

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

Title: Revision of AP1000 GTS Section 1.1, Definitions

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-369-A, Rev. 1: Removal of Monthly Operating Report and Occupational Radiation Exposure Report
TSTF-419-A, Rev. 0: Revise PTLR Definition and References in ISTS 5.6.6, RCS PTLR
TSTF-449-A, Rev. 4: Steam Generator Tube Integrity
TSTF-471-A, Rev. 1: Eliminate use of term CORE ALTERATIONS in ACTIONS and Notes

STS NUREGs Affected:

TSTF-369-A, Rev. 1: NUREG-1430, -1431, -1432, -1433, -1434
TSTF-419-A, Rev. 0: NUREG-1430, -1431, -1433, -1434
TSTF-449-A, Rev. 4: NUREG-1430, -1431, -1432
TSTF-471-A, Rev. 1: NUREG-1430, -1431, -1432

NRC Approval Date:

TSTF-369-A, Rev. 1: 23-Jun-04
TSTF-419-A, Rev. 0: 21-Mar-02
TSTF-449-A, Rev. 4: 06-May-05
TSTF-471-A, Rev. 1: 07-Dec-06

TSTF Classification:

TSTF-369-A, Rev. 1: Technical Change
TSTF-419-A, Rev. 0: Technical Change
TSTF-449-A, Rev. 4: Technical Change
TSTF-471-A, Rev. 1: 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:

The Vogtle Electric Generating Plant Units 3 and 4 License Amendment Request (VEGP LAR) proposed the following changes to the initial version of the PTS (referred to as the current TS by the VEGP LAR). These changes include Administrative Changes (A), Less Restrictive Changes (L), and More Restrictive Changes (M). These changes are discussed in Sections VI and VII of this GTST.

VEGP LAR DOC A001:	Administrative editorial/clarification changes
VEGP LAR DOC A002:	Administrative editorial/clarification changes
VEGP LAR DOC A003:	Administrative editorial/clarification changes
VEGP LAR DOC A004:	Administrative editorial/clarification changes
VEGP LAR DOC L01:	Deletion of Actuation Device Test Definition
VEGP LAR DOC L02:	Renumbering TS 5.6.5 and TS 5.6.6 in the Definitions
VEGP LAR DOC L03:	Deletion of Core Alteration Definition
VEGP LAR DOC M01:	Deletion of Reactor Trip Channel Operational Test (RTCOT) Definition

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

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(1) applicable to operating reactor designs, but not to the AP1000 design; (2) already incorporated in the GTS; or (3) superseded by another change.

TSTF-369-A, Rev. 1 deleted subsection 5.6.1, "Occupational Radiation Exposure Report," and subsection 5.6.4, "Monthly Operating Reports," from WOG STS Rev. 2.1. AP1000 GTS Section 5.6, Rev. 19, contains these two subsections. In GTST AP1000-A40-5.6, these two subsections are deleted from AP1000 GTS Section 5.6, Rev. 19, and the other Section 5.6 subsections are renumbered. These changes are discussed later by this GTST in Section VI "Traveler Information - Description of TSTF changes."

Along with the removal of these two subsections, references to the CORE OPERATING LIMITS REPORT (COLR) and PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR) Specifications in the definitions for COLR and PTLR were changed to reflect the revised numbering. The same changes approved in TSTF-369-A, Rev. 1, were incorporated by COL Amendment 13 in the VEGP Units 3 and 4 PTS Sections 1.1 and 5.6, as proposed by VEGP LAR DOC L02. These changes are implemented by this GTST in AP1000 STS Section 1.1, Rev. 0, consistent with WOG STS Section 1.1, Rev. 4.

TSTF-419-A, Rev. 0, revised WOG STS Section 1.1, Rev. 2, by deleting the last sentence of the definition of the PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR), which includes the reference to the Specifications addressing unit operation within the limits specified in the PTLR. The GTS Section 1.1 PTLR definition contains a sentence that is equivalent to the sentence deleted from the STS definition. As proposed by VEGP LAR DOC A004, VEGP Units 3 and 4 COL Amendment 13 removed the last sentence of the PTLR definition in PTS Section 1.1, consistent with TSTF-419-A, Rev. 0. Therefore, this change is implemented by this GTST in AP1000 STS Section 1.1, Rev. 0, consistent with WOG STS Section 1.1, Rev. 4.

TSTF-449-A, Rev. 4, made an editorial change to the definition of LEAKAGE in WOG STS 1.1, Rev. 3. The term "SG LEAKAGE" is changed to "primary to secondary LEAKAGE." Since AP1000 GTS Section 1.1, Rev. 19 already includes this change, it is retained in the AP1000 STS Section 1.1, Rev. 0.

TSTF-471-A, Rev. 1, eliminated the definition of CORE ALTERATIONS from WOG STS 1.1, Rev. 3. AP1000 GTS Section 1.1, Rev. 19, contains this definition. VEGP LAR DOC L03 proposed deleting the definition of CORE ALTERATIONS from VEGP PTS Section 1.1 consistent with this TSTF.

Based on TSTF-471-A, Rev. 1, this GTST will not include the definition of CORE ALTERATION in AP1000 STS Section 1.1, Rev. 0.

TSTF-490-A, Rev. 0 revised the definition of DOSE EQUIVALENT I-131. However, as NRC Staff withdrew the approval of TSTF-490, Rev. 0, in a March 14, 2012 memorandum (Accession No. ML12039A201), the proposed changes to the definition of DOSE EQUIVALENT XE-133 in AP1000 GTS Section 1.1, Rev. 19 will not be adopted.

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)

APOG Recommended Changes to Improve Specification 1.1

Insert the word “channel” in the second sentence for the definition of “CHANNEL CALIBRATION” so the sentence reads, “The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY.”

Remove the brackets from the AVERAGE REACTOR COOLANT TEMPERATURE (°F) in Table 1.1-1.

V. Applicability**Affected Generic Technical Specifications and Bases:**

Section 1.1, Definitions

Changes to the Generic Technical Specifications and Bases:

- Delete the definition of ACTUATION DEVICE TEST. (DOC L01)
 - Modify the phrase “interlock logic state” in the definition of ACTUATION LOGIC TEST. (DOC A001)
 - Change the phrase “ACTUATION DEVICE TEST” to “actuated device” in the definition of ACTUATION LOGIC TEST. (DOC L01)
 - Modify the text of the first sentence in the definition of CHANNEL CALIBRATION. (DOC A001)
 - Delete the word “the” prior to the phrase “OPERABILITY of all devices” from the first sentence of the definition of “CHANNEL OPERATIONAL TEST (COT).” (DOC A001)
 - Delete the definition of CORE ALTERATIONS. (TSTF-471-A, Rev. 1, DOC L03)
 - Delete the word “parameter” from the last sentence of the definition CORE OPERATING LIMITS REPORT (COLR). (DOC A002)
 - Change the phrase “in a RCS” to “in an RCS” in the definition of LEAKAGE. (WOG STS 1.1, Rev.4)
 - Renumber Specification 5.6.5 to 5.6.3 in the COLR definition; and Specification 5.6.5 to 5.6.4 in the PTLR definition. (TSTF-369-A, Rev. 1, DOC L02, and WOG STS 1.1, Rev. 4)
 - Insert the text “of the FSAR” at the end of item ‘a’ for the definition of PHYSICS TESTS. (DOC A002)
 - Delete the last sentence of the definition of the PRESSURE AND TEMEPRATURE LIMITS REPORT (PTLR). (TSTF-419-A, Rev. 0, DOC L04, WOG STS 1.1, Rev. 4)
 - Delete the last sentence in the definition of PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR). (TSTS-419, Rev. 0 and DOC A004)
 - Delete the definition of REACTOR TRIP CHANNEL OPERATIONAL TEST (RTCOT). (DOC M01)
 - Replace the word “required” with “necessary” in the definition for TRIP ACTUATING DEVICE OPERATIONAL TEST. (DOC A001)
-

VI. Traveler Information

Description of TSTF changes:

The definitions for COLR and PTLR are updated in AP1000 STS Section 1.1 to reflect the revised numbering of Section 5.6 subsections resulting from the removal of GTS subsection 5.6.1, "Occupational Radiation Exposure Report," and subsection 5.6.4, "Monthly Operating Reports," consistent with TSTF-369-A. See GTST AP1000-A40-5.6.

Based on TSTF-369-A, the reference to Specification 5.6.5 is renumbered as 5.6.3 in the definition of COLR. Also the reference to Specification 5.6.6 is renumbered as 5.6.4 in the definition of PTLR. These changes are implemented by this GTST in AP1000 STS 1.1, Rev. 0. These changes are consistent with WOG STS 1.1, Rev. 4.

TSTF-419-A, Rev. 0, revised WOG STS Rev. 2, by deleting the last sentence from the definition of PTLR, which references the Specifications that address unit operation within the limits specified in the PTLR. The deleted text is "Plant operation within these operating limits is addressed in LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits" and LCO 3.4.14, "Low Temperature Overpressure Protection (LTOP) System." The PTLR definition in AP1000 GTS Section 1.1, Rev. 19, contains the deleted sentence, but this GTST will not include the sentence in AP1000 STS 1.1, Rev. 0, to be consistent with the PTLR definition in WOG STS Section 1.1, Rev. 4.

TSTF-449-A, Rev. 4, made an editorial change to the definition of LEAKAGE in WOG STS Section 1.1, Rev. 3. The term SG LEAKAGE is changed to the phrase "primary to secondary LEAKAGE." As GTS Section 1.1, Rev. 19, already includes this change, it will remain in the definition of LEAKAGE in AP1000 STS 1.1, Rev. 0.

TSTF-471-A, Rev. 1, deleted the definition of CORE ALTERATIONS from WOG STS Section 1.1, Rev. 3; but AP1000 GTS Section 1.1, Rev. 19, still includes this definition. Based on this TSTF, AP1000 STS 1.1, Rev. 0, does not include a definition of CORE ALTERATION.

Rationale for TSTF changes:

In TSTF-419-A, Rev. 0, the proposed change to the definition of PTLR eliminates duplication of references between the definition of PTLR and Specification 5.6.6 [AP1000 STS 5.6.4].

According to TSTF-449-A, Rev. 4, the term SG LEAKAGE is changed to "primary to secondary LEAKAGE" because the term SG LEAKAGE is not used in the Technical Specifications or Bases. The phrase used in the Technical Specifications and Bases is "primary to secondary LEAKAGE." Therefore, the WOG STS definition was revised to use the phrase "primary to secondary LEAKAGE" instead of the term SG LEAKAGE.

According to TSTF-471-A, Rev. 1, the defined term "CORE ALTERATIONS" is not used in any [LCO] Applicability statements. The term is used in GTS Required Action A.2.1 of LCOs 3.8.2, 3.8.4, and 3.8.6; and required Action A.1 of LCOs 3.9.1, 3.9.2, and 3.9.3, which require immediately suspending CORE ALTERATIONS. The term is also used in the frequency of GTS SR 3.9.5.4 regarding the performance of VFS train testing; however, the associated LCO 3.9.5 is being relocated from the TS as described in GTST AP1000-A24-3.9.5. Suspending CORE ALTERATIONS or exempting testing except during CORE ALTERATIONS has no effect on the initial conditions or mitigation of any Design Basis Accident (DBA) or transient, and these

requirements apply an operational burden with no corresponding safety benefit. Therefore, the uses of the defined term CORE ALTERATIONS are removed from the Technical Specifications.

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

Administrative Changes (A):

VEGP LAR DOC A001:

The phrase in the definition of Actuation Logic Test is revised from:

“in conjunction with each possible interlock logic state”

by adding the phrase “required for OPERABILITY of a logic circuit” so that it reads:

“in conjunction with each possible interlock logic state required for OPERABILITY of a logic circuit”

The first sentence of the definition for Channel Calibration is revised from:

“A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel so that it responds within the required range and accuracy to known values of the parameter that the channel monitors.”

by replacing “so” with “output such” and to replace “required” with “necessary” so that it reads:

“A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors.”

The phrase in the definition of CHANNEL OPERATIONAL TEST (COT) is revised from:

“to verify the OPERABILITY of all devices”

by eliminating the word “the” so that it reads:

“to verify OPERABILITY of all devices”

The second sentence of the definition for TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT) is revised from:

“The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the required accuracy.”

by replacing “required” with “necessary” so that the text reads:

“The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the necessary accuracy.”

VEGP LAR DOC A002:

The TS definition of Core Operating Limits Report (COLR) is revised to reflect standard wording in NUREG-1431. The last sentence is revised from:

“Plant operation within these parameter limits is addressed in individual Specifications.”

by deleting the word “parameter” such that the text reads:

“Plant operation within these limits is addressed in individual Specifications.”

VEGP LAR DOC A003:

The TS references to various Chapters and Sections of the Final Safety Analysis Report (FSAR) are revised to include "FSAR" consistent with standard wording in NUREG-1431.

The definition of Physics Tests, item a, is revised to:

"Described in Chapter 14, Initial Test Program, of the FSAR"

VEGP LAR DOC A004:

The TS definition for Pressure and Temperature Limits Report (PTLR) is revised to reflect standard wording in NUREG-1431. The definition is revised by deleting the last sentence that stated:

"Plant operation within these operating limits is addressed in LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits" and LCO 3.4.14, "Low Temperature Overpressure Protection (LTOP) System.""

This change conforms to the change discussed before for TSTF-419, Rev. 0.

All the above changes will clarify the requirements and allow for consistent application of the definitions, tests, and calibrations. These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the TS.

Less Restrictive Changes (L):

VEGP LAR DOC L01:

The TS definition for ACTUATION DEVICE TEST is deleted from AP1000 GTS 1.1, Rev. 19. Reference to "overlap with the ACTUATION DEVICE TEST" that is cited in the definition of Actuation Logic Test is replaced with "overlap with the actuated device."

VEGP LAR DOC L02:

Similar to TSTF-369-A, Rev. 1, VEGP LAR DOC L02 proposed to delete subsection 5.6.1, "Occupational Radiation Exposure Report," and subsection 5.6.4, "Monthly Operating Reports," from VEGP Units 3 and 4 PTS Section 5.6. GTST AP1000-A40-5.6 addresses deletion of these two subsections from AP1000 GTS Section 5.6, Rev. 19, and the renumbering of the other Section 5.6 subsections.

Based on TSTF-369-A, Rev. 1, and VEGP LAR DOC L02, GTS Section 5.6, Specification 5.6.5 is renumbered as 5.6.3 in the COLR definition; and Specification 5.6.6 is renumbered as 5.6.4 in the PTLR definition in AP1000 STS Section 1.1, Rev. 0. These changes are consistent with WOG STS Section 1.1, Rev. 4.

VEGP LAR DOC L03:

Similar to TSTF-471-A, Rev. 1, VEGP LAR DOC L03 eliminates from AP1000 GTS Section 1.1, Rev. 19, the definition of CORE ALTERATIONS. According to VEGP LAR DOC L03, "suspending core alterations has no effect on the initial conditions or mitigation of any design basis accident or transient. Requirements to suspend core alterations are an operational burden with no corresponding safety benefit. Therefore, the uses of the defined term CORE ALTERATIONS are removed from the Technical Specifications."

More Restrictive Changes (M):

VEGP LAR DOC M01:

VEGP LAR DOC M01 proposes the deletion from AP1000 GTS Section 1.1, Rev. 19, the definition of REACTOR TRIP CHANNEL OPERATIONAL TEST (RTCOT). This definition does not exist in WOG STS 1.1, Rev. 4. The rationale for this change is discussed below.

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

The changes proposed by VEGP LAR DOC A001 through VEGP LAR DOC A004 clarify the VEGP Units 3 and 4 PTS requirements and allow for consistent application of the definitions, tests, and calibrations. These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the PTS.

VEGP LAR DOC L01 deletes the definition of ACTUATION DEVICE TEST from PTS Section 1.1 (and its use from PTS Section 3.3). According to VEGP LAR DOC L01, “the definition of the actuation device test is a test of the actuated equipment. As discussed in the [Bases for PTS Section 3.3], performance of an actuation device test demonstrates that the actuated device responds to a simulated actuation signal. As such, Surveillances associated with the testing of the actuated equipment should be addressed in the actuated equipment Specifications, where failures of the surveillance would lead to entering the Actions for the inoperable actuated equipment.”

“This less restrictive change results in closer alignment with NUREG Standard TS presentation of actuated device testing, and associated required actions for inoperabilities of actuated devices... As such there is no adverse impact to public health and safety.” Therefore, removing the definition of ACTUATION DEVICE TEST (in conjunction with related changes in other Specifications as discussed below) is acceptable.

Because of the deletion of the definition of ACTUATION DEVICE TEST by DOC L01, the phrase “ACTUATION DEVICE TEST” at the end of the definition of ACTUATION LOGIC TEST is replaced by “actuated device.”

VEGP LAR DOC L02 revised PTS Section 5.6, “Reporting Requirements,” by deleting subsections 5.6.1, “Occupational Radiation Exposure Report,” and 5.6.4, “Monthly Operating Reports,” and renumbering the other PTS Section 5.6 subsections. Subsection 5.6.5 is renumbered as 5.6.3, and subsection 5.6.6 is renumbered as 5.6.4. These numbering changes are reflected in the references to these subsections in AP1000 STS Section 1.1 in the COLR and PTLR definitions. These changes are consistent with WOG STS Section 1.1, Rev. 4. Since these subsection reference updates do not reduce technical or administrative requirements, and are consistent with NRC approved TSTF-369-A, Rev. 1, “Removal of Monthly Operating Report and Occupational Radiation Exposure Report,” they are acceptable.

VEGP LAR DOC L03, similar to TSTF-471-A, Rev. 1, proposed eliminating the definition of CORE ALTERATIONS from PTS Section 1.1 (and its uses in other specifications). According to VEGP LAR DOC L03, “suspending core alterations has no effect on the initial conditions or mitigation of any design basis accident or transient. Requirements to suspend core alterations impose an operational burden with no corresponding safety benefit.”

VEGP LAR DOC M01 proposed deleting the definition of REACTOR TRIP CHANNEL OPERATIONAL TEST (RTCOT) from PTS Section 1.1, and the use of this definition from PTS 3.3.1. According to VEGP LAR DOC M01, current PTS Section 1.1 (and GTS Section 1.1) defines an RTCOT as follows: “A RTCOT shall be the injection of a simulated or actual signal

into the reactor trip channel as close to the sensor as practicable to verify OPERABILITY of the required interlock and/or trip functions. The RTCOT may be performed by means of a series of sequential, overlapping, or total channel steps so that the entire channel is tested from the signal conditioner through the trip logic.”

Similar changes are suggested for Specifications 3.1.8, 3.3.1 and 5.5.14. Specifically, the definition of RTCOT is replaced with ACTUATION LOGIC TEST or CHANNEL OPERATIONAL TEST, as appropriate. VEGP LAR DOC M01 states that “With these changes, RTCOT is not required by the TS. Therefore, the Section 1.1 definition is deleted. The changes result in consistency with the use of ACTUATION LOGIC TEST and COT in other TS requirements and are consistent with the intent of the required TS testing, and are consistent with NUREG-1431.”

Based on VEGP LAR DOC M01, these changes are designated as more restrictive because they explicitly require testing to overlap the actuated device, and channel calibrations, as appropriate.

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

APOG Recommended Changes to Improve Specification 1.1

Insert the word “channel” in the second sentence for the definition of “CHANNEL CALIBRATION” so the sentence reads, “The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY.”

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

The Channel Calibration definition has unnecessary differences from the NUREG-1431 definition as the word “channel” has been omitted in the second sentence prior to “OPERABILITY.” The NUREG-1431 wording was approved as part of TSTF-205. Therefore, the omitted word will be restored.

VII. GTST Safety Evaluation

Technical Analysis:

According to TSTF-419-A, Rev. 0, the proposed change to the definition of PTLR eliminates duplication of references between the definition of PTLR and Specification 5.6.6 [AP1000 STS 5.6.4]. This change is consistent with WOG STS 1.1, Rev. 4.

According to TSTF-471-A, Rev. 1, “suspending CORE ALTERATIONS or exempting testing except during CORE ALTERATIONS has no effect on the initial conditions or mitigation of any Design Basis Accident (DBA) or transient, and these requirements apply an operational burden with no corresponding safety benefit. Therefore, the uses of the defined term CORE ALTERATIONS are removed from the Technical Specifications.”

Technical discussion for the changes proposed by VEGP LAR DOCs L01, L02 and L03 are covered in the previous section VI of this GTST under “Rational for Changes.” Please refer to VEGP Units 3 and 4, Technical Specification Upgrade LAR Enclosure 1 Attachment 2, DOCs L01, L02 and L03 for additional information in support of the change.

VEGP LAR DOC M01 deletes the definition of “REACTOR TRIP CHANNEL OPERATIONAL TEST (RTCOT)” from AP1000 GTS 1.1, Rev. 19. VEGP LAR DOC M01 indicates that the changes made for TS 1.1, 3.1.8, 3.3.1, and 5.5.14, because of the deletion of the definition of RTCOT, result in consistency with the use of Actuation Logic Test and COT in other TS requirements and are consistent with the intent of the required TS testing, and are consistent with NUREG-1431. VEGP LAR DOC M01 also states that “These changes are designated as more restrictive because they explicitly require testing to overlap the actuated device, and channel calibrations, as appropriate.”

The VEGP Units 3 and 4, Technical Specification Upgrade LAR Enclosure 1 Attachment 2, DOC M01 provides more details of the technical evaluation in support of the change. (Refs. 2 and 6)

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 are acceptable, the NRC staff concludes that AP1000 STS Subsection 1.1 is an acceptable model Specification for the AP1000 standard reactor design.

References to Previous NRC Safety Evaluation Reports (SERs):

None

VIII. Review Information

Evaluator Comments:

None

E. Danial Doss
Argonne National Laboratory
630-252-5967
doss@anl.gov

Review Information:

Availability for public review and comment on Revision 0 of this traveler approved by NRC staff on 5/20/2014.

APOG Comments (Ref. 7) and Resolutions:

- 1 (Internal #17) Section III - "Comments on Relations Among ...", APOG indicates that the reference to "DOC L04" needs to be replaced with reference to "DOC A004" in the discussion of TSTF-419-A. This error was inadvertent; therefore, it is resolved by making the recommended change.
- 2 (Internal #18) Section VI - "Rationale for changes in RCOL ...", APOG recommends revising the sentence "Similar changes are suggested for Specifications 3.1.8, 3.3.1 and 5.5.14" with the text "Similar changes are suggested for Specifications 3.1.8, 3.3.1 and 5.5.14. Specifically, the definition of RTCOT is replaced with ACTUATION LOGIC TEST or CHANNEL OPERATIONAL TEST, as appropriate." This is resolved by making the recommended change.
- 3 (Internal #19) Section VI - "Rationale for changes in RCOL ...", APOG recommends moving the two paragraphs describing the revised PTS Section 1.1 definitions of ACTUATION LOGIC TEST (refer to DOC A001 and DOC L01) and CHANNEL OPERATIONAL TEST (refer to DOC A001) prior to the discussion to the DOC M01 change. This is resolved by making the recommended change.
- 4 (Internal #21) Section VIII - "Reviewer Comments," APOG recommends deleting the reviewer's evaluation of difference between GTS and WOG STS definition of LEAKAGE. This is resolved by making the recommended change.
- 5 (Internal #22) Section XI and XII, Per NUREG-1431, APOG recommends adding the word "channel" prior to OPERABILITY in the second sentence for the definition of "CHANNEL CALIBRATION" so the sentence reads, "The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY." This is resolved by making the recommended change.
- 6 (Internal #23) Section XI and XII, Per DOC A001, the word "the" prior to the phrase "OPERABILITY of all devices" is deleted from the first sentence of the definition of "CHANNEL OPERATIONAL TEST (COT)." This is resolved by making the recommended change.

- 7 (Internal #24) Sections III, V, VI, VII, VIII, XI, and XII - APOG indicated that the NRC Staff withdrew the approval of TSTF-490, Rev. 0, in a March 14, 2012 memorandum (Accession No. ML12039A201). Accordingly, the previously proposed changes made by TSTF-490, Rev. 0, to the definition of DOSE EQUIVALENT XE-133 in AP1000 GST Section 1.1, Rev. 19 will not be adopted. This is resolved by making the recommended APOG changes.
- 8 (Internal #25) Section XI and XII - Per DOC A003, insert a comma following "...Initial Test Program" in item 'a' of the definition for "PHYSICS TESTS." This is resolved by making the recommended changes.
- 9 (Internal #26) Section XI and XII - APOC recommends removing the brackets around the values of the AVERAGE REACTOR COOLANT TEMPERATURE (°F) in Table 1.1-1. This is resolved by making the recommended changes.

NRC Final Approval Date: 12/17/2015

NRC Contact:

C. Craig Harbuck
301-415-3140
Craig.Harbuck@nrc.gov

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. 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).
-

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.

1.0 USE AND APPLICATION

1.1 Definitions

-----NOTE-----

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

<u>Term</u>	<u>Definition</u>
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
ACTUATION DEVICE TEST	An ACTUATION DEVICE TEST is a test of the actuated equipment. This test may consist of verification of actual operation but shall, at a minimum, consist of a continuity check of the associated actuated devices. The ACTUATION DEVICE TEST shall be conducted such that it provides component overlap with the ACTUATION LOGIC TEST.
ACTUATION LOGIC TEST	An ACTUATION LOGIC TEST shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state required for OPERABILITY of a logic circuit and the verification of the required logic output. The ACTUATION LOGIC TEST shall be conducted such that it provides component overlap with the ACTUATION DEVICE TEST actuated device .
AXIAL FLUX DIFFERENCE (AFD)	AFD shall be the difference in normalized flux signals between the top and bottom halves of a two-section excore neutron detector.

1.1 Definitions

CHANNEL CALIBRATION	<p>A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel so output such that it responds within the required necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY.</p> <p>Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in-place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps.</p>
CHANNEL CHECK	<p>A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.</p>
CHANNEL OPERATIONAL TEST (COT)	<p>A COT shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify the OPERABILITY of all devices in the channel required for channel OPERABILITY. The COT shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints required for channel OPERABILITY such that the setpoints are within the necessary range and accuracy. The COT may be performed by means of any series of sequential, overlapping, or total channel steps.</p>
CORE ALTERATION	<p>CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.</p>
CORE OPERATING LIMITS REPORT (COLR)	<p>The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits shall be determined for each reload cycle in accordance with Specification 5.6.53. Plant operation within these parameter limits is addressed in individual Specifications.</p>

1.1 Definitions

DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries per gram) that alone would produce the same committed effective dose equivalent as the quantity and isotopic mixture of I-130, I-131, I-132, I-133, I-134, and I-135 actually present. The dose conversion factors used for this calculation shall be those listed in Table 2.1 of EPA Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion," EPA-520/ 1-88-020, September 1988.
DOSE EQUIVALENT XE-133	DOSE EQUIVALENT XE-133 shall be that concentration of Xe-133 (microcuries per gram) that alone would produce the same effective dose equivalent as the quantity and isotopic mixture of noble gases (Kr-85m, Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135, and Xe-138) actually present. The dose conversion factors used for this calculation shall be those listed in Table III.1 of EPA Federal Guidance Report No. 12, "External Exposure to Radionuclides in Air, Water, and Soil," EPA 402 R 93 081, September 1993.
ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions). The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.

1.1 Definitions

LEAKAGE

LEAKAGE shall be:

a. Identified LEAKAGE

1. LEAKAGE, such as that from seals or valve packing, that is captured and conducted to collection systems or a sump or collecting tank;
2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE;
3. Reactor Coolant System (RCS) LEAKAGE through a steam generator (SG) to the Secondary System (primary to secondary LEAKAGE); or
4. RCS LEAKAGE through the passive residual heat removal heat exchanger (PRHR HX) to the In containment Refueling Water Storage Tank (IRWST).

b. Unidentified LEAKAGE

All LEAKAGE that is not identified LEAKAGE.

c. Pressure Boundary LEAKAGE

LEAKAGE (except primary to secondary LEAKAGE and PRHR HX tube LEAKAGE) through a nonisolatable fault in an RCS component body, pipe wall, or vessel wall.

MODE

A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

1.1 Definitions

OPERABLE-OPERABILITY	A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
PHYSICS TESTS	<p>PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are:</p> <ol style="list-style-type: none"> a. Described in Chapter 14, Initial Test Program, of the FSAR; b. Authorized under the provisions of 10 CFR 50.59; or c. Otherwise approved by the Nuclear Regulatory Commission.
PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)	The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heatup and cooldown rates, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6. 54. Plant operation within these operating limits is addressed in LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits" and LCO 3.4.14, "Low Temperature Overpressure Protection (LTOP) System."
QUADRANT POWER TILT RATIO (QPTR)	QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3400 MWt.

1.1 Definitions

REACTOR TRIP CHANNEL OPERATIONAL TEST (RTCOT)	A RTCOT shall be the injection of a simulated or actual signal into the reactor trip channel as close to the sensor as practicable to verify OPERABILITY of the required interlock and/or trip functions. The RTCOT may be performed by means of a series of sequential, overlapping, or total channel steps so that the entire channel is tested from the signal conditioner through the trip logic.
REACTOR TRIP SYSTEM (RTS) RESPONSE TIME	The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.
SHUTDOWN MARGIN (SDM)	<p>SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming:</p> <ol style="list-style-type: none"> a. All rod cluster control assemblies (RCCAs) are fully inserted except for the single assembly of highest reactivity worth, which is assumed to be fully withdrawn. However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck RCCA in the SDM calculation. With any RCCAs not capable of being fully inserted, the reactivity worth of these assemblies must be accounted for in the determination of SDM; and b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design level. c. In MODE 2 with $k_{\text{eff}} < 1.0$, and MODES 3, 4, and 5, the worth of fully inserted Gray Rod Cluster Assemblies (GRCAs) will be included in the SDM calculation.

1.1 Definitions

STAGGERED TEST BASIS	A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during n Surveillance Frequency intervals, where n is the total number of systems, subsystems, channels, or other designated components in the associated function.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT)	A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of all devices in the channel required for trip actuating device OPERABILITY. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the required necessary accuracy. The TADOT may be performed by means of any series of sequential, overlapping, or total channel steps.

Table 1.1-1 (page 1 of 1)
MODES

MODES	TITLE	REACTIVITY CONDITION (k_{eff})	% RATED THERMAL POWER ^(a)	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	≥ 0.99	> 5	NA
2	Startup	≥ 0.99	≤ 5	NA
3	Hot Standby	< 0.99	NA	> 420
4	Safe Shutdown ^(b)	< 0.99	NA	$420 \geq T_{avg} > 200$
5	Cold Shutdown ^(b)	< 0.99	NA	≤ 200
6	Refueling ^(c)	NA	NA	NA

(a) Excluding decay heat.

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

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

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.

1.0 USE AND APPLICATION

1.1 Definitions

-----NOTE-----

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

<u>Term</u>	<u>Definition</u>
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
ACTUATION LOGIC TEST	An ACTUATION LOGIC TEST shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state required for OPERABILITY of a logic circuit and the verification of the required logic output. The ACTUATION LOGIC TEST shall be conducted such that it provides component overlap with the actuated device.
AXIAL FLUX DIFFERENCE (AFD)	AFD shall be the difference in normalized flux signals between the top and bottom halves of a two-section excore neutron detector.
CHANNEL CALIBRATION	<p>A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY.</p> <p>Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an in-place qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps.</p>
CHANNEL CHECK	A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of

1.1 Definitions

CHANNEL CHECK (continued)

the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.

CHANNEL OPERATIONAL TEST (COT)

A COT shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The COT shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints required for channel OPERABILITY such that the setpoints are within the necessary range and accuracy. The COT may be performed by means of any series of sequential, overlapping, or total channel steps.

CORE OPERATING LIMITS REPORT (COLR)

The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits shall be determined for each reload cycle in accordance with Specification 5.6.3. Plant operation within these limits is addressed in individual Specifications.

DOSE EQUIVALENT I-131

DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries per gram) that alone would produce the same committed effective dose equivalent as the quantity and isotopic mixture of I-130, I-131, I-132, I-133, I-134, and I-135 actually present. The dose conversion factors used for this calculation shall be those listed in Table 2.1 of EPA Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion," EPA-520/ 1-88-020, September 1988.

DOSE EQUIVALENT XE-133

DOSE EQUIVALENT XE-133 shall be that concentration of Xe-133 (microcuries per gram) that alone would produce the same effective dose equivalent as the quantity and isotopic mixture of noble gases (Kr-85m, Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135, and Xe-138) actually present. The dose conversion factors used for this calculation shall be those listed in Table III.1 of EPA Federal Guidance Report No. 12, "External Exposure to Radionuclides in Air, Water, and Soil," EPA 402 R 93 081, September 1993.

1.1 Definitions

ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME

The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions). The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.

LEAKAGE

LEAKAGE shall be:

- a. Identified LEAKAGE
1. LEAKAGE, such as that from seals or valve packing, that is captured and conducted to collection systems or a sump or collecting tank;
 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE;
 3. Reactor Coolant System (RCS) LEAKAGE through a steam generator (SG) to the Secondary System (primary to secondary LEAKAGE); or
 4. RCS LEAKAGE through the passive residual heat removal heat exchanger (PRHR HX) to the In containment Refueling Water Storage Tank (IRWST).

b. Unidentified LEAKAGE

All LEAKAGE that is not identified LEAKAGE.

1.1 Definitions

LEAKAGE (continued)

c. Pressure Boundary LEAKAGE

LEAKAGE (except primary to secondary LEAKAGE and PRHR HX tube LEAKAGE) through a nonisolatable fault in an RCS component body, pipe wall, or vessel wall.

MODE

A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.

OPERABLE-OPERABILITY

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

PHYSICS TESTS

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

- a. Described in Chapter 14, Initial Test Program, of the FSAR;
- b. Authorized under the provisions of 10 CFR 50.59; or
- c. Otherwise approved by the Nuclear Regulatory Commission.

PRESSURE AND
TEMPERATURE LIMITS
REPORT (PTLR)

The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heatup and cooldown rates, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.4.

1.1 Definitions

QUADRANT POWER TILT RATIO (QPTR)	QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3400 MWt.
REACTOR TRIP SYSTEM (RTS) RESPONSE TIME	The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.
SHUTDOWN MARGIN (SDM)	<p>SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming:</p> <ol style="list-style-type: none"> a. All rod cluster control assemblies (RCCAs) are fully inserted except for the single assembly of highest reactivity worth, which is assumed to be fully withdrawn. However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck RCCA in the SDM calculation. With any RCCAs not capable of being fully inserted, the reactivity worth of these assemblies must be accounted for in the determination of SDM; and b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design level. c. In MODE 2 with $k_{eff} < 1.0$, and MODES 3, 4, and 5, the worth of fully inserted Gray Rod Cluster Assemblies (GRCAs) will be included in the SDM calculation.

1.1 Definitions

STAGGERED TEST BASIS	A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during n Surveillance Frequency intervals, where n is the total number of systems, subsystems, channels, or other designated components in the associated function.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT)	A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of all devices in the channel required for trip actuating device OPERABILITY. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the necessary accuracy. The TADOT may be performed by means of any series of sequential, overlapping, or total channel steps.

Table 1.1-1 (page 1 of 1)
MODES

MODE	TITLE	REACTIVITY CONDITION (k_{eff})	% RATED THERMAL POWER ^(a)	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	≥ 0.99	> 5	NA
2	Startup	≥ 0.99	≤ 5	NA
3	Hot Standby	< 0.99	NA	> 420
4	Safe Shutdown ^(b)	< 0.99	NA	$420 \geq T_{avg} > 200$
5	Cold Shutdown ^(b)	< 0.99	NA	≤ 200
6	Refueling ^(c)	NA	NA	NA

(a) Excluding decay heat.

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

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