as soon after the occurrence as practical to minimize the potential for propagation of gross failure. This change will not affect the probability of an accident. The time required to restore the containment atmosphere radioactivity monitor (gaseous and particulate) to Operable status or the requirement to place a moveable air monitor in-line are not initiators of an analyzed event.

The consequences of an accident is not significantly affected by this change. Also, the 30 day completion time associated with restoring the containment atmosphere radioactivity monitor (gaseous and particulate) to Operable status and removal of the requirement to place a moveable air monitor in-line recognizes that at least one other form of leakage detection is available, and that containment atmospheric grab samples or RCS water inventory balance are completed on a 24 hour frequency. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.16 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 increases the amount of time, 72 hours to 30 days, to restore the containment atmosphere radioactivity monitor (gaseous and particulate) to Operable status, and removes the requirement to place a moveable air monitor in-line if the containment atmosphere radioactivity monitor (gaseous and particulate) can not be returned to Operable status. The 30 day completion time associated with restoring the containment atmosphere radioactivity monitor (gaseous and particulate) to Operable status and removal of the requirement to place a moveable air monitor in-line recognizes that at least one other form of leakage detection is available, and that containment atmospheric grab samples or RCS water inventory balance are completed on a 24 hour frequency. This ensures that adequate information to detect leakage is provided at an acceptable frequency. Also, if a containment atmosphere radioactivity monitor (gaseous and particulate) cannot be restored to Operable status within 30 days, a shutdown is required. As a result, this change does not allow continued operation unless monitors (containment atmospheric radioactivity monitor and containment sump monitor) of diverse measurement means are available, as required by Regulatory Guide 1.45. 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 3.4.16 Discussion of Changes Labeled L.3) (continued)

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

The proposed change increases the amount of time, 72 hours to 30 days, to restore the containment atmosphere radioactivity monitor (gaseous and particulate) to Operable status, and removes the requirement to place a moveable air monitor in-line if the containment atmosphere radioactivity monitor (gaseous and particulate) can not be returned to Operable status. The margin of safety is not affected by this change. While operation is allowed to continue for 30 days with an inoperable containment atmosphere radioactivity monitor (gaseous and particulate) and with no moveable air monitor in-line, at least one other form of leakage detection is available, and containment atmospheric grab samples or RCS water inventory balance are completed on a 24 hour frequency. Sufficient monitoring capability exists to detect significant Reactor Coolant Pressure Boundary (RCPB) degradation as soon after the occurrence as practical to minimize the potential for propagation of gross failure. Therefore, the change does not involve a significant reduction in the margin of safety.

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NUREG-1432 REV. 1
SPECIFICATION 3.4.17
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3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.~~16~~ 17 RCS Specific Activity

LCO 3.4.~~16~~ 17 The specific ~~iodine~~ activity of the reactor coolant shall be within limits.

APPLICABILITY: MODES 1 and 2,
MODE 3 with RCS average temperature (T_{avg}) ≥ 500°F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 > 1.0 μCi/gm.	----------NOTE---------- LCO 3.0.4 is not applicable. ----------	
<3.4.7.a> <3.4.7>	A.1 Verify DOSE EQUIVALENT I-131 within the acceptable region of Figure 3.4.~~26~~ 17-1.	Once per 4 hours
	AND	
	A.2 Restore DOSE EQUIVALENT I-131 to within limit.	48 hours

(continued)

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.4.7.a> B. Required Action and associated Completion Time of Condition A not met. OR DOSE EQUIVALENT I-131 in the unacceptable region of Figure 3.4.~~16~~-1. 17 7	B.1 Be in MODE 3 with T_{avg} < 500°F. COLD 7	6 hours
<3.4.7.b> C. Gross specific activity of the reactor coolant not within limit.	C.1 Perform SR 3.4.~~16~~.2. 17 AND C.2 Be in MODE 3 with T_{avg} < 500°F. COLD	4 hours 6 hours

2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<TABLE 4.4-4> SR 3.4.~~16~~.1 17 Verify reactor coolant gross specific activity ≤ 100/E μCi/gm.	7 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.4.~~18~~ 17.2 <TABLE 4.4-4> ----------NOTE---------- Only required to be performed in MODE 1. ---------- 5	
Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 1.0 μCi/gm.	14 days AND Between 2 and 6 hours after THERMAL POWER change of ≥ 15% RTP within a 1 hour period
SR 3.4.~~18~~ 17.3 <TABLE 4.4-4> ----------NOTE---------- Not required to be performed until 31 days after a minimum of 2 EFPD and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours. ----------	
Determine $\bar{E}$ from a sample taken in MODE 1 after a minimum of 2 EFPD and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	184 days

Move CTS Figure 3.4-1/
ITS 3.4.17-1 from CTS page
3/4 4-27 to here

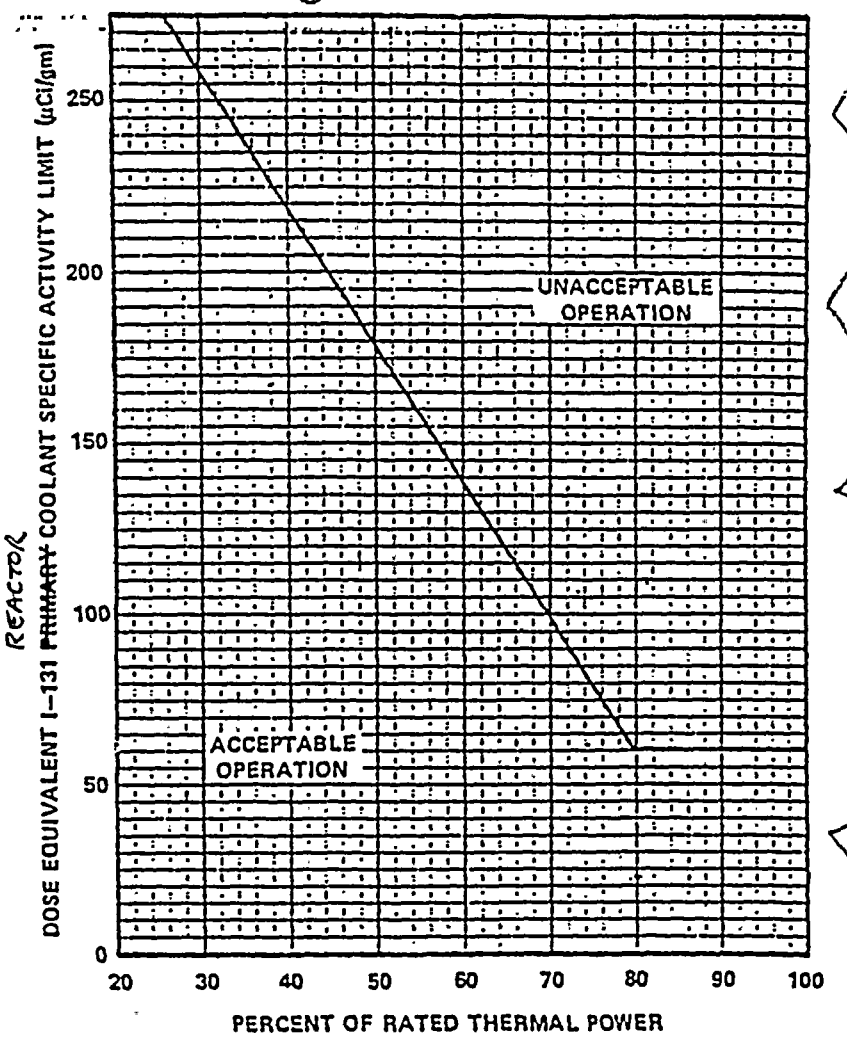

FIGURE ~~3.4-1~~ 3.4.17-1

DOSE EQUIVALENT I-131 ~~PRIMARY~~ REACTOR COOLANT SPECIFIC ACTIVITY LIMIT VERSUS PERCENT OF RATED THERMAL POWER WITH THE PRIMARY COOLANT SPECIFIC ACTIVITY > 1.0 µCi/GRAM DOSE EQUIVALENT I-131

Palo Verde - Units 1,2,3

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SPECIFICATION 3.4.17
BASES MARK UP

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.~~16~~ 17 RCS Specific Activity

BASES 7

BACKGROUND

The Code of Federal Regulations, 10 CFR 100 (Ref. 1) specifies the maximum dose to the whole body and the thyroid an individual at the site boundary can receive for 2 hours during an accident. The limits on specific activity ensure that the doses are held to a small fraction of the 10 CFR 100 limits during analyzed transients and accidents.

The RCS specific activity LCO limits the allowable concentration level of radionuclides in the reactor coolant. The LCO limits are established to minimize the offsite radioactivity dose consequences in the event of a steam generator tube rupture (SGTR) accident.

The LCO contains specific activity limits for both DOSE EQUIVALENT I-131 and gross specific activity. The allowable levels are intended to limit the 2 hour dose at the site boundary to a small fraction of the 10 CFR 100 dose guideline limits. The limits in the LCO are standardized based on parametric evaluations of offsite radioactivity dose consequences for typical site locations.

The parametric evaluations showed the potential offsite dose levels for an SGTR accident were an appropriately small fraction of the 10 CFR 100 dose guideline limits. Each evaluation assumes a broad range of site applicable atmospheric dispersion factors in a parametric evaluation.

APPLICABLE SAFETY ANALYSES

The LCO limits on the specific activity of the reactor coolant ensure that the resulting 2 hour doses at the site boundary will not exceed a small fraction of the 10 CFR 100 dose guideline limits following an SGTR accident. The SGTR safety analysis (Ref. 2) assumes the specific activity of the reactor coolant at the LCO limits and an existing reactor coolant steam generator (SG) tube leakage rate of 1 gpm. The analysis also assumes a reactor trip and a turbine trip at the same time as the SGTR event. 3

The analysis for the SGTR accident establishes the acceptance limits for RCS specific activity. Reference to

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

this analysis is used to assess changes to the facility that could affect RCS specific activity as they relate to the acceptance limits.

The rise in pressure in the ruptured SG causes radioactively contaminated steam to discharge to the atmosphere through the atmospheric dump valves or the main steam safety valves. The atmospheric discharge stops when the turbine bypass to the condenser removes the excess energy to rapidly reduce the RCS pressure and close the valves. The unaffected SG removes core decay heat by venting steam until the cooldown ends.

8

The allowable limits shown on Figure 3.4.17-1 accomodat possible iodine spiking phenomenon which may occur following changes in thermal power.

The safety analysis shows the radiological consequences of an SGTR accident are within a small fraction of the Reference 1 dose guideline limits. Operation with iodine specific activity levels greater than the LCO limit is permissible if the activity levels do not exceed the limits shown in Figure 3.4.~~16~~17-1 for more than 48 hours.

The ~~remainder of the~~ above-limit permissible iodine levels shown in Figure 3.4.~~16~~17-1 are acceptable because of the low probability of an SGTR accident occurring during the established 48 hour time limit. The occurrence of an SGTR accident at these permissible levels could increase the site boundary dose levels, but still be within 10 CFR 100 dose guideline limits.

RCS specific activity satisfies Criterion 2 of ~~the NRC Policy Statement~~ 10 CFR 50.36 (c)(2)(ii). 1

LCO

The specific iodine activity is limited to 1.0 µCi/gm DOSE EQUIVALENT I-131, and the gross specific activity in the primary coolant is limited to the number of µCi/gm equal to 100 divided by E (average disintegration energy of the sum of the average beta and gamma energies of the coolant nuclides). The limit on DOSE EQUIVALENT I-131 ensures the 2 hour thyroid dose to an individual at the site boundary during the Design Basis Accident (DBA) will be a small fraction of the allowed thyroid dose. The limit on gross specific activity ensures the 2 hour whole body dose to an individual at the site boundary during the DBA will be a small fraction of the allowed whole body dose.

(continued)

BASES

LCO (continued)

The SGTR accident analysis (Ref. 2) shows that the 2 hour site boundary dose levels are within acceptable limits. Violation of the LCO may result in reactor coolant radioactivity levels that could, in the event of an SGTR, lead to site boundary doses that exceed the 10 CFR 100 dose guideline limits.

APPLICABILITY

In MODES 1 and 2, and in MODE 3 with RCS ~~average~~ COLD LEG temperature ≥ 500°F, operation within the LCO limits for DOSE EQUIVALENT I-131 and gross specific activity is necessary to contain the potential consequences of an SGTR to within the acceptable site boundary dose values. 2

For operation in MODE 3 with RCS ~~average~~ COLD LEG temperature < 500°F, and in MODES 4 and 5, the release of radioactivity in the event of an SGTR is unlikely since the saturation pressure of the reactor coolant is below the lift pressure settings of the atmospheric dump valves and main steam safety valves.

ACTIONS

A Note to the ~~ACTIONS~~ Required of Condition A 1 excludes the MODE change restriction of LCO 3.0.4. This exception allows entry into the applicable MODE(S) while relying on the ACTIONS even though the ACTIONS may eventually require plant shutdown. This exception is acceptable due to the significant conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient specific activity excursions while the plant remains at, or proceeds to power operation. 6

A.1 and A.2

With the DOSE EQUIVALENT I-131 greater than the LCO limit, samples at intervals of 4 hours must be taken to demonstrate the limits of Figure 3.4.~~16~~17-1 are not exceeded. The Completion Time of 4 hours 7 is required to obtain and analyze a sample.

Sampling must continue for trending. The DOSE EQUIVALENT I-131 must be restored to within limits within 48 hours.

<Continued on next page>

(continued)

BASES

<From previous page>

ACTIONS

A.1 and A.2 (continued)

The Completion Time of 48 hours is required if the limit violation resulted from normal iodine spiking.

B.1

If a Required Action and associated Completion Time of Condition A is not met or if the DOSE EQUIVALENT I-131 is in the unacceptable region of Figure 3.4.16-1, the reactor must be brought to MODE 3 with RCS average temperature < 500°F within 6 hours. The allowed Completion Time of 6 hours is required to reach MODE 3 below 500°F without challenging plant systems.

C.1 and C.2

With the gross specific activity in excess of the allowed limit, an analysis must be performed within 4 hours to determine DOSE EQUIVALENT I-131. The Completion Time of 4 hours is required to obtain and analyze a sample.

The change within 6 hours to MODE 3 and RCS average temperature < 500°F lowers the saturation pressure of the reactor coolant below the setpoints of the main steam safety valves and prevents venting the SG to the environment in an SGTR event. The allowed Completion Time of 6 hours is required to reach MODE 3 below 500°F from full power conditions and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.16.1

The Surveillance requires performing a gamma isotopic analysis as a measure of the gross specific activity of the reactor coolant at least once per 7 days. While basically a quantitative measure of radionuclides with half lives longer than 15 minutes, excluding iodines, this measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in gross specific activity.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.~~16~~ 17.1 (continued)

Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. The Surveillance is applicable in MODES 1 and 2, and in MODE 3 with RCS average temperature at least 500°F. The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time.

COLD LEG

The 14-day surveillance requirement is modified by the Note "Only required to be performed in MODE 1." This is acceptable because the level of fission products generated in MODES 2 and 3 is much less than in MODE 1.

SR 3.4.~~16~~ 17.2

This Surveillance is performed to ensure iodine remains within limit during normal operation and following fast power changes when fuel failure is more apt to occur. During normal operation, The 14 day Frequency is adequate to trend changes in the iodine activity level considering gross activity is monitored every 7 days. The Frequency, between 2 hours and 6 hours after a power change of ≥ 15% RTP within a 1 hour period, is established because the iodine levels peak during this time following fuel failure; samples at other times would provide inaccurate results.

SR 3.4.~~16.3~~ 17

A radiochemical analysis for E determination is required every 184 days (6 months) with the plant operating in MODE 1 equilibrium conditions. The E determination directly relates to the LCO and is required to verify plant operation within the specified gross activity LCO limit. The analysis for E is a measurement of the average energies per disintegration for isotopes with half lives longer than 15 minutes, excluding iodines. The Frequency of 184 days recognizes E does not change rapidly.

One sample is sufficient if the plant has gone through a shutdown or if the transient is complete in 6 hours

This SR has been modified by a Note that indicates sampling is required to be performed within 31 days after 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for at least 48 hours. This ensures the radioactive materials are at equilibrium so the analysis for E is representative and not skewed by a crud burst or other similar abnormal event. Should the 184 day Frequency interval be exceeded. Further discussion of SR Note format is found in Section 1.4, Frequency.

(continued)

BASES (continued)

REFERENCES

1. 10 CFR 100.11, 1973.

7 2. FSAR, Section ~~15.6.3~~.

NUREG-1432 EXCEPTIONS
SPECIFICATION 3.4.17

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

2. ITS 3.4.17, RCS Specific Activity, uses T_{cold}. NUREG-1432 uses T_{avg} in 3.4.17, RCS Specific Activity. Palo Verde presently uses and will continue to use T_{cold} rather than T_{avg}. All PVNGS safety analysis that specifies an initial RCS temperature expresses this in terms of cold leg temperature. The continued use of T_{cold} is a deviation from NUREG-1432 but is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the LCO.

3. NUREG-1432, 3.4.17, Applicable Safety Analysis Bases, states that the Steam Generator Tube Rupture (SGTR) safety analysis assumes a reactor trip and turbine trip at the same time as the SGTR event. ITS 3.4.17, Applicable Safety Analysis Bases, will not use this statement. All PVNGS SGTR safety analysis sequence of events show that a turbine trip and reactor trip occur some finite period of time after the SGTR has occurred. This is a deviation from NUREG-1432 but is consistent with PVNGS licensing basis.

4. ITS 3.4.17, Action C Bases, has replaced the word "prevents" in NUREG-1432 with the phrase "minimizes the potential for." This was done because reducing cold leg temperature to < 500°F does not prevent the affected SG safety valves from lifting during a SGTR event. Only reducing RCS pressure below 1255 psia will ensure the affected SG safety valves will not lift. This change is consistent with PVNGS licensing basis.

5. NUREG-1432, SR 3.4.16.2, contains a Note in the Surveillance column that states, "Only required to be performed in Mode 1." ITS SR 3.4.17.2 will move this Note into the Frequency column just above the 14 day Frequency, and describe in the Bases for SR 3.4.17.2 that this note applies to the 14-day Surveillance requirement. This was done to limit the application of the note to only the 14-day Surveillance requirement, and not apply it to the requirement "Between 2 and 6 hours after THERMAL POWER change of ≥ 15% RTP within a 1 hour period." CTS SR 4.4.7 (Table 4.4-4) requires an iodine analysis sample in MODES 1, 2 and 3 between 2 and 6 hours after THERMAL POWER change of > 15% RTP within a 1 hour period. Limitation of the Note in the ITS SR 3.4.17.2 Frequency column to the 14-day requirement with supporting discussion in the ITS Bases will ensure the CTS requirement for iodine sampling in MODES 1, 2 and 3 following a rapid power change will continue to be met. This change is consistent with PVNGS licensing basis.

6. ITS 3.4.17, Action A, Note explanation in the Bases has been moved to be consistent with the location of Action A Note in the Specification. This Note only allows 3.0.4 exclusion for DOSE EQUIVALENT I-131 limit. The location of the Note explanation in the Bases implies that this exclusion applies to Gross Specific Activity as well. The Note explanation in the Bases is relocated to clarify that it applies only to DOSE EQUIVALENT I-131 limit. This is done to maintain consistency between the Specification and Bases. This is consistent with PVNGS licensing basis. The Bases has also been revised to be consistent with the Specification.

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

8. NUREG-1432 Bases B 3.4.16 (correlates with ITS B 3.4.17), Applicable Safety Analyses, states that the occurrence of a SGTR accident at the permissible levels of Figure 3.4.16-1 could increase the site boundary dose levels, but still be within 10 CFR 100 dose guideline levels. CTS Bases 3/4.4.7 does not support that basis for CTS Figure 3.4-1, which is the correlating figure for NUREG Figure 3.4.16-1 and ITS Figure 3.4.17-1. Since the current licensing basis does not support the NUREG statement, the statement is not included in ITS Bases 3.4.17, Applicable Safety Analysis. Instead, a statement from CTS Bases 3/4.4.7 is added that clarifies the allowable limits of ITS Figure 3.4.17-1 accommodate possible iodine spiking phenomenon which may occur following changes in THERMAL POWER. This is consistent with PVNGS licensing basis.

9. The ITS Bases for SR 3.4.17.2 contains the statement "One sample is sufficient if the plant has gone through a shutdown or if the transient is complete in 6 hours." This statement is not in NUREG-1432. This statement is from CTS SR 4.4.7, Table 4.4-4, and is specified as Relocation LA.1 in the Discussion of Changes for ITS 3.4.17. This statement is appropriate because the iodine production will have stabilized in those conditions. This change is consistent with PVNGS licensing basis.

PVNGS CTS
SPECIFICATION 3.4.17
MARK UP

Specification 3.4.17

A.1

3.4

3.4.17

REACTOR COOLANT SYSTEM (RCS)

3/4.4.7 SPECIFIC ACTIVITY

RCS

LIMITING CONDITION FOR OPERATION

LCO 3.4.17 3/4.7 The specific activity of the primary coolant shall be limited to within:

a. Less than or equal to 1.0 microcurie/gram DOSE EQUIVALENT I-131, and A.2

b. Less than or equal to 100/E microcuries/gram.

APPLICABILITY: MODES 1, 2, 3 (/4) and 5. with RCS cold leg temperature ≥ 500°F. L.1

ACTION:

MODES 1, 2, and 3*: NOTE LCO 3.0.4 is not applicable L.2

REQ ACT A.2 a. With the specific activity of the primary coolant greater than 1.0 microcurie/gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure 3.4-1, be in at least HOT STANDBY with T_{cold} less than 500°F within 6 hours.

ACT B

ACT C b. With the specific activity of the primary coolant greater than (not within limits) 100/E microcuries/gram, be in at least HOT STANDBY with T_{cold} less than 500°F within 6 hours. Perform SR 3.4.17.2 within 4 hours and M.1

MODES 1, 2, 3 (/4) and 5. with RCS cold leg temperature ≥ 500°F. L.1

REQ ACT A.1 With the specific activity of the primary coolant greater than 1.0 microcurie/gram DOSE EQUIVALENT I-131 or greater than 100/E microcuries/gram, perform the sampling and analysis requirements of item 4a) of Table 4.4-4 until the specific activity of the primary coolant is restored to within its limits. A.2

SURVEILLANCE REQUIREMENTS

4.4.7 The specific activity of the primary coolant shall be determined to be within the limits by performance of the sampling and analysis program of Table 4.4-4.

*With T_{cold} greater than or equal to 500°F.

A.1

TABLE 4.4-4

PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM

	TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY	MODES IN WHICH SAMPLE AND ANALYSIS REQUIRED
SR 3.4.17.1	(1) Gross Activity Determination (Verify Reactor Coolant)	At least once per 72 hours (L.3)	1, 2, 3/4 with RCS cold leg temperature ≥ 500°F (L.1)
SR 3.4.17.2	(2) Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration (specific activity ≤ 1.0 μCi/gm)	1 per 14 days	1 and SR 3.4.17.2 NOTE
SR 3.4.17.3	(3) Radiochemical for E Determination	1 per 6 months*	1
	4. Isotopic Analysis for Iodine Including I-131, I-133, and I-135	(a) Once per 4 hours, when ever the specific activity exceeds 1.0 μCi/gram, DOSE EQUIVALENT I-131 or (REQ ACT A.1)	1#, 2#, 3#, 4#, 5# with RCS cold leg temperature ≥ 500°F (L.1) and
		100/E μCi/gram, and (A.2)	
		(b) One sample between 2 and 6 hours following a THERMAL POWER change exceeding 15% of the RATED THERMAL POWER within a 1-hour period. One sample is sufficient if plant has gone through a SHUTDOWN or if transient is complete in 6 hours. (SR 3.4.17.2) (L.4) (L.4.1)	1, 2, 3

#Until the specific activity of the primary coolant system is restored within its limits. within 31 days (M.2)

*Sample to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since reactor was last subcritical for 48 hours or longer. (SR 3.4.17.3 NOTE)

Specification 3.4.17

LTS Figure 3.4-1
has been moved to ITS 3.4.17-1.
Reference ITS 3.4.17 DOCA.1
for discussion

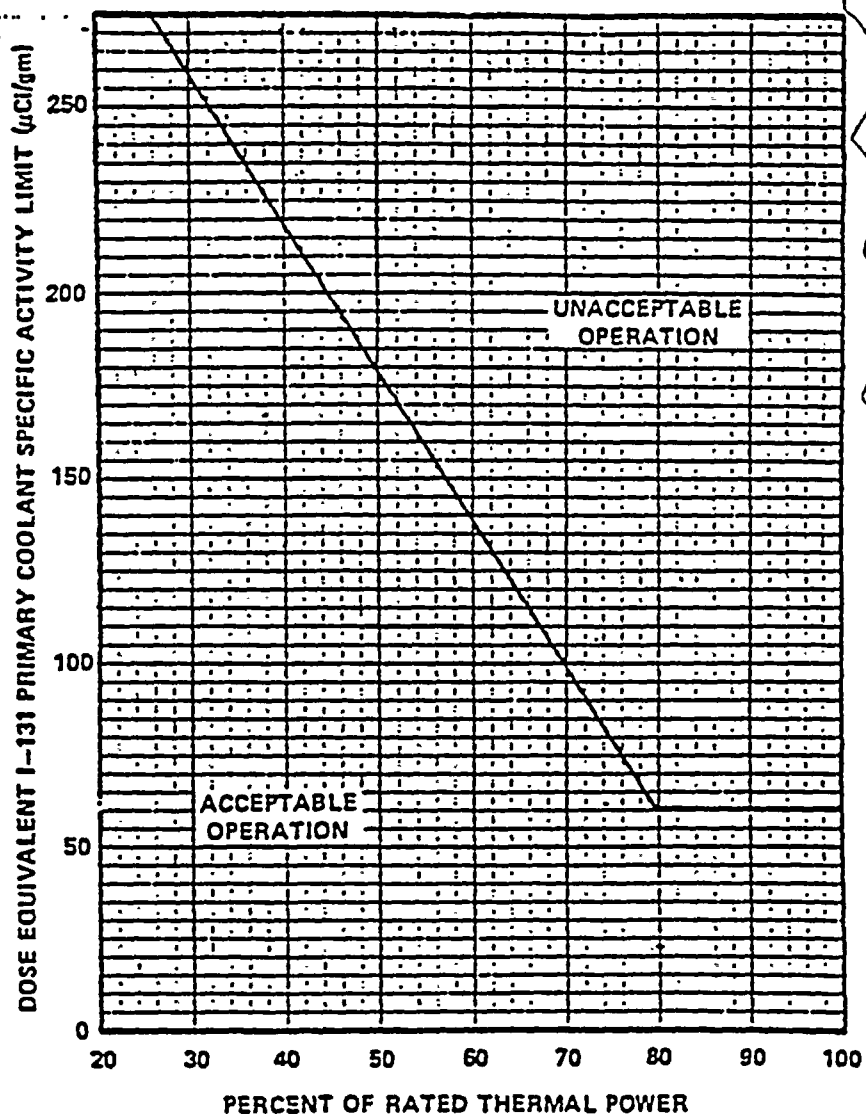

FIGURE ~~3.4-2~~ 3.4.17-1

DOSE EQUIVALENT I-131 PRIMARY COOLANT SPECIFIC ACTIVITY LIMIT VERSUS PERCENT OF RATED THERMAL POWER WITH THE PRIMARY COOLANT SPECIFIC ACTIVITY > 1.0 µCi/GRAM DOSE EQUIVALENT I-131

DISCUSSION OF CHANGES
SPECIFICATION 3.4.17

ADMINISTRATIVE CHANGES

A.1 All reformatting and renumbering is in accordance with the 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 Specification (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 LCO 3.4.7 states that the specific activity of the primary coolant shall be limited to:

a. Less than or equal to 1.0 microcurie/gram DOSE EQUIVALENT I-131, and
b. Less than or equal to 100 E microcuries/gram.

ITS 3.4.17 does not require items a and b in the LCO. These requirements are located in ITS 3.4.17 SRs as well as in Figure 3.4.17-1. Therefore, moving items a and b to a different location within the same Specification is a presentation preference only and is considered an administrative change. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - MORE RESTRICTIVE

M.1 CTS 3.4.7 Action B states in general that when the specific activity of the primary coolant is not within limits to be within at least HOT STANDBY with T_{cold} less than 500°F within 6 hours. ITS 3.4.17, Action C.1 requires the performance of SR 3.4.17.2, verify RCS DOSE EQUIVALENT I-131 specific activity ≤ 1.0 microcurie/gram, every 4 hours in addition to unit SHUTDOWN to Mode 3 with T_{cold} < 500°F. The addition of this Action constitutes a more restrictive change to current PVNGS operating practices. This change is consistent with NUREG-1432.

M.2 CTS 3.4.7 SR Table 4.4-4 Item 3 requires E-Bar to be determined from a sample taken in Mode 1 after a minimum of 2 EFPD and 20 days of Mode 1 operation have elapsed since the reactor was last subcritical for 48 hours. ITS 3.4.17 SR 3.4.17.3 requires Surveillance performance within 31 days after a minimum of 2 EFPD and 20 days of Mode 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours should the 184 day Frequency interval be exceeded. The addition of this requirement constitutes a more restrictive change to PVNGS operating practice. This is acceptable because it ensures radioactive materials are at equilibrium so the analysis for E Bar is representative and not skewed. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - RELOCATIONS

LA.1 CTS Table 4.4-4 Item 4.b requires, in part, that one iodine sample is sufficient if the plant had gone through a SHUTDOWN or the transient is complete in 6 hours. This requirement is not required to determine the Operability of a system, component or structure and therefore is being relocated to ITS SR 3.4.1.7.2 Bases Section.

Any changes to the Bases will be in accordance with ITS Chapter 5.0 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 the ITS to provide adequate protection of public health and safety. Therefore, relocation of this requirement to the Bases Section is acceptable and is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE

L.1 CTS 3.4.7 RCS Specific Activity Modes of Applicability are Modes 1, 2, 3, 4, and 5. ITS 3.4.17 will delete Modes 4 and 5 and allow Applicability in Mode 3 to be with $T_{cold} \geq 500°F$. Therefore, the Modes of Applicability for this Specification are being changed to Modes 1 and 2, and Mode 3 with $T_{cold} \geq 500°F$. This change is acceptable because in Modes 1 and 2, and in Mode 3 with RCS cold leg temperature ≥ 500°F, operation within the LCO limits for DOSE EQUIVALENT I-131 and gross specific activity are necessary to contain the potential consequences of an SGTR to within the acceptable site boundary dose values.

For operation in Mode 3 with RCS cold leg temperature < 500°F, and in Modes 4 and 5, a release of radioactivity in the event of an SGTR is unlikely since the saturation pressure of the reactor coolant is below the lift pressure settings of the main steam safety valves. This change is consistent with NUREG-1432.

L.2 ITS LCO 3.4.17, Condition A, will be modified by a Note that states that the provisions of LCO 3.0.4 are not applicable. As a result, a Mode change is allowed when reactor coolant specific activity Dose Equivalent I-131 is > 1.0 microcuries per gram. This allowance is provided because of the significant conservatism incorporated into the specific activity limit, the low probability of an event for which specific activity is limiting, and the ability to restore specific activity transients while the plant remains at, or proceeds to power operation. In addition, the LCO limits assure the dose due to a SGTR would be a small fraction of the 10 CFR 100 limit, operation during the allowed time frame would not represent a significant impact to the health and safety of the public. This change is consistent with NUREG-1432.

TECHNICAL CHANGES - LESS RESTRICTIVE (continued)

L.3 CTS Table 4.4-4 Item 1 requires a sample Frequency of at least once per 72 hours. ITS SR 3.4.17.1 relaxes the frequency from 72 hours to 7 days. This change is acceptable because ITS SR 3.4.17.1 requires performing a gamma isotopic analysis as a measure of the gross specific activity of the reactor coolant at least once per 7 days. While basically a quantitative measure of radionuclides with half lives longer than 15 minutes, excluding iodines, this measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in gross specific activity.

Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. The Surveillance is applicable in Modes 1 and 2, and in Mode 3 with RCS average temperature at least 500°F. The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time. This change is consistent with NUREG-1432.

L.4 CTS 3.4.7 SR Table 4.4-4 Item 4.b requires the Dose Equivalent I-131 specific activity be verified in Modes 1 and 2, and Mode 3 with RCS T_{cold} > 500°F. ITS SR 3.4.17.2 adds a Note which only requires the SR to be performed in Mode 1. This change will delete the Modes 2 and 3 requirements for this Surveillance. This is acceptable because the level of fission products generated in Modes 2 and 3 are much less, and fuel failures associated with fast power changes are more apt to occur in Mode 1. This change is consistent with NUREG-1432.

NO SIGNIFICANT HAZARDS CONSIDERATION
SPECIFICATION 3.4.17

ADMINISTRATIVE CHANGES
(ITS 3.4.17 Discussion of Changes Labeled A.1 and A.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, "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 Section/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 Section/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 3.4.17 Discussion of Changes Labeled (A.1 and A.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 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 - MORE RESTRICTIVE
(ITS 3.4.17 Discussion of Changes Labeled M.1 and M.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. 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 in the specific Discussion of Changes listed 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 3.4.17 Discussion of Changes Labeled M.1 and M.2) (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 3.4.17 Discussion of Changes Labeled LA.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 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 3.4.17 Discussion of Changes Labeled LA.1) (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 submittal, 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.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.17 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 CTS 3.4.7 RCS Specific Activity Modes of Applicability are Modes 1, 2, 3, 4, and 5. ITS 3.4.17 will delete Modes 4 and 5 and allow Applicability in Mode 3 to be with $T_{cold} \geq 500°F$. Therefore, the Modes of Applicability for this Specification are being changed to Modes 1 and 2, and Mode 3 with $T_{cold} \geq 500°F$. This change is acceptable because in Modes 1 and 2, and in Mode 3 with RCS cold leg temperature ≥ 500°F, operation within the LCO limits for DOSE EQUIVALENT I-131 and gross specific activity are necessary to contain the potential consequences of an SGTR to within the acceptable site boundary dose values.

For operation in Mode 3 with RCS cold leg temperature < 500°F, and in Modes 4 and 5, a release of radioactivity in the event of an SGTR is unlikely since the saturation pressure of the reactor coolant is below the lift pressure settings of the main steam safety valves. 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 3.4.17 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 proposed change relaxes Applicability, from Modes 1-5 to Modes 1, 2, and 3 with $T_{cold} \geq 500°F$, for RCS specific activity. RCS specific activity in Modes 4 or 5 are not derived from design basis accidents. RCS specific activity limits, in Modes 1, 2, and 3 with $T_{cold} \geq 500°F$, minimize radioactivity dose consequences in the event of a Steam Generator Tube Rupture. This change will not affect the probability of an accident. RCS specific activity Applicability is not an initiator of any analyzed event.

The RCS specific activity limits ensure that the resulting 2 hour doses at the site boundary will not exceed a small fraction of the 10 CFR 100 does guideline limits following a SGTR accident. The consequences of an accident are not significantly affected by this change. Operation in Mode 3 with RCS cold leg temperature < 500°F, and in Modes 4 and 5, the release of radioactivity in the event of a SGTR is unlikely since the saturation pressure of the reactor coolant is below the lift settings of the main steam safety valves. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change will not involve a significant increase in the probability or consequence of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.17 Discussion of Changes Labeled L.1) (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 relaxes Applicability, from Modes 1-5 to Modes 1, 2, and 3 with $T_{cold} \geq 500°F$, for RCS specific activity. In Modes 1, 2, and in Mode 3 with RCS cold leg temperature ≥ 500°F, operation within the RCS specific activity limits are necessary to contain the potential consequences of an SGTR to within the acceptable site boundary dose values. For operation in Mode 3 with RCS cold leg temperature < 500°F, and in Modes 4 and 5, a release of radioactivity in the event of an SGTR is unlikely since the saturation pressure of the reactor coolant is below the lift pressure settings of the main steam safety valves. As a result, operation in Modes where a SGTR could occur with RCS specific activity not within limits is still restricted. 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 relaxes Applicability, from Modes 1-5 to Modes 1, 2, and 3 with $T_{cold} \geq 500°F$, for RCS specific activity. The margin of safety is not affected by this change. While RCS specific activity Applicability no longer applies in Mode 3 with RCS cold leg temperature < 500°F, and in Modes 4 and 5, a release of radioactivity in the event of an SGTR is unlikely since the saturation pressure of the reactor coolant is below the lift pressure settings of the main steam safety valves. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.17 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 ITS LCO 3.4.17, Condition A, will be modified by a Note that states that the provisions of LCO 3.0.4 are not applicable. As a result, a Mode change is allowed when reactor coolant specific activity Dose Equivalent I-131 is > 1.0 microcuries per gram. This allowance is provided because of the significant conservatism incorporated into the specific activity limit, the low probability of an event for which specific activity is limiting, and the ability to restore specific activity transients while the plant remains at, or proceeds to power operation. In addition, the LCO limits assure the dose due to a SGTR would be a small fraction of the 10 CFR 100 limit, operation during the allowed time frame would not represent a significant impact to the health and safety of the public. 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 3.4.17 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 uses an LCO 3.0.4 exclusion which allows a Mode change when RCS Dose Equivalent I-131 is not within limits. This exception allows entry into applicable Mode(s) while relying on LCO Actions even though the Actions may eventually require a plant shutdown. This change will not affect the probability of an accident. This exception is acceptable due to the conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient specific activity excursions while the plant remains at power, or proceeds to power operation. Allowing Mode changes when RCS Dose Equivalent I-131 is not within limits is not an initiator of any analyzed event. Due to the conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient specific activity excursions while the plant remains at power, or proceeds to power operation, the consequences of an accident are not significantly affected by this change. In addition, since RCS specific activity limits assure dose due to a SGTR would be a small fraction of the 10 CFR 100 limits, operation during the allowed time frame would not represent a significant impact to the health and safety of the public. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the change will not involve a significant increase in the probability or consequence of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.17 Discussion of Changes Labeled L.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 change uses an LCO 3.0.4 exclusion which allows a Mode change when RCS Dose Equivalent I-131 is not within limits. While this exception allows entry into applicable Mode(s), it is acceptable due to the conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient specific activity excursions. Also, Dose Equivalent I-131 must be restored, within 48 hours, to within limits. As a result, this change does not allow indefinite operation with Dose Equivalent I-131 not within limits prior to requiring Mode 3 entry with RCS cold leg temperature < 500°F. 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 uses an LCO 3.0.4 exclusion which allows a Mode change when RCS Dose Equivalent I-131 is not within limits. Due to the conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient specific activity excursions while the plant remains at power, or proceeds to power operation, the margin of safety is not affected by this change. In addition, since RCS specific activity limits assure dose due to a SGTR would be a small fraction of the 10 CFR 100 limits, operation during the allowed time frame would not represent a significant impact to the health and safety of the public. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.17 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 CTS Table 4.4-4 Item 1 requires a sample Frequency of at least once per 72 hours. ITS SR 3.4.17.1 relaxes the frequency from 72 hours to 7 days. This change is acceptable because ITS SR 3.4.17.1 requires performing a gamma isotopic analysis as a measure of the gross specific activity of the reactor coolant at least once per 7 days. While basically a quantitative measure of radionuclides with half lives longer than 15 minutes, excluding iodines, this measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in gross specific activity.

Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. The Surveillance is applicable in Modes 1 and 2, and in Mode 3 with RCS average temperature at least 500°F. The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time. 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 3.4.17 Discussion of Changes Labeled L.3)

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

The proposed change increases Surveillance Requirement (SR) Frequency, from 72 hours to 7 days, for performance of the Surveillance that measures RCS gross specific activity. SR Frequency performance is not derived from design basis accidents. The Surveillance provides an indication of any increase in gross specific activity. The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time between Surveillance performances. This change will not affect the probability of an accident. The Surveillance Frequency is not an initiator of any analyzed event. The consequences of an accident are not significantly affected by this change. Also, trending the results of this Surveillance allows proper remedial action to be taken before reaching RCS gross specific activity limit under normal operating conditions. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the 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 increases Surveillance Requirement (SR) Frequency, from 72 hours to 7 days, for performance of the Surveillance that measures RCS gross specific activity. Even though SR Frequency is extended to 7 days, the 7 day Frequency considers the unlikelihood of a gross fuel failure during the time between Surveillance performances. Also, trending the results of this Surveillance allows proper remedial action to be taken before reaching RCS gross specific activity limit under normal operating conditions. In addition, if RCS gross specific activity is not within limits the unit must be placed in Mode 3 with RCS cold leg temperature < 500°F within 6 hours. As a result, this change allows only restricted operation with RCS gross specific activity not within limits. 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 3.4.17 Discussion of Changes Labeled L.3)

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

The proposed change increases Surveillance Requirement (SR) Frequency, from 72 hours to 7 days, for performance of the Surveillance that measures RCS gross specific activity. The margin of safety is not affected by this change. While basically a quantitative measure of radionuclides with half lives longer than 15 minutes, excluding iodines, this measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in gross specific activity. The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time between Surveillance performances. Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. Therefore, the change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE
(ITS 3.4.17 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 CTS 3.4.7 SR Table 4.4-4 Item 4.b requires the Dose Equivalent I-131 specific activity be verified in Modes 1 and 2, and Mode 3 with RCS T_{cold} > 500°F. ITS SR 3.4.17.2 adds a Note which only requires the SR to be performed in Mode 1. This change will delete the Modes 2 and 3 requirements for this Surveillance. This is acceptable because the level of fission products generated in Modes 2 and 3 are much less, and fuel failures associated with fast power changes are more apt to occur in Mode 1. 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 3.4.17 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 adds a Note to the Surveillance, that verifies Dose Equivalent I-131 is within limits, that states, "Only required to be performed in Mode 1." Previously, Surveillance performance was required in Modes 1, 2, and 3 with RCS cold leg temperature > 500°F. Surveillance performance in only Mode 1 is not derived from design basis accidents. This Surveillance is performed to ensure iodine remains within limit during normal operation following fast power changes when fuel failure is apt to occur. This change will not affect the probability of an accident. Performance of this Surveillance is not an initiator of any analyzed event. The consequences of an accident are not significantly affected by this change. In addition, performance of this Surveillance in Mode 1 is optimal because the level of fission products generated in other Modes is much less. Also, fuel failures associated with fast power changes is more apt to occur in Mode 1 than in Modes 2 or 3. The change does not alter assumptions relative to the mitigation of an analyzed event. Therefore, the 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 adds a Note to the Surveillance, that verifies Dose Equivalent I-131 is within limits, that states, "Only required to be performed in Mode 1." Previously, Surveillance performance was required in Modes 1, 2, and 3 with RCS cold leg temperature > 500°F. The performance of this Surveillance in Mode 1 is optimal because the level of fission products generated in other Modes is much less. Also, fuel failures associated with fast power changes is more apt to occur in Mode 1 than in Modes 2 or 3. As a result, Dose Equivalent I-131 is monitored when it is most likely to change. This ensures that operation with Dose Equivalent I-131 not within limits is monitored and restricted. 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 3.4.17 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 adds a Note to the Surveillance, that verifies Dose Equivalent I-131 is within limits, that states, ."Only required to be performed in Mode 1." Previously, Surveillance performance was required in Modes 1, 2, and 3 with RCS cold leg temperature > 500°F. The margin of safety is not affected by this change. While performance of this Surveillance is only required in Mode 1, it is the optimal Mode for performance of this Surveillance because: (1) fission products generated in other Modes is much less, and (2) fuel failures associated with fast power changes is more apt to occur in Mode 1 than in Modes 2 or 3. As a result; Dose Equivalent I-131 is monitored when it is most likely to change. Therefore, the change does not involve a significant reduction in a margin of safety.

ENVIRONMENTAL ASSESSMENT

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.