

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

Title: Changes Related to LCO 3.6.4, Containment Pressure

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-425, Rev. 3, Relocate Surveillance Frequencies to Licensee Control - RITSTF Initiative 5b

STS NUREGs Affected:

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

NRC Approval Date:

TSTF-425, Rev. 3: 06-Jul-09

TSTF Classification:

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 A083: TS 3.6.4, Condition B Divided into Two Separate Conditions
VEGP LAR DOC A084: TS 3.6.4, Applicability Editorial Change

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(1) applicable to operating reactor designs, but not to the AP1000 design; (2) already incorporated in the GTS; or (3) superseded by another change.

The “Actions” section of the bases is revised by VEGP LAR DOC A083 to include discussion of Condition C. The NRC staff proposed changes revise portions of the VEGP LAR DOC A083 changes.

TSTF-425 is 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, 2, 3, and 4.” from a period to a comma.

Reference to LCO 3.6.8 is revised to LCO 3.6.7 in the “Applicability” and “Actions” sections of the Bases.

The Applicability Note is revised from “...MODES 5 or 6.” to “...MODES 5 and 6.”

In the “Actions” section of the Bases, under heading “B.1, B.2, and C.1”, revise second and third paragraphs as suggested by APOG comment but with additional changes to further clarify applicable plant conditions specified in the required actions.

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)

Revise the “Applicability” section of the Bases, fourth paragraph from “...the cooling events...” to “...the containment cooling events...”

Revise the “Actions” section of the Bases, under heading “B.1, B.2, and C.1”, in the third paragraph capitalize the word “**C**ondition”. In the fourth paragraph capitalize “...**C**ontainment **A**ir **F**iltration **S**ystem...”

Revise the “Actions” section of the Bases, under heading “B.1, B.2, and C.1”, second and third paragraph as follows:

“If the containment **high low** pressure limit is **still** not met, **Condition C applies**~~only Condition B applies since entry into MODE 5 is sufficient to exit the Applicability applies.~~

~~If the containment low pressure limit is not met both Conditions B and C apply.~~
Once in MODE 5 or 6, Required Action C.1 requires that a containment air flow path ≥ 6 inches in diameter shall be opened within 8 hours from condition entry.”

Revise the “Surveillance Requirements” section of the Bases, delete the word “both” from “...related to trending of ~~both~~ containment pressure variations...”

V. Applicability

Affected Generic Technical Specifications and Bases:

Section 3.6.4, Containment Pressure

Changes to the Generic Technical Specifications and Bases:

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

Applicability statement for TS 3.6.4 is formatted to meet requirements of TSTF-GG-05-01, subsection 2.5.4.b.1. (DOC A084)

Condition B is divided into two separate Conditions. The applicable Condition and MODES are added to Condition B entry statement. Required Action B.3 is moved to proposed Condition C and Completion Time is revised. The “Actions” section of the bases is revised to include Action C.1. (DOC A083)

The “Applicability” and “Actions” sections of the Bases reference to LCO 3.6.8 is revised to LCO 3.6.7. (NRC staff proposed change)

The Applicability Note is revised from “...MODES 5 or 6.” to “MODES 5 and 6.” (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)

In the “Applicability” section of the Bases, fourth paragraph, the first sentence is revised from “...the cooling events...” to “...the containment cooling events...” (APOG Comment)

In the “Actions” section of the Bases, under heading “B.1, B.2, and C.1”, in the third paragraph the word “**C**eondition” is capitalized. In the fourth paragraph “...**C**eontainment **A**air **F**iltration **S**ystem...” is capitalized. (APOG Comment)

In the “Actions” section of the Bases, under heading “B.1, B.2, and C.1”, the second and third paragraphs are revised for clarity. (APOG Comment) The proposed changes were revised by NRC staff to provide more clarity.

In the “Surveillance Requirements” section of the Bases, the word “both” is deleted from “...related to trending of ~~both~~-containment pressure variations...” (APOG Comment)

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 A083 adds Condition C to the specification and moves Required Action B.3 to the added Condition C. The Completion Time for Required Action B.3 is revised from 44 hours to 8 hours. Condition B entry statement is revised to include the applicable Condition and MODES.

VEGP LAR DOC A084 adds the appropriate hanging indent to the “Applicability” statement.

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

VEGP LAR DOC A083 divides Action B into two separate Actions, which is an editorial change. Adding the specific Condition and applicable Modes to Condition B provides clarification.

VEGP LAR DOC A084 is a reformatting change that provides consistency with TSTF-GG-05-01.

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

The Applicability statement is revised by changing the period after “MODES 1, 2, 3, and 4.” to a comma.

The “Applicability” and “Actions” sections of the bases reference LCO 3.6.8. Due to VEGP LAR DOC M13 changes the reference to LCO 3.6.8 is revised to LCO 3.6.7.

The Applicability Note is revised from “...MODES 5 or 6.” to “...MODES 5 and 6.”

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

The “Applicability” section of the Bases, fourth paragraph is revised from “...the cooling events...” to “the containment cooling events...” (APOG Comment)

The “Actions” section of the Bases, under heading “B.1, B.2, and C.1”, the third paragraph is revised by capitalizing the word “**C**ondition”. In the fourth paragraph the phrase “...**C**ontainment **A**ir **F**iltration **S**ystem...” is capitalized. (APOG Comment)

The “Actions” section of the Bases, under heading “B.1, B.2, and C.1”, the second and third paragraphs are revised to clarify Condition applicability. (APOG Comment)

The “Surveillance Requirements” section of the Bases, the word “both” is deleted from “...related to trending of ~~both~~ containment pressure variations...” (APOG Comment)

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

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

The reference to LCO 3.6.8 is renumbered to LCO 3.6.7 in the “Applicability” and “Actions” section of the bases, due to renumbering of TS 3.6 section based on VEGP LAR DOC M13 changes. VEGP LAR DOC M13 change combines TS 3.6.6 and TS 3.6.7 into a single new TS 3.6.6, which results in renumbering subsequent TS 3.6 sections.

Revising the Applicability Note from “...MODES 5 or 6.” to “...MODES 5 and 6.” is an editorial change.

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

Revising the “Applicability” section of the Bases to include “containment” before “cooling events” is an editorial clarification.

Revising the “Actions” section of the Bases to capitalize the word “Condition” and the phrase “...Containment Air Filtration System...” is an editorial change.

Revising the “Actions” section of the Bases to clarify Condition applicability is an editorial change for clarification.

Revising the “Surveillance Requirements” section of the Bases by deleting the word “both” is an editorial change.

VII. GTST Safety Evaluation

Technical Analysis:

VEGP LAR DOC A083 revises Action B, which provides the actions required to be taken when the containment pressure is not restored to within limits in 1 hour, as specified in Action A. Splitting the GTS Action B into two separate Actions is an editorial change. The actions required to be taken when the Required Action and associated Completion Time of Condition A are not met is not changed. If the unit is initially in Mode 1, 2, 3, or 4, then proposed Condition B is entered, which requires a unit shutdown to Mode 3 within 6 hours and to Mode 5 within 36 hours. This is the same as the GTS requirements.

Once in Mode 5, proposed Condition C is entered. The actions required to be taken by proposed Condition C require a containment air flow path ≥ 6 inches in diameter be open within 8 hours. Currently, while 44 hours is allowed to open a containment air flow path ≥ 6 inches in diameter, the time starts upon entry into Condition B. Since proposed Condition C is not entered until after Mode 5 is reached, and the proposed Required Action B.2 allows 36 hours for this, the proposed 8 hour Completion Time of Required Action C.1 allows no more time than is currently allowed.

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 3.6.4 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 #6) The GTST sections often repeat VEGP LAR DOCs, which reference "existing" and "current" requirements. The inclusion in the GTST of references to "existing" and "current," are not always valid in the context of the GTS. Each occurrence of "existing" and "current" should be revised to be clear and specific to GTS, MTS, or VEGP COL TS (or other), as appropriate. This is resolved by making the APOG recommended changes to the GTST.
3. (Internal #13) The NRC approval of TSTF-425, and model safety evaluation provided in the CLIP 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.

4. (Internal #349) First paragraph of the Technical Analysis discusses DOC A083. The last two sentences discuss an action that is not in GTS and is not in the revised STS (i.e., going to MODE 6). These sentences should be deleted as they are not relevant to the change. This portion of the DOC A083 discussion is related to a similar change in GTS 3.6.5. Delete sentences that read "While the Required Action B.2 does not specify that an option is to be in MODE 6, it is always an option. It is not necessary to state that the unit can go to a lower mode". This is resolved by making the APOG recommended change.
5. (Internal #350) GTS LCO 3.6.4 has Applicability Notes that are mistakenly moved in the GTST as LCO Notes. The GTS evaluation and the corresponding Bases, continue to reflect the existence of Applicability Notes. The GTST Section XI and Section XII TS pages appear to have typographical errors in the placement of the Notes. Revise Section XI and Section XII to present the LCO Notes as Applicability Notes. This is resolved by making the APOG recommended change and revising "MODES 5 or 6" to "MODES 5 and 6" in the Applicability Note.
6. (Internal #351) Revise TS 3.6.4 Bases for the Applicability to change from "the cooling events" to "the containment cooling events" for clarification. This is resolved by making the APOG recommended change to the "Applicability" section of the Bases, fourth paragraph, first sentence as follows:

"Therefore, maintaining containment pressure within the low pressure limit is essential to ensure initial conditions assumed in the **containment** cooling events in MODES 1..."

7. (Internal #352 and #353) Revise the "Actions" section of the Bases. The editorial changes provide clarity and correction. These changes are made for consistency with the TS 3.6.4 requirements being discussed in the Bases. This is resolved by making the APOG recommended changes and additional NRC staff proposed changes as follows:

"Upon entry into MODE 5, if the containment highlow pressure limit is still not met, or if while in MODE 5 or 6 the containment pressure cannot be restored to within its low pressure limit within the required Completion Time, Condition C applies entry into MODE 5 is sufficient to exit the Applicability. If the containment low pressure limit is not met, Required Action B.3 applies."

~~If in MODE 5 or 6 the containment low pressure limit is not met, Required~~
Action C.1 requires that a containment air flow path \geq 6 inches in diameter shall be opened within **448** hours from **e**Condition entry. Any flow path (or paths) with an area equivalent to 6 inches in diameter is adequate to provide the necessary air flow.

The primary means of opening a containment air flow path is by establishing a **e**Containment ~~a~~**Air f**iltration ~~s~~**S**ystem (VFS) air flow path into..."

8. (Internal #354) Editorial change is recommended. These non-technical changes provide improved clarity, consistency, and operator usability. This is resolved by making the APOG recommended changes to the "Surveillance Requirements" section of the Bases, by deleting the word "both" from the second sentence.

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).
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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.

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment pressure shall be ≥ -0.2 psig and $\leq +1.0$ psig.

APPLICABILITY: MODES 1, 2, 3, and 4,
MODES 5 and 6 without an open containment air flow path ≥ 6 inches in diameter.

-----NOTE-----
The high pressure LCO limit is not applicable in MODES 5 ~~or~~ and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment pressure not within limits.	A.1 Restore containment pressure to within limits.	1 hour
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours
	B.3 Open a containment air flow path ≥ 6 inches in diameter.	44 hours
C. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6.	C.1 Open a containment air flow path ≥ 6 inches in diameter.	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.4.1 Verify containment pressure is within limits.	12 hours

B 3.6 CONTAINMENT SYSTEMS**B 3.6.4 Containment Pressure****BASES**

BACKGROUND The containment pressure is limited during normal operation to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or steam line break (SLB). These limits also prevent the containment pressure from exceeding the containment design negative pressure differential with respect to the outside atmosphere in the event of transients which result in a negative pressure.

Containment pressure is a process variable that is monitored and controlled. The containment pressure limits are derived from the operating band of conditions used in the containment pressure analyses for the Design Basis Events which result in internal or external pressure loads on the containment vessel. Should operation occur outside these limits, the initial containment pressure would be outside the range used for containment pressure analyses.

APPLICABLE SAFETY ANALYSES Containment internal pressure is an initial condition used in the DBA analyses to establish the maximum peak containment internal pressure. The limiting DBAs considered, relative to containment pressure, are the LOCA and SLB, which are analyzed using computer pressure transients. The worst case LOCA generates larger mass and energy release than the worst cast SLB. Thus, the LOCA event bounds the SLB event from the containment peak pressure standpoint (Ref. 1).

The initial pressure condition used in the containment analysis was 15.7 psia (1.0 psig). This resulted in a maximum peak pressure from a LOCA, P_a , of 58.3 psig. The containment analysis (Ref. 1) shows that the maximum peak calculated containment pressure results from the limiting LOCA. The maximum containment pressure resulting from the worst case LOCA does not exceed the containment design pressure, 59 psig.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The containment was also designed for an external pressure load equivalent to 1.7 psid. The limiting negative pressure transient is a loss of all AC power sources coincident with extreme cold weather conditions which cool the external surface of the containment vessel. The initial pressure condition used in this analysis was -0.2 psig. This resulted in a minimum pressure inside containment, as illustrated in Reference 1, which is less than the design load. Other external pressure load events evaluated include:

Failed fan cooler control

Malfunction of containment purge system

Inadvertent Passive Containment Cooling System (PCS) actuation

Containment pressure satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

Maintaining containment pressure at less than or equal to the LCO upper pressure limit ensures that, in the event of a DBA, the resultant peak containment accident pressure will remain below the containment design pressure.

Maintaining containment pressure at greater than or equal to the LCO lower pressure limit ensures that the containment will not exceed the design negative differential pressure following negative pressure transients. If the containment pressure does not meet the low pressure limit, the containment vacuum relief capacity of one flow path may not be adequate to ensure the containment pressure meets the negative pressure design limit.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. Since maintaining containment pressure within the high pressure limit is essential to ensure initial conditions assumed in the accident analyses are maintained, the LCO is applicable in MODES 1, 2, 3, and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining containment pressure within the high pressure limit of the LCO is not required in MODE 5 or 6.

BASES

APPLICABILITY (continued)

In MODES 1 through 6, the potential exists for excessive containment cooling events to produce a negative containment pressure below the design limit. However, in MODES 5 and 6, a containment air flow path may be opened (LCO 3.6.87, Containment Penetrations), providing a vacuum relief path that is sufficient to preclude a negative containment pressure below the design limit.

Therefore, maintaining containment pressure within the low pressure limit is essential to ensure initial conditions assumed in the **containment** cooling events in MODES 1 through 4 and in MODES 5 and 6 without an open containment air flow path \geq 6 inches in diameter. With a 6 inch diameter or equivalent containment air flow path, the vacuum relief function is not needed to mitigate a low pressure event.

ACTIONS

A.1

When containment pressure is not within the limits of the LCO, it must be restored within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

B.1, B.2, and ~~B.3~~C.1

If the containment pressure cannot be restored to within its limits within the required Completion Time **in MODE 1, 2, 3, or 4**, the plant must be placed in a condition 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.

Upon entry into MODE 5, if the containment high/low pressure limit is still not met, or if while in MODE 5 or 6 the containment pressure cannot be restored to within its low pressure limit within the required Completion Time, Condition C applies. ~~entry into MODE 5 is sufficient to exit the Applicability. If the containment low pressure limit is not met, Required Action B.3 applies.~~

BASES

ACTIONS (continued)

~~If in MODE 5 or 6 the containment low pressure limit is not met,~~**Required Action C.1 requires that** a containment air flow path \geq 6 inches in diameter shall be opened within **448** hours from ~~e~~**C**ondition entry. Any flow path (or paths) with an area equivalent to 6 inches in diameter is adequate to provide the necessary air flow.

The primary means of opening a containment air flow path is by establishing a ~~e~~**C**ontainment ~~a~~**A**ir ~~f~~**F**iltration ~~s~~**S**ystem (VFS) air flow path into containment. Manual actuation and maintenance as necessary to open a purge supply, purge exhaust, or vacuum relief flow path are available means to open a containment air flow path. In addition, opening of a spare penetration is an acceptable means to provide the necessary flow path. Opening of an equipment hatch or a containment airlock is acceptable, but may not be possible due to the differential pressure condition. Containment air flow paths opened must comply with LCO 3.6.~~87~~, “Containment Penetrations.”

The **448** hour Completion Time is reasonable for opening a containment air flow path in an orderly manner.

**SURVEILLANCE
REQUIREMENTS**SR 3.6.4.1

Verifying that containment pressure is within limits ensures that unit operation remains within the limits assumed in the containment analysis. The 12 hour Frequency of this SR was developed based on operating experience related to trending of ~~both~~ containment pressure variations during the applicable MODES. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the main control room, including alarms, to alert the operator to an abnormal containment pressure condition.

REFERENCES

1. **FSAR** Section 6.2, “Containment Systems.”
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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.

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure

LCO 3.6.4 Containment pressure shall be ≥ -0.2 psig and $\leq +1.0$ psig.

APPLICABILITY: MODES 1, 2, 3, and 4,
MODES 5 and 6 without an open containment air flow path ≥ 6 inches in
diameter.

-----NOTE-----
The high pressure LCO limit is not applicable in MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment pressure not within limits.	A.1 Restore containment pressure to within limits.	1 hour
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours
C. Required Action and associated Completion Time of Condition A not met in MODE 5 or 6.	C.1 Open a containment air flow path ≥ 6 inches in diameter.	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.4.1 Verify containment pressure is within limits.	12 hours

B 3.6 CONTAINMENT SYSTEMS

B 3.6.4 Containment Pressure

BASES

BACKGROUND The containment pressure is limited during normal operation to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or steam line break (SLB). These limits also prevent the containment pressure from exceeding the containment design negative pressure differential with respect to the outside atmosphere in the event of transients which result in a negative pressure.

Containment pressure is a process variable that is monitored and controlled. The containment pressure limits are derived from the operating band of conditions used in the containment pressure analyses for the Design Basis Events which result in internal or external pressure loads on the containment vessel. Should operation occur outside these limits, the initial containment pressure would be outside the range used for containment pressure analyses.

APPLICABLE SAFETY ANALYSES Containment internal pressure is an initial condition used in the DBA analyses to establish the maximum peak containment internal pressure. The limiting DBAs considered, relative to containment pressure, are the LOCA and SLB, which are analyzed using computer pressure transients. The worst case LOCA generates larger mass and energy release than the worst cast SLB. Thus, the LOCA event bounds the SLB event from the containment peak pressure standpoint (Ref. 1).

The initial pressure condition used in the containment analysis was 15.7 psia (1.0 psig). This resulted in a maximum peak pressure from a LOCA, P_a , of 58.3 psig. The containment analysis (Ref. 1) shows that the maximum peak calculated containment pressure results from the limiting LOCA. The maximum containment pressure resulting from the worst case LOCA does not exceed the containment design pressure, 59 psig.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The containment was also designed for an external pressure load equivalent to 1.7 psid. The limiting negative pressure transient is a loss of all AC power sources coincident with extreme cold weather conditions which cool the external surface of the containment vessel. The initial pressure condition used in this analysis was -0.2 psig. This resulted in a minimum pressure inside containment, as illustrated in Reference 1, which is less than the design load. Other external pressure load events evaluated include:

Failed fan cooler control

Malfunction of containment purge system

Inadvertent Passive Containment Cooling System (PCS) actuation

Containment pressure satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

Maintaining containment pressure at less than or equal to the LCO upper pressure limit ensures that, in the event of a DBA, the resultant peak containment accident pressure will remain below the containment design pressure.

Maintaining containment pressure at greater than or equal to the LCO lower pressure limit ensures that the containment will not exceed the design negative differential pressure following negative pressure transients. If the containment pressure does not meet the low pressure limit, the containment vacuum relief capacity of one flow path may not be adequate to ensure the containment pressure meets the negative pressure design limit.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. Since maintaining containment pressure within the high pressure limit is essential to ensure initial conditions assumed in the accident analyses are maintained, the LCO is applicable in MODES 1, 2, 3, and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining containment pressure within the high pressure limit of the LCO is not required in MODE 5 or 6.

BASES

APPLICABILITY (continued)

In MODES 1 through 6, the potential exists for excessive containment cooling events to produce a negative containment pressure below the design limit. However, in MODES 5 and 6, a containment air flow path may be opened (LCO 3.6.7, Containment Penetrations), providing a vacuum relief path that is sufficient to preclude a negative containment pressure below the design limit.

Therefore, maintaining containment pressure within the low pressure limit is essential to ensure initial conditions assumed in the containment cooling events in MODES 1 through 4 and in MODES 5 and 6 without an open containment air flow path ≥ 6 inches in diameter. With a 6 inch diameter or equivalent containment air flow path, the vacuum relief function is not needed to mitigate a low pressure event.

ACTIONSA.1

When containment pressure is not within the limits of the LCO, it must be restored within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

B.1, B.2, and C.1

If the containment pressure cannot be restored to within its limits within the required Completion Time in MODE 1, 2, 3, or 4, the plant must be placed in a condition 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.

Upon entry into MODE 5, if the containment low pressure limit is still not met, or if while in MODE 5 or 6 the containment pressure cannot be restored to within its low pressure limit within the required Completion Time, Condition C applies. Required Action C.1 requires that a containment air flow path ≥ 6 inches in diameter shall be opened within 8 hours from Condition entry. Any flow path (or paths) with an area

BASES

ACTIONS (continued)

equivalent to 6 inches in diameter is adequate to provide the necessary air flow.

The primary means of opening a containment air flow path is by establishing a Containment Air Filtration System (VFS) air flow path into containment. Manual actuation and maintenance as necessary to open a purge supply, purge exhaust, or vacuum relief flow path are available means to open a containment air flow path. In addition, opening of a spare penetration is an acceptable means to provide the necessary flow path. Opening of an equipment hatch or a containment airlock is acceptable, but may not be possible due to the differential pressure condition. Containment air flow paths opened must comply with LCO 3.6.7, "Containment Penetrations."

The 8 hour Completion Time is reasonable for opening a containment air flow path in an orderly manner.

**SURVEILLANCE
REQUIREMENTS****SR 3.6.4.1**

Verifying that containment pressure is within limits ensures that unit operation remains within the limits assumed in the containment analysis. The 12 hour Frequency of this SR was developed based on operating experience related to trending of containment pressure variations during the applicable MODES. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the main control room, including alarms, to alert the operator to an abnormal containment pressure condition.

REFERENCES

1. FSAR Section 6.2, "Containment Systems."
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