Advanced Passive 1000 (AP1000)
Generic Technical Specification Traveler (GTST)

Title: Changes Related to LCO 3.5.1, Accumulators

I. Technical Specifications Task Force (TSTF) Travelers, Approved Since Revision 2 of STS NUREG-1431, and Used to Develop this GTST

TSTF Number and Title:

TSTF-370-A, Rev. 0,	Increase accumulator Completion Time from 1 hour to 24 hours (WCAP-15049)
TSTF-425, Rev. 3,	Relocate Surveillance Frequencies to Licensee Control - RITSTF Initiative 5b

STS NUREGs Affected:

TSTF-370-A, Rev. 0:	NUREG-1431
TSTF-425, Rev. 3:	NUREG-1430, 1431, 1432, 1433, 1434

NRC Approval Date:

TSTF-370-A, Rev. 0:	22-Feb-02
TSTF-425, Rev. 3:	06-Jul-09

TSTF Classification:

TSTF-370-A, Rev. 0:	Technical Change
TSTF-425, Rev. 3:	Technical Change

II. Reference Combined License (RCOL) Standard Departures (Std. Dep.), RCOL COL Items, and RCOL Plant-Specific Technical Specifications (PTS) Changes Used to Develop this GTST

RCOL Std. Dep. Number and Title:

None

RCOL COL Item Number and Title:

None

RCOL PTS Change Number and Title:

VEGP LAR DOC A065: Revise Required Action B.1 Completion Time for TS 3.5.1
VEGP LAR DOC D05: Revise SR 3.5.1.4 Frequency

III. Comments on Relations Among TSTFs, RCOL Std. Dep., RCOL COL Items, and RCOL PTS Changes

This section discusses the considered changes that are: (1) applicable to operating reactor designs, but not to the AP1000 design; (2) already incorporated in the GTS; or (3) superseded by another change.

TSTF-370-A, Rev. 0 revises the Completion Time for Condition B in STS 3.5.1 from 1 hour to 24 hours. This change is not applicable to the AP1000 based on the difference in the Completion Times and Core Cooling System design from that of the Westinghouse Owners Group (WOG) PWR. The Completion Time for Condition B in AP1000 Specification 3.5.1 is dependent on Conditions E and C of Specification 3.5.2. The WOG PWR Completion Time for Condition B in STS 3.5.1 is not dependent on Conditions of other Specifications. The Core Cooling System design for the AP1000 differs from that of the PWR design that was evaluated in WOG Topical Report WCAP-15049, “Risk-Informed Evaluation of an Extension to Accumulator Completion Times.”

TSTF-425 deferred for future consideration.

IV. Additional Changes Proposed as Part of this GTST (modifications proposed by NRC staff and/or clear editorial changes or deviations identified by preparer of GTST)

Applicability statement is revised to correct the punctuation after “MODES 1 and 2.” from a period to a comma.

In the “LCO” section of Bases, revise first paragraph as suggested by APOG comment but with additional changes, since using the word “initial” seems to infer that the accumulators satisfy Criterion 2; in addition, the existing language about providing “sufficient flow” should be retained. Finally, the listed items are criteria, not conditions.

In the “Actions” section of the Bases for Required Action B.1 a comma is added after “reasonable”.

In the “Actions” section of the Bases for Required Action C.1 and C.2, the first sentence is revised to replace the phrase “Conditions A or B” with “Condition A or B.”

SR 3.5.1.2, SR 3.5.1.4, and the Bases for SR 3.5.1.4 are revised to delete the periods from “cu. ft.” so that the abbreviation of the unit for cubic feet is stated as “cu ft” with no periods.

In the “Actions” section of the Bases, the acronym “AOT” is replaced with “8 hour Completion Time.”

In the Bases, the references are renumbered to be in order of first appearance.

In the “References” section of the Bases, the reference to Regulatory Guide 1.177 is formatted for consistency and reference to NUREG-1366 is formatted and revised to include the title.

APOG Recommended Changes to Improve the Bases

Throughout the Bases, references to Sections and Chapters of the FSAR do not include the “FSAR” modifier. Since these Section and Chapter references are to an external document, it is appropriate to include the acronym “FSAR” to modify “Section” and “Chapter” in references to the FSAR throughout the Bases. (DOC A003)

An editorial clarification is made to the “LCO” section of the Bases. The change clarifies that multiple parameters need to be met for the accumulators to perform their assumed safety analysis functions and not all limits are “minimum” limits.

Editorial changes are made to the “Actions” section of the Bases for Required Action B.1 by inserting the word “break” when specifying a specific type of LOCA. These non-technical changes provide improved clarity, consistency, and operator usability. In addition the word “break” is inserted before “LOCA” in the “Applicable Safety Analyses” section of the Bases.

Delete the parenthetical phrase “(i.e., entry into Condition C or E of LCO 3.5.2 has not occurred)” from the “Actions” section of the Bases for Required Action B.1. This phrase is incorrectly associated with the preceding “CMTs are required to be available to provide small break LOCA mitigation.” Deleting the parenthetical phrase corrects the discussion without removing any necessary TS Bases substance.

V. Applicability

Affected Generic Technical Specifications and Bases:

Section 3.5.1, Accumulators

Changes to the Generic Technical Specifications and Bases:

Applicability statement is revised to correct punctuation. (NRC staff proposed change)

SR 3.5.1.2, Frequency for SR 3.5.1.4, and the "Surveillance Requirements" section of the Bases for SR 3.5.1.4 are revised to replace "cu. ft." with "cu ft" to conform to the writer's guide (Ref. 4). (NRC staff proposed change)

Required Action B.1 Completion Time statement and the associated bases are revised. The first Completion Time is revised from "8 hours if Condition C or E of LCO 3.5.2 has not been entered" to "8 hours", the logical connector is changed from an "OR" to an "AND", and the second Completion Time is revised from "1 hour if Condition C and E of LCO 3.5.2 has been entered" to "1 hour from discovery of LCO 3.5.1 Condition B entry concurrent with LCO 3.5.2 Condition C or E entry." In addition, the order of the Completion Times is changed. (DOC A065)

SR 3.5.1.4, second Frequency is revised by removing "3%" which is intended to indicate the accumulator water volume fraction equivalent to 51 cu ft; this relationship is provided in the Bases. (DOC D05)

The acronym "FSAR" is added to modify "Section" and "Chapter" in references to the FSAR throughout the Bases. (DOC A003) (APOG Comment)

In the "LCO" section of the Bases the first paragraph is revised to clarify that multiple parameters need to be met for the accumulators to perform their assumed safety analysis functions and not all limits are "minimum" limits. (APOG Comment) The proposed changes were revised by NRC staff to provide more clarity.

In the "Actions" section of the Bases for Required Action B.1, in the second paragraph a comma is added after "reasonable". (NRC staff proposed change)

In the "Actions" section of the Bases for Required Action C.1 and C.2, in the first sentence "Conditions" is revised to "Condition." (NRC staff proposed change)

The "Applicable Safety Analyses" section of the Bases and the "Actions" section of the Bases for Required Action B.1 are revised by inserting the word "break" when describing specific LOCAs. (APOG Comment)

The "Actions" section of the Bases for Required Action B.1 is revised by removing the parenthetical "(i.e., concurrent entry into Condition C or E of LCO 3.5.2 has not occurred)". (APOG Comment)

SR 3.5.1.4 Bases is revised to include a correlation between the 3% value and 51 cu ft value. (DOC D05)

In the “Actions” section of the Bases for Required Action B.1, “AOT” is revised to “8 hour Completion Time.” (NRC staff proposed change)

Throughout the Bases the references are renumbered to be in order of first appearance. (NRC staff proposed change)

In the “References” section of the Bases, the reference to Regulatory Guide 1.177 is formatted for consistency and reference to NUREG-1366 is formatted and revised to include the title. (NRC staff proposed change)

VI. Traveler Information

Description of TSTF changes:

None

Rationale for TSTF changes:

None

Description of changes in RCOL Std. Dep., RCOL COL Item(s), and RCOL PTS Changes:

VEGP LAR DOC A065 revises Required Action B.1 Completion Time statement and the associated bases. The first Completion Time is revised to "8 hours", the logical connector is changed to an "AND", and the second Completion Time is revised to "1 hour from discovery of LCO 3.5.1 Condition B entry concurrent with LCO 3.5.2 Condition C or E entry." In addition, the order of the Completion Times is changed to be consistent with the writers guide (Ref.4).

VEGP LAR DOC D05 revises the Frequency for SR 3.5.1.4 and associated bases. The second Frequency is revised by removing the "3%" which is intended to indicate the accumulator water volume fraction equivalent to 51 cu ft. The Bases for SR 3.5.1.4 is revised to indicate that 3% accumulator water volume is equivalent to 51 cu ft.

Rationale for changes in RCOL Std. Dep., RCOL COL Item(s), and RCOL PTS Changes:

VEGP LAR DOC A065 changes to Required Action B.1 Completion Time provide clarity to the statement. Specifically changing the logical connector from an "OR" to an "AND" removes any implication that either Completion Time could be followed. The intent is that both apply.

VEGP LAR DOC D05 changes the Frequency of SR 3.5.1.4 by removing the details that "3%" water volume corresponds to "51 cu ft." This correlation is added to the Bases for the Frequency of SR 3.5.1.4. The Frequency continues to specify the actual volume addition of 51 cu ft. The revised Bases explains that 51 cu ft is 3% of the nominal borated water volume of 1700 cu ft.

Description of additional changes proposed by NRC staff/preparer of GTST:

The Applicability statement is revised by changing the period after "MODES 1 and 2." to a comma.

SR 3.5.1.2, Frequency for SR 3.5.1.4, and the "Surveillance Requirements" section of the Bases for SR 3.5.1.4 are revised to replace "cu. ft." with "cu ft" (NRC staff proposed change)

The acronym "FSAR" is added to modify "Section" and "Chapter" in references to the FSAR throughout the Bases. (DOC A003) (APOG Comment)

The first paragraph in the "LCO" section of the Bases is revised to clarify that multiple parameters need to be met for the accumulators to perform their assumed safety analysis

functions, not all limits are “minimum” limits, and the LOCA acceptance criteria are not conditions. (APOG Comment with clarification by NRC staff)

A comma is inserted after “reasonable” in the “Actions” section of the Bases for Required Action B.1, second paragraph. (NRC staff proposed change)

Revise “Conditions” to “Condition” in the “Actions” section of the Bases for Required Action C.1 and C.2, first sentence. (APOG Comment with clarification by NRC staff)

Insert the word “break” when describing a specific type of LOCA in the “Actions” section of the Bases for Required Action B.1, first paragraph. In addition this change is also applied to The “Applicable Safety Analyses” section of the Bases. (APOG Comment)

Delete the parenthetical “(i.e., concurrent entry into Condition C or E of LCO 3.5.2 has not occurred)” in the “Actions” section of the Bases for Required Action B.1, second paragraph. (APOG Comment)

In the “Actions” section of the Bases for Required Action B.1, “AOT” is revised to “8 hour Completion Time.” (NRC staff proposed change)

Throughout the Bases the references are renumbered to be in order of first appearance. (NRC staff proposed change)

In the “References” section of the Bases, the reference to Regulatory Guide 1.177 is formatted for consistency and reference to NUREG-1366 is formatted and revised to include the title. (NRC staff proposed change)

Rationale for additional changes proposed by NRC staff/preparer of GTST:

The change to the Applicability statement is a correction to the punctuation.

Changing “cu. ft.” to “cu ft” is an editorial correction. The change is in accordance with section 3.3.4.d of writer's guide TST-GG-05-01 (Ref. 4).

Since Bases references to FSAR Sections and Chapters are to an external document, it is appropriate to include the “FSAR” modifier.

The revision to the first paragraph in the “LCO” section of the Bases is an editorial clarification of the intent of the existing language.

Inserting a comma after “reasonable” is an editorial correction.

Revising “Conditions” to “Condition” is an editorial correction.

The insertion of the word “break” before “LOCA” in the “Applicable Safety Analyses” and “Actions” section of the Bases is an editorial clarification.

Deleting “(i.e., concurrent entry into Condition C or E of LCO 3.5.2 has not occurred)” from the “Actions” section of the Bases for Required Action B.1 is a technical improvement. The parenthetical phrase is incorrectly associated with the preceding “CMTs are required to be available to provide small break LOCA mitigation.” Deleting the parenthetical phrase corrects the discussion without removing any necessary information from the Bases.

Revising “AOT” to “8 hour Completion Time” is an editorial change.

Changing enumeration of references to be in order of first appearance is an editorial change.

Formatting and adding a title to references are editorial changes.

VII. GTST Safety Evaluation

Technical Analysis:

VEGP LAR DOC D05: The removal of the 3.0% modifier from the Frequency of SR 3.5.1.4 is made since the actual volume addition, 51 cu ft, is already provided in the SR Frequency. The percent value is providing a calculation that is not referenced to anything specific, such as total volume or indicated volume. The revised SR 3.5.1.4 continues to include the specific value, 51 cu ft, at which the SR is required to be performed if the solution volume is increased by this amount. The 3% modifier is stated in the Bases for SR 3.5.1.4. The bases is also revised to explain that 51 cu ft value is 3% of the nominal required borated water volume of 1700 cu. ft. Deleting this information from the TS is acceptable because this type of information is not necessary to be included in the TS in order to provide adequate protection of public health and safety.

Removing “(i.e., concurrent entry into Condition C or E of LCO 3.5.2 has not occurred)” from the “Actions” section of the Bases for Required Action B.1 is acceptable since it corrects the discussion without removing any necessary information from the bases.

The remaining changes are editorial, clarifying, grammatical, or otherwise considered administrative. These changes do not affect the technical content, but improve the readability, implementation, and understanding of the requirements, and are therefore acceptable.

Having found that this GTST’s proposed changes to the GTS and Bases are acceptable, the NRC staff concludes that AP1000 STS Subsection 3.5.1 is an acceptable model Specification for the AP1000 standard reactor design.

References to Previous NRC Safety Evaluation Reports (SERs):

None

VIII. Review Information

Evaluator Comments:

None

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Review Information:

Availability for public review and comment on Revision 0 of this traveler approved by NRC staff on 5/23/2014.

APOG Comments (Ref. 7) and Resolutions:

1. (Internal #3) Throughout the Bases, references to Sections and Chapters of the FSAR do not include the "FSAR" modifier. Since these Section and Chapter references are to an external document, it is appropriate (DOC A003) to include the "FSAR" modifier. This is resolved by adding the FSAR modifier to every FSAR reference in the Bases.

2. (Internal #13) The NRC approval of TSTF-425, and model safety evaluation provided in the CLIIP for TSTF-425, are generically applicable to any design's Technical Specifications. As such, the replacement of certain Frequencies with a Surveillance Frequency Control Program should be included in the GTST for AP1000 STS NUREG.

   However, implementation in the AP1000 STS should not reflect optional (i.e., bracketed) material showing retention of fixed Surveillance Frequencies where relocation to a Surveillance Frequency Control Program is acceptable. Since each represented AP1000 Utility is committed to maintaining standardization, there is no rationale for an AP1000 STS that includes bracketed options.

   Consistent with TSTF-425 criteria, replace applicable Surveillance Frequencies with "In accordance with the Surveillance Frequency control Program" and add that Program as new AP1000 STS Specification 5.5.15.

   NRC Staff disagreed with implementing TSTF-425 in the initial version of the STS. Although the APOG thinks the analysis supporting this traveler is general enough to be applicable to AP1000, staff thinks an AP1000-specific proposal from APOG is needed to identify any GTS SRs that should be excluded. Also, with the adoption of a Surveillance Frequency Control Program (SFCP) in the AP1000 STS, bracketed Frequencies, which provide a choice between the GTS Frequency and the SFCP Frequency, are needed because the NRC will use the AP1000 STS as a reference, and to be consistent with NUREG-1431, Rev. 4. APOG was requested to consider proposing an AP1000 version of TSTF-425 for a subsequent revision of the STS.

3. (Internal #293) APOG recommends revising the first paragraph in the "LCO" section of the Bases to clarify that multiple parameters need to be met for the accumulators to perform their assumed safety analysis functions and not all limits are "minimum" limits. This is

resolved by making NRC staff proposed changes that meet the intent of the APOG recommended change.

4. (Internal #294) APOG recommends inserting “break” before “LOCA” in the “Actions” section of the Bases for Required Action B.1 to provide improved clarity, consistency, and operator usability. This is resolved by inserting “break” before “LOCA” as appropriate throughout the Bases.

5. (Internal #295) APOG recommends deleting the parenthetical phrase “(i.e., entry into Condition C or E of LCO 3.5.2 has not occurred)” from the “Actions” section of the Bases for Required Action B.1. This phrase is incorrectly associated with the preceding “CMTs are required to be available to provide small break LOCA mitigation.” Deleting the parenthetical phrase corrects the discussion without removing any necessary TS Bases substance. This is resolved by making the recommended change. In addition, the NRC staff proposed replacing “cu. ft.” with “cu ft”.

NRC Final Approval Date: 12/15/2015

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IX. Evaluator Comments for Consideration in Finalizing Technical Specifications and Bases

None

X. References Used in GTST

1. AP1000 DCD, Revision 19, Section 16, “Technical Specifications,” June 2011 (ML11171A500).

2. Southern Nuclear Operating Company, Vogtle Electric Generating Plant, Units 3 and 4, Technical Specifications Upgrade License Amendment Request, February 24, 2011 (ML12065A057).

3. Southern Nuclear Operating Company, Vogtle Electric Generating Plant, Units 3 and 4, Response to Request for Additional Information Letter No. 01 Related to License Amendment Request LAR-12-002, ND-12-2015, October 04, 2012 (ML12286A363 and ML12286A360).

4. TSTF-GG-05-01, “Writer's Guide for Plant-Specific Improved Technical Specifications,” June 2005 (ML070660229).

5. NRC Safety Evaluation (SE) for Amendment No. 13 to Combined License (COL) No. NPF-91 for Vogtle Electric Generating Plant (VEGP) Unit 3, and Amendment No. 13 to COL No. NPF-92 for VEGP Unit 4, September 9, 2013, ADAMS Package Accession No. ML13238A337, which contains:

ML13238A355	Cover Letter - Issuance of License Amendment No. 13 for Vogtle Units 3 and 4 (LAR 12-002).
ML13238A359	Enclosure 1 - Amendment No. 13 to COL No. NPF-91
ML13239A256	Enclosure 2 - Amendment No. 13 to COL No. NPF-92
ML13239A284	Enclosure 3 - Revised plant-specific TS pages (Attachment to Amendment No. 13)
ML13239A287	Enclosure 4 - Safety Evaluation (SE), and Attachment 1 - Acronyms
ML13239A288	SE Attachment 2 - Table A - Administrative Changes
ML13239A319	SE Attachment 3 - Table M - More Restrictive Changes
ML13239A333	SE Attachment 4 - Table R - Relocated Specifications
ML13239A331	SE Attachment 5 - Table D - Detail Removed Changes
ML13239A316	SE Attachment 6 - Table L - Less Restrictive Changes

The following documents were subsequently issued to correct an administrative error in Enclosure 3:

ML13277A616	Letter - Correction To The Attachment (Replacement Pages) - Vogtle Electric Generating Plant Units 3 and 4-Issuance of Amendment Re: Technical Specifications Upgrade (LAR 12-002) (TAC No. RP9402)
ML13277A637	Enclosure 3 - Revised plant-specific TS pages (Attachment to Amendment No. 13) (corrected)

6. RAI Letter No. 01 Related to License Amendment Request (LAR) 12-002 for the Vogtle Electric Generating Plant Units 3 and 4 Combined Licenses, September 7, 2012 (ML12251A355).

7. APOG-2014-008, APOG (AP1000 Utilities) Comments on AP1000 Standardized Technical Specifications (STS) Generic Technical Specification Travelers (GTSTs), Docket ID NRC-2014-0147, September 22, 2014 (ML 14265A493).

XI. MARKUP of the Applicable GTS Subsection for Preparation of the STS NUREG

The entire section of the Specifications and the Bases associated with this GTST is presented next.

Changes to the Specifications and Bases are denoted as follows: Deleted portions are marked in strikethrough red font, and inserted portions in bold blue font.

3.5 PASSIVE CORE COOLING SYSTEM (PXS)

3.5.1 Accumulators

LCO 3.5.1 Both accumulators shall be OPERABLE.

APPLICABILITY: MODES 1 and 2~~.~~**,**
MODES 3 and 4 with Reactor Coolant System (RCS) pressure > 1000 psig.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One accumulator inoperable due to boron concentration outside limits.	A.1 Restore boron concentration to within limits.	72 hours
B. One accumulator inoperable for reasons other than Condition A.	B.1 Restore accumulator to OPERABLE status.	~~8 hours if Condition C or E of LCO 3.5.2 has not been entered~~ ~~OR~~ 1 hour **from discovery of LCO 3.5.1 Condition B entry concurrent with LCO 3.5.2 Condition C or E entry**~~if Condition C or E of LCO 3.5.2 has been entered~~ **AND** **8 hours**

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. AND C.2 Reduce RCS pressure to ≤ 1000 psig.	6 hours 12 hours
D. Two accumulators inoperable.	D.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	12 hours
SR 3.5.1.2	Verify the borated water volume in each accumulator is ≥ 1667 cu~~.~~ ft~~.~~, and ≤ 1732 cu~~.~~ ft.	12 hours
SR 3.5.1.3	Verify the nitrogen cover gas pressure in each accumulator is ≥ 637 psig and ≤ 769 psig.	12 hours

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.4	Verify the boron concentration in each accumulator is ≥ 2600 ppm and ≤ 2900 ppm.	31 days AND --------NOTE-------- Only required for affected accumulators. ---------- Once within 6 hours after each solution volume increase of ≥ 51 cu~~.~~ ft~~.~~, ~~3.0%~~ that is not the result of addition from the in-containment refueling water storage tank
SR 3.5.1.5	Verify power is removed from each accumulator isolation valve operator when pressurizer pressure is ≥ 2000 psig.	31 days
SR 3.5.1.6	Verify system flow performance of each accumulator in accordance with the System Level OPERABILITY Testing Program.	10 years

B 3.5 PASSIVE CORE COOLING SYSTEM (PXS)

B 3.5.1 Accumulators

BASES

BACKGROUND

Two redundant PXS accumulators provide sufficient water to the reactor vessel during the blowdown phase of a large-break loss-of-coolant accident (LOCA), to provide inventory to help accomplish the refill phase that follows thereafter, to provide Reactor Coolant System (RCS) makeup for a small-break LOCA, and to provide RCS boration for steam line breaks (Ref. ~~2~~**1**).

The blowdown phase of a large break LOCA is the initial period of the transient during which the RCS departs from equilibrium conditions, and heat from fission product decay, hot internals, and the vessel continues to be transferred to the reactor coolant. The blowdown phase of the transient ends when the RCS pressure falls to a value approaching that of the containment atmosphere.

In the refill phase of a LOCA, which immediately follows the blowdown phase, reactor coolant inventory has vacated the core through steam flashing and ejection out through the break. The core is essentially in adiabatic heatup. The accumulator inventory is available to help fill voids in the lower plenum and reactor vessel downcomer so as to establish a recovery level at the bottom of the core and ongoing reflood of the core.

The accumulators are pressure vessels, partially filled with borated water and pressurized with nitrogen gas. The accumulators are passive components, since no operator or control actions are required for them to perform their function. Internal accumulator pressure is sufficient to discharge the accumulator contents to the RCS, if RCS pressure decreases below the static accumulator pressure.

Each accumulator is piped into the reactor vessel via an accumulator line and is isolated from the RCS by two check valves in series.

A normally open motor operated valve is arranged in series with the check valves. Upon initiation of a safeguards actuation signal, the normally open valves receive a confirmatory open signal.

Power lockout and position alarms ensure that the valves meet the requirements of the Institute of Electrical and Electronic Engineers (IEEE) Standard 603-1991 (Ref. ~~1~~**2**) for “operating bypasses” and that the

BASES

BACKGROUND (continued)

accumulators will be available for injection without being subject to a single failure.

The accumulator size, water volume, and nitrogen cover pressure are selected so that both of the accumulators are sufficient to recover the core cooling before significant clad melting or zirconium water reaction can occur following a large break LOCA. One accumulator is adequate during a small break LOCA where the entire contents of one accumulator can possibly be lost via the pipe break. This accumulator performance is based on design basis accident (DBA) assumptions and models (Ref. 3). The ~~Probabilistic Risk Assessment~~**probabilistic risk assessment** (PRA) (Ref. 4) shows that one of the two accumulators is sufficient for a large break LOCA caused by spurious ADS actuation and that none of the accumulators are required for small break LOCAs, assuming that at least one core makeup tank (CMT) is available. In addition, both accumulators are required for a large break LOCA caused by the break of a cold leg pipe; the probability of this break has been significantly reduced by incorporation of leak-before-break.

APPLICABLE SAFETY ANALYSES

The accumulators are assumed to be OPERABLE in both the large and small break LOCA analyses at full power (Ref. 3) that establish the acceptance limits for the accumulators. Reference to the analyses for these DBAs is used to assess changes in the accumulators as they relate to the acceptance limits.

For a small break LOCA, a large range of break sizes and locations were analyzed to verify the adequacy of the design. The cases analyzed include the rupture of one 8 inch direct vessel injection line and several smaller break sizes. Acceptable PXS performance was demonstrated.

For a larger LOCA, including a double ended RCS piping rupture, the PXS can provide a sufficiently large flow rate, assuming both accumulators are OPERABLE, to quickly fill the reactor vessel lower plenum and downcomer. Both accumulators, in conjunction with the CMTs, ensure rapid reflooding of the core. For a large **break** LOCA, both lines are available since an 8 inch line break would be a small **break** LOCA.

BASES

APPLICABLE SAFETY ANALYSES (continued)

Following a non-LOCA event such as a steam line break, the RCS experiences a decrease in temperature and pressure due to an increase in energy removal by the secondary system. The cooldown results in a reduction of the core SHUTDOWN MARGIN with a potential for return to power. During such an event the accumulators provide injection of borated water to assist the CMT's boration to mitigate the reactivity transient and ensure the core remains shut down.

The accumulators satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO establishes the ~~minimum~~**limits on accumulator parameters and** conditions **on accumulator component electrical power and alignment** necessary to ensure that sufficient accumulator flow will be available to ~~meet~~**satisfy** the ~~necessary~~ acceptance criteria established for core cooling by 10 CFR 50.46 (Ref. 5). These ~~conditions~~**criteria** are:

a. Maximum fuel element cladding temperature is ≤ 2200°F;

b. Maximum cladding oxidation is ≤ 0.17 times the total cladding thickness before oxidation;

c. Maximum hydrogen generation from a zirconium-water reaction is ≤ 0.01 times the hypothetical amount that would be generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react; and

d. The core is maintained in a coolable geometry.

Since the accumulators discharge during the blowdown phase of a LOCA, they do not contribute to the long term cooling requirements of 10 CFR 50.46.

For an accumulator to be OPERABLE, the isolation valve must be fully open with power removed, and the limits established in the Surveillance Requirements for contained water, boron concentration, and nitrogen cover pressure must be met.

BASES

APPLICABILITY

In MODES 1 and 2, and in MODES 3 and 4 with RCS pressure > 1000 psig, the accumulator OPERABILITY requirements are based on full power operation. Although cooling requirements decrease as power decreases, the accumulators are still required to provide core cooling as long as elevated RCS pressures and temperatures exist.

This LCO is only applicable at pressures > 1000 psig. At pressures ≤ 1000 psig, the rate of RCS blowdown is such that adequate injection flow from other sources exists to retain peak clad temperatures below the 10 CFR 50.46 limit of 2200°F.

In MODES 3 and 4 with RCS pressure ≤ 1000 psig, and in MODES 5 and 6, the accumulator motor operated isolation valves are closed to isolate the accumulators from the RCS. This allows the RCS cooldown and depressurization without discharging the accumulators into the RCS or requiring depressurization of the accumulators.

ACTIONS

A.1

If the boron concentration of one accumulator is not within limits, action must be taken to restore the parameter.

Deviations in boron concentration are expected to be slight, considering that the pressure and volume are verified once per 12 hours. For one accumulator, boron concentration not within limits will have an insignificant effect on the ability of the accumulators to perform their safety function. Therefore, a Completion Time of 72 hours is considered to be acceptable.

B.1

If one accumulator is inoperable for a reason other than boron concentration, the accumulator must be returned to OPERABLE status within 8 hours. With one accumulator inoperable, the remaining accumulator is capable of providing the required safety function, except for one low probability event (large cold leg **break** LOCA) discussed in the background section. The effectiveness of one accumulator is demonstrated in analysis performed to justify PRA success criteria (Ref. 4). The analysis contained in this reference shows that for a range of other events including small **break** LOCAs and large hot leg **break** LOCAs that with one accumulator unavailable the core is adequately cooled. The incremental conditional core damage probability with this

BASES

ACTIONS (continued)

~~AOT~~**8 hour Completion Time** is more than an order of magnitude less than the value indicated to have a small impact on plant risk (Ref. ~~7~~**6**).

The 8 hour Completion Time to open the valve, remove power to the valve, or restore the proper water volume or nitrogen cover pressure ensures that prompt action will be taken to return the inoperable accumulator to OPERABLE status. The Completion Time is reasonable**,** since the CMTs are required to be available to provide small break LOCA mitigation ~~(i.e., concurrent entry into Condition C or E of LCO 3.5.2 has not occurred)~~. The effectiveness of backup CMT injection is demonstrated in analysis performed to justify PRA success criteria (Ref. ~~3~~**4**). The analysis contained in this reference shows that for a small **break** LOCA, the injection from one CMT without any accumulator injection supports adequate core cooling. This analysis provides a high confidence that with the unavailability of one accumulator, the core can be cooled following design bases accidents.

~~The 1 hour Completion Time, in the case with simultaneous entry into Condition C or E of LCO 3.5.2,~~**If LCO 3.5.2 Condition C or E is also entered concurrent with this Condition, then a 1 hour Completion Time from discovery of LCO 3.5.1 Condition B entry concurrent with LCO 3.5.2 Condition C or E entry also applies. This 1 hour Completion Time** requires very prompt actions to restore either the accumulator or the CMT **(per LCO 3.5.2 Condition C or E)** to OPERABLE status. This Completion Time is considered reasonable because of the low probability of simultaneously entering these multiple PXS Conditions and the very small likelihood of a LOCA occurring at the same time.

C.1 and C.2

If the Required Action and associated Completion Time of Condition~~s~~ A or B are not met, the plant must be placed in a MODE or condition in which the LCO does not apply. This is done by placing the plant in MODE 3 within 6 hours and with pressurizer pressure to ≤ 1000 psig 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.

BASES

ACTIONS (continued)

D.1

If more than one accumulator is inoperable, the plant is in a condition outside the accident analyses; therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.5.1.1

Each accumulator valve should be verified to be fully open every 12 hours. This verification ensures each accumulator isolation valve is fully open, as indicated in the control room, and timely discovery if a valve should be less than fully open. If an isolation valve is not fully open, the rate of injection to the RCS would be reduced. Although a motor operated valve position should not change with power removed, a partially closed valve could result in not meeting DBA analyses assumptions (Ref. 3). A 12 hour Frequency is considered reasonable in view of the other administrative controls which ensure that a mispositioned isolation valve is unlikely.

SR 3.5.1.2 and 3.5.1.3

Verification every 12 hours of the borated water volume and nitrogen cover pressure in each accumulator is sufficient to ensure adequate injection during a LOCA. Because of the static design of the accumulator, a 12 hour Frequency usually allows the operator to identify changes before limits are reached. Considering that control room alarms are provided for both parameters these limits are effectively subject to continuous monitoring. The 12 hour Frequency is considered reasonable considering the availability of the control room alarms and the likelihood that, with any deviation which may occur, the accumulators will perform their safety function with slight deviations in these parameters.

SR 3.5.1.4

The boron concentration should be verified to be within required limits for each accumulator every 31 days, since the static design of the accumulators limits the ways in which the concentration can be changed. The 31 day Frequency is adequate to identify changes that could occur from mechanisms such as in-leakage. Sampling the affected accumulator within 6 hours after a **51 cu ft (i.e.,** 3% **of nominal required borated water volume of 1700 cu ft)** volume increase will promptly

BASES

SURVEILLANCE REQUIREMENTS (continued)

identify whether the volume change has caused a reduction of boron concentration to below the required limit. It is not necessary to verify boron concentration if the added water inventory is from the in-containment refueling water storage tank (IRWST), because the water contained in the IRWST is within the accumulator boron concentration requirements. This is consistent with the recommendation of NUREG-1366 (Ref. ~~6~~**7**).

SR 3.5.1.5

Verification every 31 days that power is removed from each accumulator isolation valve operator when the pressurizer pressure is ≥ 2000 psig ensures that an active failure could not result in the undetected closure of an accumulator motor operated isolation valve. If this were to occur, reduced accumulator capacity might be available for injection following a DBA that required operation of the accumulators. Since power is removed under administrative control, the 31 day Frequency will provide adequate assurance that power is removed.

This SR allows power to be supplied to the motor operated isolation valves when pressurizer pressure is < 2000 psig, thus allowing operational flexibility by avoiding unnecessary delays to manipulate the breakers during unit startup or shutdowns.

Should closure of a valve occur, the safeguard actuation signal provided to the valve would open a closed valve, if required.

SR 3.5.1.6

This SR requires performance of a system performance test of each accumulator to verify flow capabilities. The system performance test demonstrates that the accumulator injection line resistance assumed in accident analyses is maintained. Although the likelihood that system performance would degrade with time is low, it is considered prudent to periodically verify system performance. The System Level Operability Testing Program provides specific test requirements and acceptance criteria.

REFERENCES

1. ~~IEEE Standard 603-1991, "Criteria for Safety Systems for Nuclear Power Generating Stations."~~**FSAR Section 6.3 "Passive Core Cooling System."**

BASES

REFERENCES (continued)

2. ~~Section 6.3 "Passive Core Cooling System."~~**IEEE Standard 603-1991, "Criteria for Safety Systems for Nuclear Power Generating Stations."**

3. **FSAR** Section 15.6 "Decrease in Reactor Coolant Inventory."

4. ~~AP1000 PRA~~**FSAR Chapter 19, "Probabilistic Risk Assessment."**

5. 10 CFR 50.46.

6. ~~NUREG-1366, February 1990.~~**Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," August 1998.**

7. ~~Regulatory Guide 1.177, 8/98, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications."~~**NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements," December 1992.**

XII. Applicable STS Subsection After Incorporation of this GTST's Modifications

The entire subsection of the Specifications and the Bases associated with this GTST, following incorporation of the modifications, is presented next.

3.5 PASSIVE CORE COOLING SYSTEM (PXS)

3.5.1 Accumulators

LCO 3.5.1 Both accumulators shall be OPERABLE.

APPLICABILITY: MODES 1 and 2,
MODES 3 and 4 with Reactor Coolant System (RCS) pressure > 1000 psig.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One accumulator inoperable due to boron concentration outside limits.	A.1 Restore boron concentration to within limits.	72 hours
B. One accumulator inoperable for reasons other than Condition A.	B.1 Restore accumulator to OPERABLE status.	1 hour from discovery of LCO 3.5.1 Condition B entry concurrent with LCO 3.5.2 Condition C or E entry AND 8 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. AND C.2 Reduce RCS pressure to ≤ 1000 psig.	6 hours 12 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Two accumulators inoperable.	D.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	12 hours
SR 3.5.1.2	Verify the borated water volume in each accumulator is ≥ 1667 cu ft, and ≤ 1732 cu ft.	12 hours
SR 3.5.1.3	Verify the nitrogen cover gas pressure in each accumulator is ≥ 637 psig and ≤ 769 psig.	12 hours

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.4	Verify the boron concentration in each accumulator is ≥ 2600 ppm and ≤ 2900 ppm.	31 days AND --------NOTE-------- Only required for affected accumulators. ---------- Once within 6 hours after each solution volume increase of ≥ 51 cu ft, that is not the result of addition from the in-containment refueling water storage tank
SR 3.5.1.5	Verify power is removed from each accumulator isolation valve operator when pressurizer pressure is ≥ 2000 psig.	31 days
SR 3.5.1.6	Verify system flow performance of each accumulator in accordance with the System Level OPERABILITY Testing Program.	10 years

B 3.5 PASSIVE CORE COOLING SYSTEM (PXS)

B 3.5.1 Accumulators

BASES

BACKGROUND

Two redundant PXS accumulators provide sufficient water to the reactor vessel during the blowdown phase of a large-break loss-of-coolant accident (LOCA), to provide inventory to help accomplish the refill phase that follows thereafter, to provide Reactor Coolant System (RCS) makeup for a small-break LOCA, and to provide RCS boration for steam line breaks (Ref. 1).

The blowdown phase of a large break LOCA is the initial period of the transient during which the RCS departs from equilibrium conditions, and heat from fission product decay, hot internals, and the vessel continues to be transferred to the reactor coolant. The blowdown phase of the transient ends when the RCS pressure falls to a value approaching that of the containment atmosphere.

In the refill phase of a LOCA, which immediately follows the blowdown phase, reactor coolant inventory has vacated the core through steam flashing and ejection out through the break. The core is essentially in adiabatic heatup. The accumulator inventory is available to help fill voids in the lower plenum and reactor vessel downcomer so as to establish a recovery level at the bottom of the core and ongoing reflood of the core.

The accumulators are pressure vessels, partially filled with borated water and pressurized with nitrogen gas. The accumulators are passive components, since no operator or control actions are required for them to perform their function. Internal accumulator pressure is sufficient to discharge the accumulator contents to the RCS, if RCS pressure decreases below the static accumulator pressure.

Each accumulator is piped into the reactor vessel via an accumulator line and is isolated from the RCS by two check valves in series.

A normally open motor operated valve is arranged in series with the check valves. Upon initiation of a safeguards actuation signal, the normally open valves receive a confirmatory open signal.

Power lockout and position alarms ensure that the valves meet the requirements of the Institute of Electrical and Electronic Engineers (IEEE) Standard 603-1991 (Ref. 2) for “operating bypasses” and that the

BASES

BACKGROUND (continued)

accumulators will be available for injection without being subject to a single failure.

The accumulator size, water volume, and nitrogen cover pressure are selected so that both of the accumulators are sufficient to recover the core cooling before significant clad melting or zirconium water reaction can occur following a large break LOCA. One accumulator is adequate during a small break LOCA where the entire contents of one accumulator can possibly be lost via the pipe break. This accumulator performance is based on design basis accident (DBA) assumptions and models (Ref. 3). The AP1000 probabilistic risk assessment (PRA) (Ref. 4) shows that one of the two accumulators is sufficient for a large break LOCA caused by spurious ADS actuation and that none of the accumulators are required for small break LOCAs, assuming that at least one core makeup tank (CMT) is available. In addition, both accumulators are required for a large break LOCA caused by the break of a cold leg pipe; the probability of this break has been significantly reduced by incorporation of leak-before-break.

APPLICABLE SAFETY ANALYSES

The accumulators are assumed to be OPERABLE in both the large and small break LOCA analyses at full power (Ref. 3) that establish the acceptance limits for the accumulators. Reference to the analyses for these DBAs is used to assess changes in the accumulators as they relate to the acceptance limits.

For a small break LOCA, a large range of break sizes and locations were analyzed to verify the adequacy of the design. The cases analyzed include the rupture of one 8 inch direct vessel injection line and several smaller break sizes. Acceptable PXS performance was demonstrated.

For a larger LOCA, including a double ended RCS piping rupture, the PXS can provide a sufficiently large flow rate, assuming both accumulators are OPERABLE, to quickly fill the reactor vessel lower plenum and downcomer. Both accumulators, in conjunction with the CMTs, ensure rapid reflooding of the core. For a large break LOCA, both lines are available since an 8 inch line break would be a small break LOCA.

BASES

APPLICABLE SAFETY ANALYSES (continued)

Following a non-LOCA event such as a steam line break, the RCS experiences a decrease in temperature and pressure due to an increase in energy removal by the secondary system. The cooldown results in a reduction of the core SHUTDOWN MARGIN with a potential for return to power. During such an event the accumulators provide injection of borated water to assist the CMT's boration to mitigate the reactivity transient and ensure the core remains shut down.

The accumulators satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO establishes the limits on accumulator parameters and conditions on accumulator component electrical power and alignment necessary to ensure that sufficient accumulator flow will be available to satisfy the acceptance criteria established for core cooling by 10 CFR 50.46 (Ref. 5). These criteria are:

a. Maximum fuel element cladding temperature is ≤ 2200°F;

b. Maximum cladding oxidation is ≤ 0.17 times the total cladding thickness before oxidation;

c. Maximum hydrogen generation from a zirconium-water reaction is ≤ 0.01 times the hypothetical amount that would be generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react; and

d. The core is maintained in a coolable geometry.

Since the accumulators discharge during the blowdown phase of a LOCA, they do not contribute to the long term cooling requirements of 10 CFR 50.46.

For an accumulator to be OPERABLE, the isolation valve must be fully open with power removed, and the limits established in the Surveillance Requirements for contained water, boron concentration, and nitrogen cover pressure must be met.

BASES

APPLICABILITY

In MODES 1 and 2, and in MODES 3 and 4 with RCS pressure > 1000 psig, the accumulator OPERABILITY requirements are based on full power operation. Although cooling requirements decrease as power decreases, the accumulators are still required to provide core cooling as long as elevated RCS pressures and temperatures exist.

This LCO is only applicable at pressures > 1000 psig. At pressures ≤ 1000 psig, the rate of RCS blowdown is such that adequate injection flow from other sources exists to retain peak clad temperatures below the 10 CFR 50.46 limit of 2200°F.

In MODES 3 and 4 with RCS pressure ≤ 1000 psig, and in MODES 5 and 6, the accumulator motor operated isolation valves are closed to isolate the accumulators from the RCS. This allows the RCS cooldown and depressurization without discharging the accumulators into the RCS or requiring depressurization of the accumulators.

ACTIONS

A.1

If the boron concentration of one accumulator is not within limits, action must be taken to restore the parameter.

Deviations in boron concentration are expected to be slight, considering that the pressure and volume are verified once per 12 hours. For one accumulator, boron concentration not within limits will have an insignificant effect on the ability of the accumulators to perform their safety function. Therefore, a Completion Time of 72 hours is considered to be acceptable.

B.1

If one accumulator is inoperable for a reason other than boron concentration, the accumulator must be returned to OPERABLE status within 8 hours. With one accumulator inoperable, the remaining accumulator is capable of providing the required safety function, except for one low probability event (large cold leg break LOCA) discussed in the background section. The effectiveness of one accumulator is demonstrated in analysis performed to justify PRA success criteria (Ref. 4). The analysis contained in this reference shows that for a range of other events including small break LOCAs and large hot leg break LOCAs that with one accumulator unavailable the core is adequately cooled. The incremental conditional core damage probability with this 8

ACTIONS (continued)

hour Completion Time is more than an order of magnitude less than the value indicated to have a small impact on plant risk (Ref. 6).

The 8 hour Completion Time to open the valve, remove power to the valve, or restore the proper water volume or nitrogen cover pressure ensures that prompt action will be taken to return the inoperable accumulator to OPERABLE status. The Completion Time is reasonable, since the CMTs are required to be available to provide small break LOCA mitigation. The effectiveness of backup CMT injection is demonstrated in analysis performed to justify PRA success criteria (Ref. 4). The analysis contained in this reference shows that for a small break LOCA, the injection from one CMT without any accumulator injection supports adequate core cooling. This analysis provides a high confidence that with the unavailability of one accumulator, the core can be cooled following design bases accidents.

If LCO 3.5.2 Condition C or E is also entered concurrent with this Condition, then a 1 hour Completion Time from discovery of LCO 3.5.1 Condition B entry concurrent with LCO 3.5.2 Condition C or E entry also applies. This 1 hour Completion Time requires very prompt actions to restore either the accumulator or the CMT (per LCO 3.5.2 Condition C or E) to OPERABLE status. This Completion Time is considered reasonable because of the low probability of simultaneously entering these multiple PXS Conditions and the very small likelihood of a LOCA occurring at the same time.

C.1 and C.2

If the Required Action and associated Completion Time of Condition A or B are not met, the plant must be placed in a MODE or condition in which the LCO does not apply. This is done by placing the plant in MODE 3 within 6 hours and with pressurizer pressure to ≤ 1000 psig 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.

BASES

ACTIONS (continued)

D.1

If more than one accumulator is inoperable, the plant is in a condition outside the accident analyses; therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.5.1.1

Each accumulator valve should be verified to be fully open every 12 hours. This verification ensures each accumulator isolation valve is fully open, as indicated in the control room, and timely discovery if a valve should be less than fully open. If an isolation valve is not fully open, the rate of injection to the RCS would be reduced. Although a motor operated valve position should not change with power removed, a partially closed valve could result in not meeting DBA analyses assumptions (Ref. 3). A 12 hour Frequency is considered reasonable in view of the other administrative controls which ensure that a mispositioned isolation valve is unlikely.

SR 3.5.1.2 and 3.5.1.3

Verification every 12 hours of the borated water volume and nitrogen cover pressure in each accumulator is sufficient to ensure adequate injection during a LOCA. Because of the static design of the accumulator, a 12 hour Frequency usually allows the operator to identify changes before limits are reached. Considering that control room alarms are provided for both parameters these limits are effectively subject to continuous monitoring. The 12 hour Frequency is considered reasonable considering the availability of the control room alarms and the likelihood that, with any deviation which may occur, the accumulators will perform their safety function with slight deviations in these parameters.

SR 3.5.1.4

The boron concentration should be verified to be within required limits for each accumulator every 31 days, since the static design of the accumulators limits the ways in which the concentration can be changed. The 31 day Frequency is adequate to identify changes that could occur from mechanisms such as in-leakage. Sampling the affected accumulator within 6 hours after a 51 cu ft (i.e., 3% of nominal required borated water volume of 1700 cu ft) volume increase will promptly

SURVEILLANCE REQUIREMENTS (continued)

identify whether the volume change has caused a reduction of boron concentration to below the required limit. It is not necessary to verify boron concentration if the added water inventory is from the in-containment refueling water storage tank (IRWST), because the water contained in the IRWST is within the accumulator boron concentration requirements. This is consistent with the recommendation of NUREG-1366 (Ref. 7).

SR 3.5.1.5

Verification every 31 days that power is removed from each accumulator isolation valve operator when the pressurizer pressure is ≥ 2000 psig ensures that an active failure could not result in the undetected closure of an accumulator motor operated isolation valve. If this were to occur, reduced accumulator capacity might be available for injection following a DBA that required operation of the accumulators. Since power is removed under administrative control, the 31 day Frequency will provide adequate assurance that power is removed.

This SR allows power to be supplied to the motor operated isolation valves when pressurizer pressure is < 2000 psig, thus allowing operational flexibility by avoiding unnecessary delays to manipulate the breakers during unit startup or shutdowns.

Should closure of a valve occur, the safeguard actuation signal provided to the valve would open a closed valve, if required.

SR 3.5.1.6

This SR requires performance of a system performance test of each accumulator to verify flow capabilities. The system performance test demonstrates that the accumulator injection line resistance assumed in accident analyses is maintained. Although the likelihood that system performance would degrade with time is low, it is considered prudent to periodically verify system performance. The System Level Operability Testing Program provides specific test requirements and acceptance criteria.

BASES

REFERENCES

1. FSAR Section 6.3 “Passive Core Cooling System.”

2. IEEE Standard 603-1991, “Criteria for Safety Systems for Nuclear Power Generating Stations.”

3. FSAR Section 15.6 “Decrease in Reactor Coolant Inventory.”

4. FSAR Chapter 19, “Probabilistic Risk Assessment.”

5. 10 CFR 50.46.

6. Regulatory Guide 1.177, “An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications,” August 1998.

7. NUREG-1366, “Improvements to Technical Specifications Surveillance Requirements,” December 1992.