

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

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**Title: Changes Related to LCO 3.7.9, Spent Fuel Pool Makeup Water Sources**

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**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:**

None

**STS NUREGs Affected:**

Not Applicable

**NRC Approval Date:**

Not Applicable

**TSTF Classification:**

Not Applicable

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**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:**

There are no Vogtle departures applicable to Specification 3.7.9.

**RCOL COL Item Number and Title:**

There are no Vogtle COL items applicable to Specification 3.7.9.

**RCOL PTS Change Number and Title:**

VEGP LAR DOC A003: References to various Chapters and Sections of the Final Safety Analysis Report (FSAR) are revised to include FSAR.  
VEGP LAR DOC A105: TS 3.7.9 title is revised  
VEGP LAR DOC A110: TS 3.7.9 Required Action A.1 Note moved to Actions Table Note  
VEGP LAR DOC M13: TS 3.7.9 LCO Note 3 reference change  
VEGP LAR DOC L05: TS LCO 3.0.8 is eliminated  
VEGP LAR DOC L14: Delete "calculated" with respect to decay heat in SRs

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(1) applicable to operating reactor designs, but not to the AP1000 design; (2) already incorporated in the GTS; or (3) superseded by another change.

None

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**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)**

Minor corrections were made to correct grammatical errors in the Bases.

Identify all acronyms at the first occurrence in the Bases discussion.

Make an additional technical edit for clarity in the Applicability statement and Bases. LCO Note 3 discusses reactor decay heat in addition to spent fuel pool decay heat. The proposed change clarifies that only pool decay heat is intended to be addressed by the Applicability statement. Revise the Applicability statement, as indicated (NRC Staff Comment):

APPLICABILITY: During storage of fuel in the spent fuel ~~storage~~ pool with a ~~calculated~~ **spent fuel pool** decay heat > 4.7 MWt

Revise the “Applicability” section of the Bases as stated (NRC Staff Comment):

This LCO applies during storage of fuel in the spent fuel ~~storage~~ pool with a ~~calculated~~ **spent fuel pool** decay heat (**normally determined by calculation**) > 4.7 MWt. With **spent fuel pool** decay heat  $\leq$  4.7 MWt, the assumed spent fuel ~~storage~~ pool water inventory (i.e., level below the pump suction connection to the pool) provides for 3 days of **spent fuel pool** cooling without makeup.

Revise the third sentence of the second paragraph in the “ASA” section of the Bases to state (NRC Staff Comment):

. . . ~~At or below 6.0 Mwt~~ **With** reactor decay heat  $\leq$  **6.0 MWt**, containment air cooling is adequate.

Revise the second paragraph of the “LCO” section of the Bases to state (NRC Staff Comment):

An OPERABLE flow path from the required makeup source assures spent fuel **pool** cooling for at least 72 hours. Several additional makeup sources are available, including the ground level PCCAWST. These makeup sources assure spent fuel **pool** cooling for at least 7 days.

**APOG Recommended Changes to Improve the Bases**

Revise the first sentence of the fourth paragraph in the “Background” section of the Bases to state:

Once decay heat in the spent fuel pool is reduced to  $\leq$  ~~at or below~~ 4.7 MWt, the spent. . .

Revise the second sentence of the first paragraph in the “ASA” section of the Bases to state:

The worst case decay heat load (decay heat > 7.2 MWt) is produced by a ~~an~~ **emergency** full core off-load following a refueling plus ten years of spent fuel.

Revise the third sentence of the fifth paragraph in the “LCO” section of the Bases to state:

In **MODES** 5 and 6, with the reactor decay heat > 6.0 MWt, . .

Revise the fifth paragraph and add a new sixth paragraph as follows:

. . . the PCCWST is reserved for containment cooling in accordance with LCO 3.6.6, Passive Containment Cooling System (PCS)—~~Shutdown~~. Thus, . . . pool decay heat to > 7.2 MWt.

**The decay heat specified in the three Notes is normally determined by calculation.**

When a portion of the fuel is returned to the reactor vessel in preparation . . .

These non-technical changes provide improved clarity, consistency, and operator usability.

Revise the first paragraph of the “Actions” section of the Bases to state:

LCO 3.0.3 is applicable while in MODE 1, 2, 3, or 4. ~~Since spent fuel pool cooling requirements apply at all times,~~ The Actions have been modified by a Note stating that LCO 3.0.3 is not applicable. . . .

This change provides consistency with the TS requirement being discussed in the TS Bases.

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

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## V. Applicability

### **Affected Generic Technical Specifications and Bases:**

Section 3.7.9, Spent Fuel Storage Pool Makeup Water Sources

### **Changes to the Generic Technical Specifications and Bases:**

The LCO title, LCO statement, and LCO Notes are revised to provide consistent terminology for the Spent Fuel Pool system. (DOC A105)

The term “calculated” is deleted from the GTS 3.7.9 LCO Notes with regard to decay heat because the method of determining decay heat is not required to be included in TS Notes. (DOC L14)

The GTS 3.7.9 LCO Note reference to LCO 3.6.7 is revised to LCO 3.6.6. (DOC M13)

The GTS 3.7.9 Applicability statement is revised to provide consistent terminology for the Spent Fuel Pool system and delete the term “calculated.” (DOC A105 and DOC L14)

The GTS 3.7.9 Applicability statement is further revised to clarify that only pool decay heat is intended to be addressed by the Applicability statement. The associated Bases discussion is revised to be consistent. (NRC Staff Comment)

The GTS 3.7.9 Condition A statement is revised to provide consistent terminology for the Spent Fuel Pool system. (DOC A105)

GTS 3.7.9 Required Action A.1 Note is revised to eliminate reference to AP1000 GTS LCO 3.0.8. (DOC L05). The remaining portion of the Note is moved to become an Action Table Note. The Note placement is consistent with the handling of similar Notes. (DOC A110)

GTS 3.7.9 SR descriptions are revised to provide consistent terminology for the Spent Fuel Pool system and remove term “calculated.” (DOC A105 and DOC L14)

The first sentence of the fourth paragraph in the “Background” section of the Bases is revised to improve clarity, consistency, and operator usability. (APOG Comment and NRC Staff Edit)

The first two paragraphs in the “ASA” section of the Bases are revised to improve clarity, consistency, and operator usability. (APOG Comment and NRC Staff Comment)

The second, fifth, and sixth paragraphs in the “LCO” section of the Bases are revised to improve clarity, consistency, and operator usability. A new paragraph is also added. (APOG Comment and NRC Staff Edit)

The first paragraph in the “Actions” section of the Bases is revised to be consistent with the TS requirement. (APOG Comment and NRC Staff Edit)

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

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**VI. Traveler Information****Description of TSTF changes:**

Not Applicable

**Rationale for TSTF changes:**

Not Applicable

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

DOC A105 revises the GTS 3.7.9 LCO title from “Fuel Storage Pool Makeup Water Sources,” to “Spent Fuel Pool Makeup Water Sources.” All references to “Fuel Storage Pool” are revised to “Spent Fuel Pool” throughout the GTS 3.7.9 Specification and bases.

DOC A110 relocates the GTS 3.7.9 Required Action A.1 Note that states (as modified by DOC L05) “LCO 3.0.3 is not applicable,” to the beginning of the Actions Table.

DOC M13 combines GTS 3.6.6 and GTS 3.6.7. Subsequent LCO numbering change is captured in Notes to LCO 3.7.9.

DOC L05 removes reference to LCO 3.0.8, which is eliminated.

DOC L14 revises GTS 3.7.9 LCO Notes 1, 2, and 3; the Applicability statement; and the GTS SR 3.7.9.1, SR 3.7.9.2, SR 3.7.9.3, and SR 3.7.9.4 Notes by deleting “calculated” with respect to decay heat.

A more detailed description of each DOC can be found in Reference 2, VEGP TSU LAR Enclosure 1, and the NRC staff safety evaluation can be found in Reference 3, VEGP LAR SER. The VEGP TSU LAR was modified in response to NRC staff RAIs in Reference 5 and the Southern Nuclear Operating Company RAI Response in Reference 6.

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

DOC A105 provides consistent terminology with respect to the Spent Fuel Pool system.

DOC A110 provides consistency with other Notes of this type.

DOC M13 provides an editorial reference change based on changes in the organization of Section 3.6

DOC L05 notes that considerations of GTS LCO 3.0.8 are adequately addressed within individual LCO referencing LCO 3.0.8 or by TS 5.4.1.b to Monitor Safety System Shutdown Monitoring Trees parameters. AP1000 GTS LCO 3.0.8 is eliminated.

DOC L14 notes that the use of “calculated” is a method of determination that is not required to be included in the TS to properly interpret the applicability requirement. This type of information



is not necessary to be included in the TS to provide adequate protection of public health and safety.

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

All acronyms are identified at the first occurrence in the Bases discussion.

The Applicability statement is revised to state:

APPLICABILITY: During storage of fuel in the spent fuel ~~storage~~-pool with a ~~calculated~~ **spent fuel pool** decay heat > 4.7 MWt (NRC Staff Comment)

The first sentence of the fourth paragraph in the “Background” section of the Bases is revised to state (APOG Comment and NRC Staff Edit):

Once decay heat in the spent fuel ~~storage~~-pool is reduced to ~~at or below~~ **≤ 4.7** MWt, the spent fuel ~~storage~~-pool water inventory is sufficient, without makeup, to maintain ~~the~~ spent fuel ~~storage~~-pool **cooling** for 72 hours.

The second sentence of the first paragraph in the “ASA” section of the Bases is revised to state (APOG Comment):

The worst case decay heat load (decay heat > 7.2 MWt) is produced by a ~~n~~ **emergency** full core off-load following a refueling plus ten years of spent fuel.

The third sentence of the second paragraph in the “ASA” section of the Bases is revised to state (NRC Staff Comment):

. . . ~~At or below 6.0 Mw~~ **With** reactor decay heat **≤ 6.0 MWt**, containment air cooling is adequate.

The second paragraph of the “LCO” section of the Bases is revised to state (NRC Staff Comment):

An OPERABLE flow path from the required makeup source assures spent fuel **pool** cooling for at least 72 hours. Several additional makeup sources are available, including the ground level PCCAWST. These makeup sources assure spent fuel **pool** cooling for at least 7 days.

The fifth and sixth paragraphs in the “LCO” section of the Bases are revised and a new paragraph is added between them (APOG Comment and NRC Staff Edit):

. . . In **MODEMODES** 5 and 6, with ~~the calculated~~ reactor decay heat > 6.0 MWt, the PCCWST is reserved for containment cooling in accordance with LCO 3.6. ~~67~~, Passive Containment Cooling System (PCS) — ~~Shutdown~~. Thus, fuel movement from the reactor to the spent fuel ~~storage~~-pool must be suspended until reactor decay heat is ≤ 6.0 MWt if the fuel movement will increase the spent fuel ~~storage~~-pool decay heat to > 7.2 MWt.

**The spent fuel pool decay heat and reactor decay heat specified in the three Notes ~~is~~ are normally determined by calculation.**

When a portion of the fuel is returned to the reactor vessel in preparation for startup, the **spent fuel** pool decay heat is reduced to  $\leq 5.6$  MWt and makeup from the cask washdown pit is sufficient.

The “Applicability” section of the Bases is revised to state (APOG Comment and NRC Staff Edit):

This LCO applies during storage of fuel in the spent fuel **storage** pool with ~~a calculated~~**spent fuel pool** decay heat (**normally determined by calculation**)  $> 4.7$  MWt. With **spent fuel pool** decay heat  $\leq 4.7$  MWt, the assumed spent fuel ~~storage~~-pool water inventory (i.e., level below the pump suction connection to the pool) provides for 3 days of **spent fuel pool** cooling without makeup.

The first paragraph of the “Actions” section of the Bases is revised to state (APOG Comment and NRC Staff Edit):

LCO 3.0.3 is applicable ~~while~~ in MODES 1, 2, 3, ~~or~~ 4. ~~Since spent fuel pool cooling requirements apply at all times, the~~**The** ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. Spent fuel pool cooling requirements are independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

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

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

The Applicability statement is revised to clarify that only pool decay heat is intended to be addressed by the Applicability statement. The associated Bases discussion is revised to be consistent.

Numerous changes are to correct grammatical errors in the Bases.

The non-technical changes to the “Background” section of the Bases provide improved clarity, consistency, and operator usability.

The non-technical changes to the “ASA” section of the Bases provide improved clarity, consistency, and operator usability.

The non-technical changes to the “LCO” section of the Bases provide improved clarity, consistency, and operator usability.

The non-technical changes to the “Actions” section of the Bases provide consistency with the TS requirement being discussed in the TS Bases.

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

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**VII. GTST Safety Evaluation****Technical Analysis:**

DOC L05 eliminates GTS LCO 3.0.8. In conjunction with the change to eliminate LCO 3.0.8, all Notes and references are no longer necessary and are administratively eliminated. The elimination of GTS LCO 3.0.8 is discussed in detail in GTS O01-LCO 3.0.

DOC L14 revises GTS 3.7.9 LCO Notes 1, 2, and 3, the GTS 3.7.9 Applicability, the GTS SR 3.7.9.1 Note, the GTS SR 3.7.9.2 Note, the GTS SR 3.7.9.3 Note, and the GTS SR 3.7.9.4 Note by deleting the word “calculated” with respect to decay heat. The affected specifications ensure that the appropriate structures, systems, and components are Operable and that the appropriate testing is performed when fuel storage pool decay heat are above specified values, as applicable. The use of “calculated” is a method of determination that is not required to be included in the TS to properly interpret the applicability requirement.

The Applicability statement and associated Bases are revised to provide additional clarity. LCO Note 3 discusses reactor decay heat in addition to spent fuel pool decay heat. The change to the Applicability statement clarifies that only pool decay heat is intended to be addressed by the Applicability statement. This is consistent with the intent of the TS requirement and is, therefore, acceptable.

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 3.7.9 is an acceptable model Specification for the AP1000 standard reactor design.

**References to Previous NRC Safety Evaluation Reports (SERs):**

None

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## 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 5/19/2014.

### 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" clarifier. 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 as appropriate.
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. Noted ambiguities are corrected in the GTST body.
3. (Internal # 7) Section VII, GTST Safety Evaluation, inconsistently completes the subsection "References to Previous NRC Safety Evaluation Reports (SERs)" by citing the associated SE for VEGP 3&4 COL Amendment 13. It is not clear whether there is a substantive intended difference when omitting the SE citation. This is resolved by removing the SE citation in Section VII of the GTST and ensuring that appropriate references to the consistent citation of this reference in Section X of the GTST are made.
4. (Internal # 428) In GTST for Subsection 3.7.9, Section V, under the heading "Changes to GTS and Bases," the first paragraph discusses the DOC A105 changes to the LCO title and Specification, but does not mention the LCO Note changes. Revise sentence to state: "The LCO title, LCO statement, and LCO Notes are revised to provide consistent terminology for the Spent Fuel Pool system. (DOC A105)" This is resolved by making the recommended change.
5. (Internal # 429) In the "Background" section of the Bases, revise the first sentence of the fourth paragraph as follows:

Once decay heat in the spent fuel pool is reduced to  $\leq$  ~~at or below~~ 4.7 MWt, the spent. . .

This non-technical change provides improved clarity, consistency, and operator usability. This is resolved by making the recommended change with additional edits. The NRC staff recommends the following edit for consistency:

Once decay heat in the spent fuel ~~storage~~-pool is reduced to ~~at or below~~  $\leq$  4.7 MWt, the spent fuel ~~storage~~-pool water inventory is sufficient, without makeup, to maintain ~~the spent fuel storage~~-pool **cooling** for 72 hours.

6. (Internal # 430) In the “ASA” section of the Bases, revise the second sentence of the first paragraph as follows:

The worst case decay heat load (decay heat > 7.2 MWt) is produced by a ~~n~~ **emergency** full core off-load following a refueling plus ten years of spent fuel.

This non-technical change provides improved clarity, consistency, and operator usability. This is resolved by making the recommended change with additional edits. The NRC staff recommends the following edit to the third sentence in the second paragraph for consistency with the previous comment:

. . . ~~At or below 6.0 Mwt~~ **With** reactor decay heat  $\leq$  **6.0 MWt**, containment air cooling is adequate.

7. (Internal # 431 and 433) In the “LCO” section of the Bases, revise the third sentence of the fifth paragraph as follows:

In **MODES** 5 and 6, with the reactor decay heat > 6.0 MWt, . . .

Revise the fifth paragraph and add a new sixth paragraph as follows:

. . . the PCCWST is reserved for containment cooling in accordance with LCO 3.6.6, Passive Containment Cooling System (PCS)—~~Shutdown~~. Thus, . . . pool decay heat to > 7.2 MWt.

**The decay heat specified in the three Notes is normally determined by calculation.**

When a portion of the fuel is returned to the reactor vessel in preparation . . .

This non-technical change provides improved clarity, consistency, and operator usability. This is resolved by making the recommended change with additional edits. Revise the second paragraph of the “LCO” section of the Bases as follows:

An OPERABLE flow path from the required makeup source assures spent fuel **pool** cooling for at least 72 hours. Several additional makeup sources are available, including the ground level PCCAWST. These makeup sources assure spent fuel **pool** cooling for at least 7 days.

Revise the fifth and sixth paragraphs (including the addition of a new paragraph between them) of the “LCO” section of the Bases as follows:

. . . In ~~MODE~~**MODES** 5 and 6, with ~~the calculated~~ reactor decay heat > 6.0 MWt, the PCCWST is reserved for containment cooling in accordance with

LCO 3.6.67, Passive Containment Cooling System (PCS)—~~Shutdown~~. Thus, fuel movement from the reactor to the spent fuel ~~storage~~ pool must be suspended until reactor decay heat is  $\leq 6.0$  MWt if the fuel movement will increase the spent fuel ~~storage~~ pool decay heat to  $> 7.2$  MWt.

**The spent fuel pool decay heat and reactor decay heat specified in the three Notes ~~is~~ are normally determined by calculation.**

When a portion of the fuel is returned to the reactor vessel in preparation for startup, the **spent fuel** pool decay heat is reduced to  $\leq 5.6$  MWt and makeup from the cask washdown pit is sufficient.

8. (Internal # 432) In the “Actions” section of the Bases, revise the first paragraph as follows:

LCO 3.0.3 is applicable while in MODE 1, 2, 3, or 4. ~~Since spent fuel pool cooling requirements apply at all times, t~~The Actions have been modified by a Note stating that LCO 3.0.3 is not applicable. . . .

These changes are made for consistency with the TS requirement(s) being discussed in the TS Bases. There are no explicit requirements placed on SFP cooling. This LCO (on makeup) is also not required at all times. This is resolved by making the recommended change with an additional edit. Revise the second paragraph of the “Actions” section of the Bases as follows:

LCO 3.0.3 is applicable ~~while~~ in MODES **1, 2, 3, or 4**. ~~Since spent fuel pool cooling requirements apply at all times, the~~The ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. Spent fuel pool cooling requirements are independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

NRC Staff recommends an additional technical edit for clarity in the Applicability statement and Bases. LCO Note 3 discusses reactor decay heat in addition to spent fuel pool decay heat. The proposed change clarifies that only pool decay heat is intended to be addressed by the Applicability statement. Revise the Applicability statement, as indicated:

APPLICABILITY: During storage of fuel in the spent fuel ~~storage~~ pool with ~~a calculated~~**spent fuel pool** decay heat  $> 4.7$  MWt

In the “Applicability” section of the Bases, revise the paragraph as follows:

This LCO applies during storage of fuel in the spent fuel ~~storage~~ pool with ~~a calculated~~**spent fuel pool** decay heat (**normally determined by calculation**)  $> 4.7$  MWt. With **spent fuel pool** decay heat  $\leq 4.7$  MWt, the assumed spent fuel ~~storage~~ pool water inventory (i.e., level below the pump suction connection to the pool) provides for 3 days of **spent fuel pool** cooling without makeup.

**NRC Final Approval Date:** 12/8/2015

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

None

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**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. 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)
4. TSTF-GG-05-01, "Writer's Guide for Plant-Specific Improved Technical Specifications," June 2005.
  5. 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).
  6. 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)

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 (ML14265A493).
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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.

**Spent Fuel ~~Storage~~-Pool Makeup Water Sources**  
3.7.9

## 3.7 PLANT SYSTEMS

3.7.9 **Spent Fuel ~~Storage~~-Pool Makeup Water Sources**

LCO 3.7.9 **Spent fuel ~~Fuel storage~~**-pool makeup water sources shall be OPERABLE.

-----NOTES-----

1. OPERABILITY of the cask washdown pit is required when the ~~calculated~~-spent fuel ~~storage~~-pool decay heat **is** > 4.7 MWt and ≤ 7.2 MWt.
  2. OPERABILITY of the cask loading pit is required when the ~~calculated~~-spent fuel ~~storage~~-pool decay heat **is** > 5.6 MWt and ≤ 7.2 MWt.
  3. OPERABILITY of the Passive Containment Cooling Water Storage Tank (PCCWST) is required as a spent fuel ~~storage~~-pool makeup water source when the ~~calculated~~-spent fuel ~~storage~~-pool decay heat **is** > 7.2 MWt. If the reactor decay heat is > 6.0 MWt, the PCCWST must be exclusively available for containment cooling in accordance with LCO 3.6.~~67~~.
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APPLICABILITY: During storage of fuel in the spent fuel ~~storage~~-pool with ~~a-calculated~~ **spent fuel pool** decay heat > 4.7 MWt.

**Spent Fuel ~~Storage~~-Pool Makeup Water Sources**  
3.7.9

ACTIONS

~~-----NOTE-----~~  
**LCO 3.0.3 is not applicable.**  
~~-----~~

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required spent fuel <del>storage</del> -pool makeup water sources inoperable.	<p><del>A.1 <del>-----NOTE-----</del> LCOs 3.0.3 and 3.0.8 are not applicable.</del></p> <p><b>A.1</b> Initiate action to restore the required makeup water source(s) to OPERABLE status.</p>	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.9.1 <del>-----NOTE-----</del> Only required to be performed when spent fuel <del>storage</del>-pool <del>calculated</del>-decay heat is &gt; 7.2 MWt. <del>-----</del></p> <p>Verify one passive containment cooling system, motor-operated valve in each flow path is closed and locked, sealed, or otherwise secured in position.</p>	7 days
<p>SR 3.7.9.2 <del>-----NOTE-----</del> Only required to be performed when spent fuel <del>storage</del>-pool <del>calculated</del>-decay heat is &gt; 7.2 MWt. <del>-----</del></p> <p>Verify the PCCWST volume is ≥ 756,700 gallons.</p>	7 days

**Spent Fuel ~~Storage~~-Pool Makeup Water Sources**  
3.7.9

## SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.7.9.3      -----NOTE----- Only required to be performed when spent fuel <del>storage</del> -pool <del>calculated</del> -decay heat is $\leq 7.2$ MWt. ----- Verify the water level in the cask washdown pit is $\geq 13.75$ ft.	31 days
SR 3.7.9.4      -----NOTE----- Only required to be performed when spent fuel <del>storage</del> -pool <del>calculated</del> -decay heat is $> 5.6$ MWt and $\leq 7.2$ MWt. ----- Verify the water level in the cask loading pit is $\geq 43.9$ ft. and in communication with the spent fuel <del>storage</del> -pool.	31 days
SR 3.7.9.5      Verify the spent fuel <del>storage</del> -pool makeup isolation valves PCS-PL-V009, PCS-PL-V045, PCS-PL-V051, SFS-PL-V042, SFS-PL-V045, SFS-PL-V049, SFS-PL-V066, and SFS-PL-V068 are OPERABLE in accordance with the Inservice Testing Program.	In accordance with the Inservice Testing Program

## B 3.7 PLANT SYSTEMS

B 3.7.9 **Spent Fuel ~~Storage~~-Pool Makeup Water Sources**BASES

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## BACKGROUND

The spent fuel ~~storage~~-pool is normally cooled by the nonsafety spent fuel pool cooling system. In the event the normal cooling system is unavailable, the spent fuel ~~storage~~-pool can be cooled by the normal residual heat removal system. Alternatively, the spent fuel ~~storage~~-pool contains sufficient water inventory for decay heat removal by boiling. To support extended periods of loss of normal pool cooling, makeup water is required to provide additional cooling by boiling. Both safety and non-safety makeup water sources are available on-site.

Three safety-related, gravity fed sources of makeup water are provided to the spent fuel ~~storage~~-pool. These makeup water sources contain sufficient water to maintain spent fuel ~~storage~~-pool cooling for 72 hours. When the spent fuel ~~storage~~-pool decay heat is  $> 4.7$  MWt and  $\leq 7.2$  MWt, the cask washdown pit must be available to provide makeup to the spent fuel ~~storage~~-pool. When the spent fuel ~~storage~~-pool decay heat is  $> 5.6$  MWt and  $\leq 7.2$  MWt both the cask washdown pit and the cask loading pit must be available to provide makeup to the spent fuel ~~storage~~-pool. When the spent fuel ~~storage~~-pool decay heat is  $> 7.2$  MWt and the reactor decay heat is  $\leq 6.0$  MWt, the Passive Containment Cooling Water Storage Tank (PCCWST) must be available to provide makeup water to the spent fuel ~~storage~~-pool (when the tank is no longer required for containment cooling purposes). Additional on-site makeup water sources are available to provide spent fuel ~~storage~~-pool cooling between 3 and 7 days.

The PCCWST is isolated by two normally closed valves. The normally closed valves will be opened only to provide emergency makeup to the spent fuel ~~storage~~-pool. A third downstream valve permits the operator to regulate addition of water to the spent fuel ~~storage~~-pool as required to maintain the cooling water inventory.

Once decay heat in the spent fuel ~~storage~~-pool is  $\leq$  ~~reduced to at or below~~ 4.7 MWt, the spent fuel ~~storage~~-pool water inventory is sufficient, without makeup, to maintain ~~the~~ spent fuel ~~storage~~-pool **cooling** for 72 hours. When the spent fuel ~~storage~~-pool decay heat load is  $\leq 5.6$  MWt for the cask loading pit and  $\leq 4.7$  MWt for the cask washdown pit, the pits are no longer required to be OPERABLE for spent fuel ~~storage~~-pool makeup.

## BASES

## BACKGROUND (continued)

A general description of the spent fuel ~~storage~~-pool design is given in **FSAR** Section 9.1.2 (Ref. 1). A description of the Spent Fuel Pool Cooling and Cleanup System is given in **FSAR** Section 9.1.3 (Ref. 2).

APPLICABLE  
SAFETY  
ANALYSES

In the event the normal spent fuel ~~storage~~-pool cooling system is unavailable, the spent fuel cooling is provided by the heat capacity of the water in the pool. The worst case decay heat load (decay heat > 7.2 MWt) is produced by ~~a an-emergency~~ full core off-load following a refueling plus ten years of spent fuel. For this case the spent fuel ~~storage~~-pool inventory provided by the water over the stored fuel and below the pump suction connection is capable of cooling the spent fuel ~~storage~~-pool without boiling for at least 2.5 hours, following a loss of normal spent fuel ~~storage~~-pool cooling. After boiling starts, makeup water may be required to replace water lost by boiling and is available, without offsite support, via the PCCWST.

The requirements of LCO 3.6.6, "Passive Containment Cooling System – Operating," are applicable in MODES 1, 2, 3, and 4 and ~~LCO 3.6.7, "Passive Containment Cooling System – Shutdown,"~~ are applicable in MODES 5 and 6 with reactor decay heat > 6.0 MWt. ~~LCOs 3.6.6 and 3.6.7~~ requires availability of the containment cooling water tank for containment heat removal. ~~With At or below 6.0 MWt~~ reactor decay heat < 6.0 MWt, containment air cooling is adequate.

Since none of the **FSAR** Chapter 15 Design Basis Accident analyses assume availability of the PCCWST, the cask washdown pit, or the cask loading pit for spent fuel ~~storage~~-pool makeup, the spent fuel ~~storage~~-pool makeup water sources specification does not satisfy any of the 10 CFR 50.36(c)(2)(ii) criteria. This LCO is included in accordance with NRC guidance provided in an NRC letter (Reference 3).

## LCO

The spent fuel ~~storage~~-pool makeup water sources are required to contain the following amount of water to be considered OPERABLE:

- Cask washdown pit water level must be  $\geq 13.75$  ft.
- Cask loading pit water level must be  $\geq 43.9$  ft.



## BASES

## LCO (continued)

- PCCWST is required to contain 756,700 gallons of water.

An OPERABLE flow path from the required makeup source assures spent fuel **pool** cooling for at least 72 hours. Several additional makeup sources are available, including the ground level **passive containment cooling ancillary water storage tank (PCCAWST)**. These makeup sources assure spent fuel **pool** cooling for at least 7 days.

Note 1 specifies that the cask washdown pit is required to be OPERABLE when the spent fuel ~~storage~~-pool decay heat is  $> 4.7$  MWt and  $\leq 7.2$  MWt.

Note 2 specifies that the cask loading pit is required to be OPERABLE when the spent fuel ~~storage~~-pool decay heat is  $> 5.6$  MWt and  $\leq 7.2$  MWt.

Note 3 specifies that the PCCWST is required to be OPERABLE when the spent fuel ~~storage~~-pool decay heat is  $> 7.2$  MWt, which is normal following a full core off load. The larger makeup source is necessary for the higher decay heat load. In MODES 5 and 6, with ~~the calculated~~ reactor decay heat  $> 6.0$  MWt, the PCCWST is reserved for containment cooling in accordance with LCO 3.6.67, Passive Containment Cooling System (PCS)—~~Shutdown~~. Thus, fuel movement from the reactor to the spent fuel ~~storage~~-pool must be suspended until reactor decay heat is  $\leq 6.0$  MWt if the fuel movement will increase the spent fuel ~~storage~~-pool decay heat to  $> 7.2$  MWt.

**The spent fuel pool decay heat and reactor decay heat specified in the three Notes are normally determined by calculation.**

When a portion of the fuel is returned to the reactor vessel in preparation for startup, the **spent fuel** pool decay heat is reduced to  $\leq 5.6$  MWt and makeup from the cask washdown pit is sufficient.

## APPLICABILITY

This LCO applies during storage of fuel in the spent fuel ~~storage~~-pool with ~~a-calculated~~ **spent fuel pool** decay heat (**normally determined by calculation**)  $> 4.7$  MWt. With **spent fuel pool** decay heat  $\leq 4.7$  MWt, the assumed spent fuel ~~storage~~-pool water inventory (i.e., level below the pump suction connection to the pool) provides for 3 days of **spent fuel pool** cooling without makeup.

## BASES

ACTIONS LCO 3.0.3 is applicable while in MODES 1, 2, 3, and or 4. ~~Since spent fuel pool cooling requirements apply at all times, the~~ The ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable, ~~since spent.~~ Spent-fuel pool cooling requirements are independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

~~LCO 3.0.8 is applicable while in MODE 5 or 6. Since spent fuel pool cooling requirements apply at all times, the ACTIONS have been modified by a Note stating that LCO 3.0.8 is not applicable. Spent fuel pool cooling requirements are independent of shutdown reactor operations. Entering LCO 3.0.8 while in MODE 5 or 6 would require the optimization of plant safety, unnecessarily.~~

A.1

If the cask washdown pit (with spent fuel ~~storage~~-pool decay heat > 4.7 and ≤ 7.2 MWt), the cask loading pit (with spent fuel ~~storage~~-pool decay heat > 5.6 MWt and ≤ 7.2 MWt) or the PCCWST (with spent fuel ~~storage~~-pool decay heat > 7.2 MWt) is inoperable, Action must be initiated immediately to restore the makeup source or its associated flow path to OPERABLE status.

Additionally, in order to provide the maximum cooling capability, the spent fuel pool should be filled to its maximum level. Nonsafety related makeup sources can be used to fill the pool. This action is not specified in the specification, since the benefit of adding approximately 6 inches of water to the pool is less than a 5% improvement in cooling capability.

SURVEILLANCE  
REQUIREMENTSSR 3.7.9.1

This SR verifies that the three flow paths from the PCCWST to the containment vessel are isolated and secured to prevent inadvertent opening and loss of required tank volume. The verification is required to be performed prior to declaring the PCCWST OPERABLE for spent fuel ~~storage~~-pool usage.

The 7 day Frequency is appropriate because the valves in the passive containment cooling system are controlled by plant procedures.

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BASES

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SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.9.2

This SR verifies sufficient PCCWST volume is available in the event of a loss of spent fuel cooling prior to declaring the tank OPERABLE for spent fuel ~~storage~~-pool usage.

The 7 day Frequency is appropriate because the volume in the PCCWST is normally stable and water level changes are controlled by plant procedures.

SR 3.7.9.3

This SR verifies sufficient cask washdown pit water volume is available in the event of a loss of spent fuel cooling. The 13.75 ft level specified provides makeup water for stored fuel with decay heat (**normally determined by calculation**)  $> 4.7$  and  $\leq 7.2$  MWt. The cask washdown pit is no longer required when the PCCWST is OPERABLE for spent fuel ~~storage~~-pool usage.

The 31 day Frequency is appropriate because the cask washdown pit has only one drain line which is isolated by series manual valves which are only operated in accordance with plant procedures, thus providing assurance that inadvertent level reduction is not likely.

SR 3.7.9.4

This SR verifies sufficient cask loading pit water volume is available and connected to the spent fuel pool such that no action is required in the fuel handling area, in the event of a loss of spent fuel cooling. The 43.9 foot level specified provides makeup water for stored fuel with decay heat (**normally determined by calculation**)  $> 5.6$  and  $\leq 7.2$  MWt. The cask loading pit is no longer required when the PCCWST is OPERABLE for spent fuel ~~storage~~-pool usage.

The 31 day Frequency is appropriate because the cask loading pit has only one drain line, which is isolated by series manual valves, which are operated only in accordance with plant procedures. This provides assurance that inadvertent level reduction is not likely.

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BASES

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SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.9.5

This SR requires verification of the OPERABILITY of the manual makeup water source isolation valves in accordance with the requirements and Frequency specified in the Inservice Testing Program. Manual valves PCS-PL-V009, PCS PL-V045, PCS-PL-V051, isolate the makeup flow path from the PCCWST. Manual valves SFS-PL-V042, SFS-PL-V045, SFS-PL-V049, SFS PL V066, and SFS-PL-V068 isolate the makeup flow path from the cask washdown pit.

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REFERENCES

1. **FSAR** Section 9.1.2, "Spent Fuel Storage."
  2. **FSAR** Section 9.1.3, "Spent Fuel Pool Cooling System."
  3. NRC letter, William C. Huffman to Westinghouse Electric Corporation, "Summary of Telephone Conference with Westinghouse to Discuss Proposed Design Changes to the AP600 Main Control Room Habitability System," dated September 11, 1997.
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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.

3.7 PLANT SYSTEMS

3.7.9 Spent Fuel Pool Makeup Water Sources

LCO 3.7.9 Spent fuel pool makeup water sources shall be OPERABLE.

-----NOTES-----

1. OPERABILITY of the cask washdown pit is required when the spent fuel pool decay heat is  $> 4.7$  MWt and  $\leq 7.2$  MWt.
  2. OPERABILITY of the cask loading pit is required when the spent fuel pool decay heat is  $> 5.6$  MWt and  $\leq 7.2$  MWt.
  3. OPERABILITY of the Passive Containment Cooling Water Storage Tank (PCCWST) is required as a spent fuel pool makeup water source when the spent fuel pool decay heat is  $> 7.2$  MWt. If the reactor decay heat is  $> 6.0$  MWt, the PCCWST must be exclusively available for containment cooling in accordance with LCO 3.6.6.
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APPLICABILITY: During storage of fuel in the spent fuel pool with spent fuel pool decay heat  $> 4.7$  MWt.

ACTIONS

-----NOTE-----

LCO 3.0.3 is not applicable.

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CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required spent fuel pool makeup water sources inoperable.	A.1 Initiate action to restore the required makeup water source(s) to OPERABLE status.	Immediately

Spent Fuel Pool Makeup Water Sources  
3.7.9

## SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.9.1 -----NOTE----- Only required to be performed when spent fuel pool decay heat is &gt; 7.2 MWt. -----</p> <p>Verify one passive containment cooling system, motor-operated valve in each flow path is closed and locked, sealed, or otherwise secured in position.</p>	7 days
<p>SR 3.7.9.2 -----NOTE----- Only required to be performed when spent fuel pool decay heat is &gt; 7.2 MWt. -----</p> <p>Verify the PCCWST volume is <math>\geq 756,700</math> gallons.</p>	7 days
<p>SR 3.7.9.3 -----NOTE----- Only required to be performed when spent fuel pool decay heat is <math>\leq 7.2</math> MWt. -----</p> <p>Verify the water level in the cask washdown pit is <math>\geq 13.75</math> ft.</p>	31 days
<p>SR 3.7.9.4 -----NOTE----- Only required to be performed when spent fuel pool decay heat is &gt; 5.6 MWt and <math>\leq 7.2</math> MWt. -----</p> <p>Verify the water level in the cask loading pit is <math>\geq 43.9</math> ft. and in communication with the spent fuel pool.</p>	31 days

Spent Fuel Pool Makeup Water Sources  
3.7.9

## SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.7.9.5      Verify the spent fuel pool makeup isolation valves PCS-PL-V009, PCS-PL-V045, PCS-PL-V051, SFS-PL-V042, SFS-PL-V045, SFS-PL-V049, SFS-PL-V066, and SFS-PL-V068 are OPERABLE in accordance with the Inservice Testing Program.	In accordance with the Inservice Testing Program



## B 3.7 PLANT SYSTEMS

## B 3.7.9 Spent Fuel Pool Makeup Water Sources

BASES

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## BACKGROUND

The spent fuel pool is normally cooled by the nonsafety spent fuel pool cooling system. In the event the normal cooling system is unavailable, the spent fuel pool can be cooled by the normal residual heat removal system. Alternatively, the spent fuel pool contains sufficient water inventory for decay heat removal by boiling. To support extended periods of loss of normal pool cooling, makeup water is required to provide additional cooling by boiling. Both safety and non-safety makeup water sources are available on-site.

Three safety-related, gravity fed sources of makeup water are provided to the spent fuel pool. These makeup water sources contain sufficient water to maintain spent fuel pool cooling for 72 hours. When the spent fuel pool decay heat is  $> 4.7$  MWt and  $\leq 7.2$  MWt, the cask washdown pit must be available to provide makeup to the spent fuel pool. When the spent fuel pool decay heat is  $> 5.6$  MWt and  $\leq 7.2$  MWt both the cask washdown pit and the cask loading pit must be available to provide makeup to the spent fuel pool. When the spent fuel pool decay heat is  $> 7.2$  MWt and the reactor decay heat is  $\leq 6.0$  MWt, the Passive Containment Cooling Water Storage Tank (PCCWST) must be available to provide makeup water to the spent fuel pool (when the tank is no longer required for containment cooling purposes). Additional on-site makeup water sources are available to provide spent fuel pool cooling between 3 and 7 days.

The PCCWST is isolated by two normally closed valves. The normally closed valves will be opened only to provide emergency makeup to the spent fuel pool. A third downstream valve permits the operator to regulate addition of water to the spent fuel pool as required to maintain the cooling water inventory.

Once decay heat in the spent fuel pool is  $\leq 4.7$  MWt, the spent fuel pool water inventory is sufficient, without makeup, to maintain spent fuel pool cooling for 72 hours. When the spent fuel pool decay heat load is  $\leq 5.6$  MWt for the cask loading pit and  $\leq 4.7$  MWt for the cask washdown pit, the pits are no longer required to be OPERABLE for spent fuel pool makeup.

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**BASES**

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**BACKGROUND (continued)**

A general description of the spent fuel pool design is given in FSAR Section 9.1.2 (Ref. 1). A description of the Spent Fuel Pool Cooling and Cleanup System is given in FSAR Section 9.1.3 (Ref. 2).

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**APPLICABLE  
SAFETY  
ANALYSES**

In the event the normal spent fuel pool cooling system is unavailable, the spent fuel cooling is provided by the heat capacity of the water in the pool. The worst case decay heat load (decay heat > 7.2 MWt) is produced by a full core off-load following a refueling plus ten years of spent fuel. For this case the spent fuel pool inventory provided by the water over the stored fuel and below the pump suction connection is capable of cooling the spent fuel pool without boiling for at least 2.5 hours, following a loss of normal spent fuel pool cooling. After boiling starts, makeup water may be required to replace water lost by boiling and is available, without offsite support, via the PCCWST.

The requirements of LCO 3.6.6, "Passive Containment Cooling System – Operating," are applicable in MODES 1, 2, 3, and 4 and in MODES 5 and 6 with reactor decay heat > 6.0 MWt. LCO 3.6.6 requires availability of the containment cooling water tank for containment heat removal. With reactor decay heat < 6.0 MWt, containment air cooling is adequate.

Since none of the FSAR Chapter 15 Design Basis Accident analyses assume availability of the PCCWST, the cask washdown pit, or the cask loading pit for spent fuel pool makeup, the spent fuel pool makeup water sources specification does not satisfy any of the 10 CFR 50.36(c)(2)(ii) criteria. This LCO is included in accordance with NRC guidance provided in an NRC letter (Reference 3).

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**LCO**

The spent fuel pool makeup water sources are required to contain the following amount of water to be considered OPERABLE:

- Cask washdown pit water level must be  $\geq 13.75$  ft.
- Cask loading pit water level must be  $\geq 43.9$  ft.
- PCCWST is required to contain 756,700 gallons of water.

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**BASES**

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**LCO (continued)**

An OPERABLE flow path from the required makeup source assures spent fuel pool cooling for at least 72 hours. Several additional makeup sources are available, including the ground level passive containment cooling ancillary water storage tank (PCCAWST). These makeup sources assure spent fuel pool cooling for at least 7 days.

Note 1 specifies that the cask washdown pit is required to be OPERABLE when the spent fuel pool decay heat is  $> 4.7$  MWt and  $\leq 7.2$  MWt.

Note 2 specifies that the cask loading pit is required to be OPERABLE when the spent fuel pool decay heat is  $> 5.6$  MWt and  $\leq 7.2$  MWt.

Note 3 specifies that the PCCWST is required to be OPERABLE when the spent fuel pool decay heat is  $> 7.2$  MWt, which is normal following a full core off load. The larger makeup source is necessary for the higher decay heat load. In MODES 5 and 6, with reactor decay heat  $> 6.0$  MWt, the PCCWST is reserved for containment cooling in accordance with LCO 3.6.6, Passive Containment Cooling System (PCS). Thus, fuel movement from the reactor to the spent fuel pool must be suspended until reactor decay heat is  $\leq 6.0$  MWt if the fuel movement will increase the spent fuel pool decay heat to  $> 7.2$  MWt.

The spent fuel pool decay heat and reactor decay heat specified in the three Notes are normally determined by calculation.

When a portion of the fuel is returned to the reactor vessel in preparation for startup, the spent fuel pool decay heat is reduced to  $\leq 5.6$  MWt and makeup from the cask washdown pit is sufficient.

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**APPLICABILITY**

This LCO applies during storage of fuel in the spent fuel pool with spent fuel pool decay heat (normally determined by calculation)  $> 4.7$  MWt. With spent fuel pool decay heat  $\leq 4.7$  MWt, the assumed spent fuel pool water inventory (i.e., level below the pump suction connection to the pool) provides for 3 days of spent fuel pool cooling without makeup.

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**ACTIONS**

LCO 3.0.3 is applicable while in MODES 1, 2, 3, and 4. The ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable, since spent fuel pool cooling requirements are independent of reactor

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**BASES**

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**ACTIONS (continued)**

operations. Entering LCO 3.0.3 while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

A.1

If the cask washdown pit (with spent fuel pool decay heat > 4.7 and  $\leq 7.2$  MWt), the cask loading pit (with spent fuel pool decay heat > 5.6 MWt and  $\leq 7.2$  MWt) or the PCCWST (with spent fuel pool decay heat > 7.2 MWt) is inoperable, Action must be initiated immediately to restore the makeup source or its associated flow path to OPERABLE status.

Additionally, in order to provide the maximum cooling capability, the spent fuel pool should be filled to its maximum level. Nonsafety related makeup sources can be used to fill the pool. This action is not specified in the specification, since the benefit of adding approximately 6 inches of water to the pool is less than a 5% improvement in cooling capability.

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**SURVEILLANCE  
REQUIREMENTS**SR 3.7.9.1

This SR verifies that the three flow paths from the PCCWST to the containment vessel are isolated and secured to prevent inadvertent opening and loss of required tank volume. The verification is required to be performed prior to declaring the PCCWST OPERABLE for spent fuel pool usage.

The 7 day Frequency is appropriate because the valves in the passive containment cooling system are controlled by plant procedures.

SR 3.7.9.2

This SR verifies sufficient PCCWST volume is available in the event of a loss of spent fuel cooling prior to declaring the tank OPERABLE for spent fuel pool usage.

The 7 day Frequency is appropriate because the volume in the PCCWST is normally stable and water level changes are controlled by plant procedures.

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**BASES**

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**SURVEILLANCE REQUIREMENTS (continued)****SR 3.7.9.3**

This SR verifies sufficient cask washdown pit water volume is available in the event of a loss of spent fuel cooling. The 13.75 ft level specified provides makeup water for stored fuel with decay heat (normally determined by calculation)  $> 4.7$  and  $\leq 7.2$  MWt. The cask washdown pit is no longer required when the PCCWST is OPERABLE for spent fuel pool usage.

The 31 day Frequency is appropriate because the cask washdown pit has only one drain line which is isolated by series manual valves which are only operated in accordance with plant procedures, thus providing assurance that inadvertent level reduction is not likely.

**SR 3.7.9.4**

This SR verifies sufficient cask loading pit water volume is available and connected to the spent fuel pool such that no action is required in the fuel handling area, in the event of a loss of spent fuel cooling. The 43.9 foot level specified provides makeup water for stored fuel with decay heat (normally determined by calculation)  $> 5.6$  and  $\leq 7.2$  MWt. The cask loading pit is no longer required when the PCCWST is OPERABLE for spent fuel pool usage.

The 31 day Frequency is appropriate because the cask loading pit has only one drain line, which is isolated by series manual valves, which are operated only in accordance with plant procedures. This provides assurance that inadvertent level reduction is not likely.

**SR 3.7.9.5**

This SR requires verification of the OPERABILITY of the manual makeup water source isolation valves in accordance with the requirements and Frequency specified in the Inservice Testing Program. Manual valves PCS-PL-V009, PCS PL-V045, PCS-PL-V051, isolate the makeup flow path from the PCCWST. Manual valves SFS-PL-V042, SFS-PL-V045, SFS-PL-V049, SFS PL V066, and SFS-PL-V068 isolate the makeup flow path from the cask washdown pit.

BASES

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- REFERENCES
1. FSAR Section 9.1.2, "Spent Fuel Storage."
  2. FSAR Section 9.1.3, "Spent Fuel Pool Cooling System."
  3. NRC letter, William C. Huffman to Westinghouse Electric Corporation, "Summary of Telephone Conference with Westinghouse to Discuss Proposed Design Changes to the AP600 Main Control Room Habitability System," dated September 11, 1997.
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