May 11, 2016

Enclosure 3

Discussion Record and List of Participants

FEBRUARY 25, 2015 MEETING WITH THE WESTINGHOUSE ADVANCED PASSIVE 1000 OWNERS GROUP

AP1000 Standard Technical Specifications Development

Discussion of Comments by AP1000 Utilities (APOG) on

Revision 0 of Generic Technical Specification Travelers (GTSTs)

Prepared by the Plant Systems Branch (SPSB) of the Office of New Reactors

Three White Flint North, Room 6A28, Meeting on February 25, 2015, 8:30 AM – 5:30 PM

Two White Flint North, Room 6E31, Teleconference on March 26, 2015, 10:00 AM – 2:00 PM

— DISCUSSION RECORD —

I. Introductions and Discussion of Agenda

Meeting attendees are listed at the end of this summary.

Background Documents

SPSB attendees briefly discussed the background documents for the meeting:

1) Federal Register Notice – Request for Public Comment on AP1000 GTSTs — ML14139A085 (79 FR 35577), Docket No.: ID NRC-2014-0147, Document No.: 2014-14608, https://federalregister.gov/a/2014-14608
2) AP1000 Utilities' Comments on AP1000 Generic TS Travelers — ML145A493
3) AP1000_GTSTs_Rev_0_APOG_comments_resolutions_Rev_0.pdf — ML15055A292
4) Topics for Discussion with AP1000 Utilities Feb 25 2015.pdf — ML15055A289
5) AP1000 DCD Rev 19, Chapter 16, Generic TS — ML11171A500
6) Vogtle Electric Generating Plant (VEGP) Units 3 and 4, TS Upgrade License Amendment Request 12-02 — ML12065A057
7) Amendment No. 13 to COLs for VEGP Units 3 and 4 — ML13238A337
8) TSTFs listed in ap1000sts_gtst_by_tstf_disposition_v0.pdf and AP1000 GTSTs — ML14129A393
9) TSTF-GG-05-01, "Writer's Guide for Plant-Specific Improved Technical Specifications," June 2005
10) AP1000 STS Feb 25-2015 meeting with AP1000 Utilities AGENDA timeline.pdf — ML15055A291
11) AP1000 STS Feb 25-2015 meeting with AP1000 Utilities AGENDA NOTES.pdf — ML15055A290

To develop an AP1000 STS NUREG, SPSB staff proposed changes to the AP1000 generic technical specifications (GTS) in 112 documents referred to as generic technical specification travelers (GTSTs). Public comments on these changes were solicited and the AP1000 Utilities provided 533 comments. SPSB staff reviewed these comments and proposed draft resolutions, which were the subject of this meeting. In many cases, the draft resolutions proposed alternative or additional changes to the changes proposed in the APOG comments. During the meeting, when APOG representatives asserted that such SPSB staff proposed changes would require further review by APOG to confirm their technical validity or meaning, in most cases

SPSB staff agreed to defer the changes for consideration in a revision of the AP1000 STS NUREG subsequent to Revision 0.

Meeting Outcome Categories – by agenda item, discussion topic, or comment

Attendees discussed SPSB proposed meeting outcome categories and agreed to the following:

These categories apply to APOG-2014-008 comments listed in the meeting topics (Background Document 4) for the 2/25/15 meeting and the 3/26/15 teleconference between representatives of the AP1000 utilities and the SPSB staff. They also apply to other APOG-2014-008 comments that were added during the meeting discussion.

A APOG agrees with SPSB proposed change to APOG-2014-008 comment: SPSB will implement its proposed change in STS Rev 0.

B1 APOG does not agree with SPSB proposed change to APOG-2014-008 comment: SPSB will implement its proposed change in STS Rev 0.

B2 APOG does not agree with SPSB proposed change to APOG-2014-008 comment: SPSB will withdraw its proposed change and implement in STS Rev 0 the change proposed by the APOG-2014-008 comment.

C1 Item resolved: SPSB action

C2 Item resolved: APOG action

D1 Item open, but resolution needed for STS Rev 0: SPSB action

D2 Item open, but resolution needed for STS Rev 0: APOG action

E1 Item open, but may be considered for subsequent STS revision: SPSB action

E2 Item open, but may be considered for subsequent STS revision: APOG action

The following applies to all APOG-2014-008 comments:

An SPSB or APOG proposed GTS change that meets one or more of the following conditions, will be implemented in STS Rev. 0:

(1) An SPSB proposed change to GTS (as presented in Rev. 0 of the GTSTs) will be implemented in STS Rev 0 provided

- APOG agrees with the change as indicated by no APOG-2014-008 comment opposing the change.

(2) An SPSB proposed change (as presented in the draft resolutions to APOG-2014-008 comments) to an APOG-2014-008 comment will be implemented in STS Rev 0 provided

- APOG agrees with the change as affirmed during the meeting or teleconference; or
- The change is editorial (typographical errors in spelling, punctuation, capitalization, or grammar) and SPSB concludes it would require no additional APOG or NRC review to determine that it does not alter the meaning of the subject passage.

(3) An APOG-2014-008 comment proposed change to GTS, or to an SPSB GTS change proposed in Rev. 0 of the GTSTs, will be implemented in the STS Rev 0 provided

- SPSB agrees with the change as indicated by no comment opposing the change (as presented in the draft resolutions to APOG-2014-008 comments); or
- SPSB agrees with the change as affirmed during the meeting or teleconference.

Any SPSB or APOG proposed GTS change that meets none of the above conditions, will not be implemented in STS Rev. 0. All such SPSB proposed changes are identified as “withdrawn” in the updated resolutions to APOG-2014-008 comments document, which is attached to this summary. The Action column is updated for each change with the outcome of the 2/25/15 meeting and 3/26/15 teleconference between representatives of the AP1000 utilities and the SPSB staff. Text of withdrawn changes are lined out and colored violet, and are preceded by the word “**Withdrawn**.”

Role and Purpose of AP1000 STS NUREG

Attendees discussed the role and purpose of standard technical specifications, as presented below:

STS NUREGs promote improvement and standardization of TS requirements consistent with Commission Final Policy Statement on TS Improvements, and provide

- Reference documents for NRC and industry to propose generic changes to improve STS for one or more reactor designs;
- Basis for license amendment requests to improve plant-specific TS (with or without using the consolidated line item improvement process, or CLIIP); and
- Basis for changes to improve plant-specific TS Bases.

II. Process for New Reactor STS NUREG Development

SPSB staff described the process for developing GTSTs.

III. General Issues

For each agenda item, discussion topic, or comment the meeting outcome category is listed along with a description of any associated actions by APOG or SPSB.

A. Role of an AP1000 STS NUREG going forward

1. TSTF disposition relative to STS Rev. 0 (Topics 1 and 2)

Attendees briefly discussed Topics 1 and 2, whether the following operating reactor STS NUREG changes (industry pressurized water and boiling water reactor owners groups' Technical Specifications Task Force travelers [TSTFs]) should be included in the AP1000 STS.

Topic 1 referenced the following APOG Comment Nos.

-	1	2	-	-	5	-	-	-	-
-	-	-	13	-	-	16	-	-	-
-	-	-	-	-	515	516	517	-	-

Topic 2 referenced the following APOG Comment Nos.

-	-	-	-	-	5	-	-	-	-
-	11	12	-	-	15	16	-	-	-
-	-	-	24	-	-	-	-	-	-
-	-	292	-	-	-	-	-	-	-
-	-	-	-	-	515	516	517	-	-

The outcomes of the APOG-2014-008 comments about TSTFs, are provided by comment number, as follows:

- **1** — TSTF-522 APOG agreed with SPSB proposed disposition of "not applicable to GTS" because of relocation of GTS LCO 3.9.6 from VEGP 3&4 PTS (instead of "TSTF already Included in GTS Rev. 19 with variation." **A**
- **2** — TSTF-523 APOG agreed with SPSB proposed disposition of "not applicable to GTS" because concerns of traveler already addressed by GTS Rev 19. [instead of "TSTF deferred for future consideration"] ..... **A**

SPSB will consider a future improvement to LCO 3.5.3 by adding a new Condition similar to Condition D of LCO 3.5.4. ..... **E1**

- **5** — TSTF-51 SPSB will include the addition of "recently" from TSTF-51 in the reference disposition tables, as "TSTF deferred for future consideration." **B2**

  APOG asserted that the existence of the specification STS 3.9.5, "Decay Time," does not necessarily obviate the purpose of using "recently" as a modifier to "irradiated fuel movement." APOG will consider proposing an AP1000 version of the "recently" part of TSTF 51 for a subsequent revision of the STS. **E2**

- **11** — TSTF-359 SPSB staff agreed to withdraw the traveler. **C1**

  APOG was requested to verify disposition (addition or removal) of Notes regarding exceptions to LCO 3.0.4 when TSTF-359 is adopted in a future revision of STS **E2**

  SPSB staff proposed discussing the meaning of the phrase "TSTF deferred for future consideration." Does it mean creating a new AP1000-specific topical report (to justify AP1000-specific changes) in place of the topical report referenced in the traveler? Does it mean an AP1000-specific TSTF needs to be submitted? SPSB and APOG agreed to defer this item until after issuance AP1000 STS Rev 0. ..... **E1, E2**

- **12** — TSTF-372 APOG asserted that the analysis supporting this traveler is not general enough to be applicable to AP1000, and LCO 3.0.8 should be removed. SPSB agreed to remove the traveler and designate it for future consideration. **C1**

  APOG was requested to consider proposing an AP1000 version of TSTF-372 for a subsequent revision of the STS. **E2**

- **13** — TSTF-425 APOG disagreed with not including this traveler in STS Rev. 0. SPSB proposed a traveler disposition of "TSTF deferred for future consideration." SPSB staff stated that incorporation of this traveler would require including bracketed Frequencies to provide a choice between the GTS Frequency (or the existing RCOL PTS Frequency, if different) and the surveillance frequency control program (SFCP) Frequency, consistent with NUREG-1431, Rev 4. APOG was requested to consider proposing an AP1000 version of TSTF-425 for a subsequent revision of the STS. **E2**

- **14** — TSTF-427 APOG asserted that the analysis supporting this traveler is not general enough to be applicable to AP1000, and LCO 3.0.9 should be removed. SPSB agreed to remove the traveler and designate it for future consideration. **C1**

  APOG was requested to consider proposing an AP1000 version of TSTF-427 for a subsequent revision of the STS. **E2**

- **24** — TSTF-490 SPSB Staff agreed to remove from STS Subsection 1.1 changes to Dose Equivalent XE-133 definition, and disposition the traveler as not applicable to GTS. **C1**

- **16** — TSTF-500 *See Agenda Items IV.F.1 and IV.G.1.* **C1**

- **478** — TSTF-500 *See Agenda Items IV.F.1 and IV.G.1.* **C1**

- **515** — TSTF-449 SPSB staff agreed to remove from STS Subsection 5.5.4 eight changes related to "optional (i.e., bracketed) material applicable to SG repair criteria that does not currently exist for AP1000 plants." SPSB staff also agreed to revise the traveler disposition to "TSTF already Included in GTS Rev. 19 with variation." **C1**

- **516** — TSTF-510 SPSB staff agreed to remove from STS Subsection 5.5.4 the "or repair" options based on TSTF-510, GTST No. A34 Section VI Items "(4)" and "(5)" and "(8)." **C1**

  APOG stated in comment 516 "At the time of a future submittal for NRC approval of repair criteria, the STS changes would also be appropriate to include at that time." **E2**

  Omission of bracketed optional provisions introduced by TSTF-510 from AP1000 STS Subsection 5.5.4 may need agreement by NRR branch responsible for SG tube inspection requirements. **E1**

- **517** — TSTF-510 SPSB staff agreed to remove from STS Subsection 5.5.4 the reviewer's note associated with GTST No. A34 Section VI change "(6)" based on TSTF-510. ..... **C1**

2. <u>Risk initiative TSTFs (Topic 3)</u>

- **11** — TSTF-359 *See Agenda Item III.1.* APOG was requested to verify disposition (addition or removal) of Notes regarding exceptions to LCO 3.0.4 when traveler adopted in a future revision of STS **E2**

- **12** — TSTF-372 *See Agenda Item III.1*..... **E2**

- **13** — TSTF-425 *See Agenda Item III.1*..... **E2**

- **14** — TSTF-427 *See Agenda Item III.1*..... **E2**

SPSB asked APOG how it plans to incorporate other risk-informed TS initiatives, based on associated TSTFs, in future revisions of the STS. This issue was tabled for future discussion, as its resolution is not needed to support AP1000 STS Rev. 0 creation. **E1, E2**

3. <u>Bracketed information and Reviewer's Notes (Topic 28)</u>

The discussion began with SPSB staff quoting from APOG-2014-008 Enclosure Page 2, General Observation D:

> As a generic philosophy, the AP1000 utilities are generating GTST comments not to include "optional" TS provisions. Plant-specific differences are not applicable to the AP1000 community at this time. There are several TSTFs that have bracketed options for plants to consider for adoption. The utilities providing comments on the GTST are maintaining a position that the AP1000 community desires TS/Bases consistency and chooses to avoid preferential differences. These are specifically detailed in the included comments.

Staff then described how it had treated (1) bracketed COL information and (2) bracketed provisions found in TSTFs being considered for incorporation in AP1000 STS.

(1) Staff chose to use the RCOL value or text for GTS bracketed COL information in the AP1000 STS (applies to GTS Chapter 5 only). The brackets ought to be retained to indicate site-specific information, as currently done in the operating reactor STS NUREGs, unless all AP1000 licensees (present and future) plan to use the RCOL's value or text. Otherwise, also include any reviewer's note related to the bracketed information, and add brackets to the reviewer's note to indicate it may be omitted from plant-specific TS.

(2) Whether to include an optional bracketed provision from a TSTF depends on the applicability of the provision to the AP1000 design. If the provision is to be included in the AP1000 STS, the STS should retain the brackets unless all AP1000 licensees (present and future) plan to use the value or text applicable to the RCOL plant-specific TS. If the provision has an associated reviewer's note and the brackets are retained, then add brackets to the reviewer's note to indicate it may be omitted from plant-specific TS, regardless of whether the TSTF included brackets around the reviewer's note.

The attendees then discussed a specific case regarding bracketed information in a TSTF change, which was also bracketed COL information in Specifications 5.1 and 5.2:

- **506** — TSTF-65 APOG commented that the GTS presentation of the COL information should be retained. That is, the STS should not replace "[Plant Manager]" with the RCOL supplied title, "plant manager." The APOG recommends maintaining GTS COL items in the STS as they are presented in the GTS. In this instance, the COL item overlaps with a change introduced by TSTF-65 that also included an associated reviewer's note (not found in the GTS). In its comment, APOG had asserted:

  > The intent of the TSTF-65 Reviewer's Note ([proposed for] being added to the AP1000 STS NUREG) imposes a new or revised COL Item, which is not appropriately coordinated with the AP1000 DCD. This change should be evaluated at a future time.

  SPSB staff agreed to retain the COL item without change in STS Rev. 0. ..... **B2**

Attendees agreed to revisit how the AP1000 STS should present COL information, bracketed TSTF provisions, and any associated reviewer's notes following completion of AP1000 STS Rev. 0. ..... **E1, E2**

SPSB staff agreed to table the following questions until after completion of AP1000 STS Rev. 0: Does APOG know of other places where a GTST <u>unnecessarily</u> includes the brackets with TSTF-bracketed information? Does APOG know of places where a GTST <u>appropriately</u> includes the brackets with TSTF-bracketed information? **E1, E2**

4. <u>Process for making future changes (Topic 2)</u>

SPSB staff agreed to table this topic until after completion of AP1000 STS Rev. 0, since its resolution is not needed to support development of STS Rev. 0. SPSB staff noted two possibilities for making future changes to the STS: (1) make changes by way of STS subsection-based GTSTs, and (2) make changes by participating in PWR & BWR Owners Groups TSTF process. **E1, E2**

B. Editorial Improvements (Topic 6)

Attendees discussed Topic 6 concerning selected kinds editorial changes. The APOG attendees agreed to some of these, but not to others. In general, if any editorial change proposed by SPSB staff would require additional APOG review to conclude that it does not alter the meaning of the subject passage, then it was agreed that such a change would need to be deferred for consideration following completion of AP1000 STS Rev. 0.

Topic 6 referenced the following APOG Comment Nos. Numbers in italics and underlined were not originally selected for discussion at the 2/25/15 meeting.

-	-	-	-	-	-	-	-	48	-
-	-	-	-	-	-	56	-	-	-
-	-	-	-	-	-	-	-	-	119
-	-	-	-	-	-	-	-	-	129
-	-	-	-	-	-	136	137	-	-
-	-	-	-	144	-	-	-	-	-
-	-	*152*	-						
-	-	-	-	-	-	-	-	178	-
-	-	202	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	258	-
260	-	-	-	-	-	-	-	-	269
-	-	-	293	-	*295*	-	297	-	-
300	-	-	-	-	-	-	-	-	-
310	-	-	-	-	-	*316*	-	-	319
-	-	-	-	-	*325*	-	*327*	-	-
-	-	-	333	334	-	336	-	-	-
-	-	*352*	353	-	-	-	-	-	-
360	*361*	-	-	-	-	-	-	-	-
370	-	-	-	-	-	-	377	-	-
-	-	*392*	-	-	-	-	-	-	-
-	-	432	-	-	-	-	-	-	-
-	-	-	-	*444*	-	-	-	-	-
-	-	-	-	-	-	*466*	-	-	-
-	-	-	-	-	-	*476*	477	478	-
480	*481*	-	-	-	-	*486*	-	-	-
-	491	-	-	-	-	-	-	-	-
-	521	-	-	-	-	-	-	-	-

SPSB selected the following items for discussion during the meeting. The meeting outcome category is provided with a description of each item.

(1) From APOG-2014-008 Enclosure Page 2, General Observation C: Regarding use of a hyphen in phrases that refer to a required action completion time or surveillance frequency. SPSB staff proposed to apply proper grammar by using a hyphen in all GTSTs for consistency, and not maintain consistency with the operating reactor STS, which do not use hyphens in these phrases. Such hyphens will be omitted from STS Rev. 0 ..... **C1**

SPSB staff recommended that the TSTF include using a hyphen in phrases that refer to a required action completion time or surveillance frequency as an editorial improvement in the next revision of operating reactor STS.

(2) Attendees discussed the following APOG-2014-008 editorial comments, for which SPSB had proposed additional or alternative edits in the comment draft resolution table (Background Document 3), to determine which kinds of edits APOG can support and which

kinds of edits APOG wants to defer until after completion of STS Rev. 0, to allow for additional review.

- **48** LCO 3.0.2 Bases edited for clarity. ..... **A**
- **56** LCO 3.0.6 Bases edited for clarity. ..... **A**
- **119**, **129**, **136**, **144**, **152** (*see Agenda item IV.B.1* for **178** and **202**)
  Bases of Specifications 3.3.1, 3.3.2, 3.3.3, 3.3.8, and 3.9.3 edited for clarity, as follows:
  - Consistent use of "Power Range Neutron Flux," "Intermediate Range Neutron Flux," and "Source Range Neutron Flux" monitors, detectors, channels, functions ..... **A**
  - Appropriate use of "Protection and Safety Monitoring System" and "PMS" **C1**
  - Consistent use of RTS Function titles ..... **A**
  - Consistent use of "Trip Setpoint" and "trip setting" **C1**
  - Consistent use of "reactor trip"; "reactor trip system (RTS)"; and "reactor trip Function" ..... **A**
  - Consistent use of P-6 setpoint, P-10 setpoint (not interlock) – SPSB staff proposed to not use 'interlock" as a synonym for, or in combination with "setpoint" but agreed, that if the Specification's *applicability or actions* uses it in this way, to leave the word interlock in the Bases. **B2**

    Use of phrases such as "above P-10," "above the P-10 interlock," "above the P-10 setpoint," and "above the P-10 interlock setpoint" will be considered for consistency improvements post STS Rev. 0. ..... **E1, E2**
  - Consistent use of "Function" and "function" ..... **A**
  - Consistent (and correct) use of [PMS] "division"; APOG noted that STS NUREGs avoid using possessive apostrophe with inanimate objects. SPSB staff agreed to withdraw use "division's" and "channel's." **B2, E1**
  - Use of "allowed **as-left** tolerance" in COT and Channel Calibration Bases discussions. APOG views inserting "as-left" as clarifying the obvious, but SPSB staff views it as promoting consistency with Setpoint Program (SP) terminology. **B1**
  - Consistent use of "control room operator" **B2, E1**
  - Use of "unit" versus "plant" versus "facility" versus "reactor" **E1**
  - Consistent description of 24-month Surveillance Frequency ..... **A**
  - Consistent capitalization of Surveillance, Frequency, Condition, Required Action, and Completion Time (SPSB made no attempt to globally fix any capitalization inconsistencies.) **E1**
  - Use of "integrated protection cabinet" or "IPC"; use of "PMS cabinet" **B1, E2**
- **137** Use of "are" instead of "may be" in sentences like: "SR 3.3.1.11 is modified by a Note indicating that neutron detectors **are** excluded from RTS RESPONSE TIME testing." APOG stated words in bases should match specification. **C1**
- **152** When Bases describe a surveillance frequency involving a precondition (e.g., "prior to reactor startup" or "4 hours after reducing power below P-10"), SPSB staff suggest quoting the frequency instead of paraphrasing it, for clarity. This suggestion is not adopted because all STS NUREGs never enclose Frequencies with quotation marks. **B2**

- **258** Bases for Specification 3.4.9 – RCS "steady state operation"; attendees agreed to match FSAR description in the bases. APOG intends to further revise after STS Rev. 0 (*see Agenda Item IV.C.2*) **C1, E2**

- **260** Bases for Specification 3.4.9 – add "initial" for first performance of a Required Action with a periodic Completion Time (*see Agenda Item IV.C.2*)..... **C1**

- **269** Withdraw the SPSB staff proposed replacement of "Protection" with "PMS" in "Protection Logic Cabinets" in Bases for SR 3.4.11.5. ..... **C1**

- **293** SPSB proposed alternate clarifications to Bases for LCO 3.5.1. ..... **B1**

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

- **295** SPSB proposed removing periods from "cu. ft." per Writer's Guide 3.1.4.d in Bases for SR 3.5.1.4 in comment **295**; Condition D of LCO 3.5.7 in comments **321** and **324**. **C1**

- **297** SPSB proposed the following alternate clarifications to Bases for LCO 3.5.2 with revised markups shown in green and orange. **B1**

  > This LCO establishes the ~~minimum~~ **limits on CMT parameters and** conditions **on CMT components** necessary to ensure that **the** ~~sufficient~~ CMT flow **assumed in the safety analyses** will be available ~~to meet the initial conditions assumed in the safety analyses~~. . . .

- **300** (see **325**) SPSB proposed the following additional clarification to Bases for Specification 3.5.2, description of Completion Time for Required Action A.1, with additional markups shown in green and orange; during the teleconference on 3/26/15, SPSB staff agreed to withdraw these edits. **B2**

  > . . . A Completion Time of 72 hours is acceptable for **a** two train **emergency core cooling system (ECCS),** ~~ECCS systems~~ which **is** ~~are~~ capable of performing **its** ~~their~~ safety function without **Withdrawn** ~~without~~ **~~with the remaining OPERABLE train provided that train does not also fail as a result of~~** a single failure.

- **310** Withdraw SPSB proposed replacement of "Protection" with "PMS" in "Protection Logic Cabinets" in GTST Section V on page 5 regarding Bases for SR 3.5.6.9.... **C1**

- **316** SPSB staff suggested replacing "3 CMTs/Accum," which is unclear, with "three of the four boron injection sources (two CMTs and two Accumulators)" in Bases for LCO 3.5.6 Required Action D.1. ..... **C1**

- **319** Withdraw SPSB proposed replacement of "Protection" with "PMS" in "Protection Logic Cabinets" in SR 3.5.6.9 and associated Bases. **C1**

- **325** (see **300**) SPSB proposed alternate clarifications to Bases for Specification 3.5.7, description of completion time for Required Action A.1 with revised markups shown in green and orange; during the teleconference on 3/26/15, SPSB staff agreed to withdraw these edits. **B2**

  > . . . The 72 hour Completion Time is consistent with times normally applied to **a** degraded two train **emergency core cooling system (ECCS),** ~~ECCS systems~~ which can provide

100% of the required flow without **Withdrawn** ~~without **with the remaining OPERABLE train provided that train does not also fail as a result of**~~ a single failure.

- **327** (also **332**) SPSB staff suggested replacing "3 CMTs/Accum," which is unclear, with "three of the four boron injection sources (two CMTs and two Accumulators)" in Bases for LCO 3.5.7 Required Action D.1. ..... **C1**
- **334** Specification 3.5.8 and associated Bases, revise second Frequency of SR 3.5.8.3 to use "combined volume increase" for clarity and consistency. **C1**
- **336** "Background" section of Bases for Specification 3.6.1 writer's guide ordered list capitalization conventions. (TSTF attendee said there is no convention.) **C1, E2**
- **352** SPSB agreed with comments on third paragraph of Bases for Required Actions B.1, B.2, and B.3 of GTS 3.6.4, except as noted in comment **353**. **C1**
- **353** SPSB proposed alternate GTS changes to first three paragraphs of Bases for Required Actions B.1, B.2, and B.3 of GTS 3.6.4 to be consistent with proposed Required Actions B.1, B.2, and C.1 of STS 3.6.4. As a part of the changes, the second and third paragraphs are combined. SPSB staff notes that placing Required Action B.3 in the new Condition C as Required Action C.1 was based on VEGP Units 3 and 4 plant-specific TS change described in LAR DOC A083, approved in Amendment 13 (Background Documents 6 and 7); SPSB staff did not, however, review any associated Bases changes. Comment **353** proposed changes to the GTST proposed revisions to the three Bases paragraphs because the "GTST revision is not as concise and leaves erroneous understanding of Condition A (which continues to apply as well)." Instead of the clarifications suggested in the comment, SPSB staff proposed replacing the GTST Section XI markup on page 17 with the following, with revised markups shown in green and orange. **C1**

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

[paragraph 1] If the containment pressure cannot be restored to within its limits within the required Completion Time **in MODE 1, 2, 3, or 4**, the plant must be placed in a condition in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

[paragraph 2] **Upon entry into MODE 5,** ~~If~~ **if** the containment ~~high~~ **low** pressure limit is **still** not met, **or if while in MODE 5 or 6 the containment pressure cannot be restored to within its low pressure limit within the required Completion Time, Condition C applies.** ~~Entry into MODE 5 is sufficient to exit the Applicability. If the containment low pressure limit is not met, Required Action B.3 applies.~~

[paragraph 3] ~~If in MODE 5 or 6, the containment low pressure limit is not met,~~ **Required Action C.1 requires that** a containment air flow path ≥ 6 inches in diameter shall be opened within ~~44~~**8** hours from ~~condition~~ **Condition** entry. Any flow path (or paths) with an area equivalent to 6 inches in diameter is adequate to provide the necessary air flow.

- **360** (also **361**) In second paragraph of "Background" section of Bases for Subsection 3.6.6, SPSB suggests including "(standpipes)" as alternate name of "PCCWST discharge lines" as used in Bases for SR 3.6.6.6. ..... **B1**
- **370** Bases for Specification 3.6.6 Required Actions E.1, E.2, F.1, and F.2 – avoid use of "and/or" per WG 3.1.1.h. *(see Agenda Item IV.D.2)* **B1**
- **377** Withdrawn SPSB proposed additional edits for clarification of second paragraph of Bases for GTS Specification 3.6.8 (STS 3.6.7) Required Actions B.1.1, B.1.2, and B.2. *(see Agenda Item IV.D.2)* **E2**
- **392*** Clarifying edits of the "ASA" section of Bases for Specification 3.7.2 – except inclusion of possessive (generator's MSIV versus generator MSIV). **C1, B2, E1**
- **432** STS Specification 3.6.7 Applicability statement and Bases for clarity (addition of "spent fuel pool" in TS 3.7.9 Applicability and Bases)..... **A**
- **444*** Clarifying edits of the "ASA" section of Bases for Specification 3.7.12. ..... **A**
- **466** Clarifications in "Applicable Safety Analyses" section of Bases for Specification 3.8.5. ..... **C1**
- **476** Restore missing completion time of "Immediately" for Required Action A.2.2. ..... **A**

  Clarifications in "Applicable Safety Analyses" and "Surveillance Requirements" sections of Bases for Specification 3.8.6. ..... **C1**
- **477** Clarifications in "Background" section of Bases for Specification 3.8.6 and Bases for Specification 3.8.6 Action A. **C1**
- **478** APOG proposed a grammatical change to the Bases for Specification 3.8.7 Action B. Instead, SPSB proposed an alternate sentence structure. The revised markup is shown in green and orange. **B1**

  > **The Condition of one** ~~One~~ or more batteries in one **division** ~~Division~~ with float **current** > 2 amps **indicates** ~~indicate~~ that a partial discharge of the battery capacity has occurred **for each affected battery**. . . .

- **478** SPSB suggested edits to Subsection 3.8.7 Conditions A, C, and F, and Required Actions C.2 and D.1 to improve clarity. **B1**
- **480** SPSB staff proposed changing the second sentence of the second paragraph of the "Applicable Safety Analyses" section of the Bases for Subsection 3.8.7, as indicated by orange and green colored text below, for consistency with other APOG-2014-008 comments. ..... **A**

  > This includes maintaining at least three of the four ~~Divisions~~ **divisions** of DC sources OPERABLE during accident conditions, in the event of:

- **480** SPSB staff proposed changing the first paragraph in the "Actions" section of Bases for Subsection 3.8.7, Required Actions A.1, A.2, and A.3, as indicated by orange and green colored text below, for consistency with other APOG-2014-008 comments. **C1**

  > With one or more cells in one or more batteries in one ~~Division~~ **division with cell float voltage** < 2.07 V, the battery cell is degraded. Within 2 hours**,** verification of the **OPERABILITY of each battery's** required battery charger~~, OPERABILITY~~ is ~~made~~ **completed** by monitoring the battery terminal voltage (SR 3.8.1.1)**;** and **verification** of the overall battery state of charge **is completed** by monitoring the battery float charge current (SR 3.8.7.1). ~~This~~ **These verifications** ~~assures~~ **provide assurance** that ~~there is~~ **the affected batteries** still **have** sufficient battery

capacity to perform ~~the~~ **their** intended function. Therefore, the affected ~~battery is~~ **batteries are** not required to be considered inoperable solely as a result of **having** one or more cells ~~in one or more batteries~~ **with cell float voltage** < 2.07 V, and continued operation is permitted for a limited period up to 24 hours.

- **480** SPSB staff proposed changing the first sentence of the first paragraph, and third, fourth, and fifth sentences of the second paragraph in the "Actions" section of Bases for Subsection 3.8.7, Required Actions C.1, C.2, and C.3, as indicated by orange and green colored text below, for consistency with other APOG-2014-008 comments and clarity. **C1**

  With one or more batteries in one ~~Division~~ **division** with one or more cells **with** electrolyte level above the top of the plates, but below the minimum established design limits, the **affected batteries still retain** ~~battery still retains~~ sufficient capacity to perform ~~the~~ **their** intended function. . . .

  . . . **These actions** ~~They~~ are modified by a ~~note~~ **Note** that indicates they are only applicable if electrolyte level is below the top of the plates. A ~~note~~ **Note** for Condition C also assures that ~~the~~ Required Action C.2, **to** verify no evidence of **electrolyte** leakage, is completed whenever the electrolyte level is detected to be below the top of the plates. Within 8 hours level is required to be restored to above the top of the plates. The Required Action C.2 requirement to verify that there is no **electrolyte** leakage by visual inspection and the Specification 5.5.11.b**.3 requirement** ~~item~~ to initiate action to equalize and test **battery cells with electrolyte level below the top of the plates** ~~in accordance with manufacturer's recommendation~~ are taken from ~~IEEE Standard 450~~ **IEEE-450 (Ref. 3)**. . . .

- **486*** In Bases for Specification 3.9.1 Required Action A.2, replace "limits" with "limit" for consistency with Condition A. . ..... **A**
- **491** Use of scientific notation in Subsection 3.9.3. ..... **A**
- **521** STS Specification 5.5.8.c removal of "primary" as an unnecessary modifier to "containment" not normally used for PWR facilities. ..... **A**

* APOG communicated its agreement with SPSB proposed changes, with exceptions noted, although the comment was not selected for discussion during the 2/25/15 meeting.

See Agenda Item IV.B.1 for additional editorial items.

C. Writer's Guide conformance changes (Topics 5, 6, 8, 9, 10)

Topic 5 referenced the following APOG Comment No.

-	-	-	-	-	-	-	-	-	29

Topic 6 referenced the following APOG Comment Nos. for this agenda item

240	-	-	-	-	-	-	-	-	-
-	-	-	-	-	*295*	-	-	-	-
370	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	438	-
-	-	-	-	-	-	456	-	-	-
-	-	-	-	-	-	-	467	-	-
-	-	-	-	-	-	-	477	-	-
-	491	-	-	-	-	-	-	-	-

Topic 8 referenced the following APOG Comment Nos.

-	-	-	-	124	-	-	127	-	-

Topic 9 referenced the following APOG Comment No.

-	-	-	-	-	-	-	-	128	-

Topic 10 referenced the following APOG Comment No.

-	-	-	-	-	-	-	-	-	129

Attendees briefly discussed various issues concerning guidance in TSTF-GG-05-01. These included Writer's Guide:

(1) Item 2.1.5.c regarding logical connector indentation. **29** **C1**

(2) Convention for use of "plus or minus" instead of "±". **124, 127** **C1**

(3) Item 2.1.3.b.1 guidance on ordered list enumeration in "ASA, LCO, and Applicability" section of the Bases. **128** **C1**

(4) Convention on use of symbols < > = ≥ ≤ in Bases, in place of text. **129** **C1**

(5) Items 3.3.3.d and 3.3.4.c on use of scientific notation. **491** **C1**

(6) Item 3.1.1.h that the term "and/or" is to be avoided. **240, 370, 438, 456, 467, 477** **B1**

(7) Item 3.1.4.d regarding abbreviation of parameter units of measure; e.g., should use "cu ft" instead of "cu. ft." for cubic feet. **295** **C1**

D. Westinghouse STS (NUREG-1431, Rev. 4) consistency changes (Topics 14, 15, 19, 29)

Topic 14 referenced the following APOG Comment Nos.

-	-	-	-	-	-	-	-	-	239
-	-	-	253	-	-	-	-	-	-

Topic 15 referenced the following APOG Comment No.

-	-	242	-	-	-	-	-	-	-

Topic 19 referenced the following APOG Comment Nos.

-	-	-	343	344	345	-	-	-	-

Topic 29 referenced the following SPSB Comment No.

-	-	-	-	534	-	-	-	-	-

SPSB attendees agreed to remove the changes they had proposed in addition to or different from those proposed by the APOG in the following Comments; changes to the affected STS subsections are described and the meeting outcome category is provided.

- **239** APOG proposed deleting a paragraph from "LCO" section of Bases for Specification 3.4.4 and revising a paragraph in "LCO" section of Bases for Specification 3.4.8 to describe the minimum core flow requirement of LCO 3.4.8. *See Agenda item IV.C.1.* **B2**

- **242** APOG proposed appending a new paragraph to the "Background" section of the Bases of GTS Subsection 3.4.7, "RCS Operational LEAKAGE ," to discuss LCO 3.4.15, "RCS Pressure Isolation Valve (PIV) Integrity," consistent with Subsection 3.4.14 of Westinghouse STS Rev. 4, as follows:

LCO 3.4.15, "RCS Pressure Isolation Valve (PIV) Integrity," measures leakage through each individual PIV and can impact this LCO. Of the two PIVs in series in each isolated line, leakage measured through one PIV does not result in RCS LEAKAGE when the other is leak tight. If both valves leak and result in a loss of mass from the RCS, the loss must be included in the allowable identified LEAKAGE.

SPSB staff noted that a similar paragraph is included in the "Applicability" section of the Bases of Subsection 3.3.13, "RCS Operational LEAKAGE," of Westinghouse STS Rev. 4. For consistency, SPSB proposed appending the above paragraph to the "Applicability" section of the Bases of GTS Subsection 3.4.7, instead of the "Background" section. The APOG representatives disagreed with this change in location of the proposed paragraph in the Bases for STS Subsection 3.4.7. SPSB staff agreed to withdraw the suggestion. **B2**

SPSB staff had also suggested omitting the word "allowable" from the last sentence of the proposed paragraph, for consistency with the second paragraph of the "Background" section of the Bases for Subsection 3.4.14, "RCS Pressure Isolation Valve (PIV) Leakage," of NUREG-1431, Rev. 4. The APOG representatives disagreed with this change. SPSB staff agreed to withdraw the suggestion. **B2**

○ **253** APOG proposed revising a paragraph in "LCO" section of Bases for Specification 3.4.8 to describe the minimum core flow requirement of LCO 3.4.8. *See Agenda Item IV.C.1.*..... **C1**

○ **343** APOG proposed revising Bases for Required Actions A.1 and A.2 of Specification 3.6.3 to replace "testing or valve manipulation" with "testing or device manipulation" in the sentence "This Required Action does not require any testing or valve manipulation." because Required Action A.2 cites "devices" and not "valves." SPSB staff suggested additional clarification to use "isolation valve or isolation device manipulation," but withdrew the suggestion based on APOG concerns about unintentionally introducing technical changes. **C1**

○ **344** APOG proposed revising Bases for Required Actions A.1 and A.2 of Specification 3.6.3 to replace "potentially being" with "being" in the phrase "capable of potentially being mispositioned" for clarity and to match NUREG-1431 wording. **C1**

APOG was requested to consider the SPSB staff suggestion to use "isolation valves and isolation devices" instead of just "isolation devices," in the Bases for consistency with Required Actions A.1 and A.2, in a subsequent revision of the AP1000 STS NUREG. **E2**

○ **345** APOG proposed revising Bases for SR 3.6.3.2 to add "containment isolation" to modify "valves" in two places to clarify nomenclature consistent with NUREG-1431 wording. **C1**

APOG was requested to consider the SPSB staff suggestion to use "containment isolation valves and isolation devices" instead of just "containment isolation valves" in the Bases for consistency with Required Actions A.1 and A.2 of Specification 3.6.3, in a subsequent revision of the AP1000 STS NUREG. **E2**

○ **534** SPSB staff proposed revising CHANNEL CHECK Bases for SR 3.3.1.1, SR 3.3.2.1, and SR 3.3.3.1 to incorporate Babcock & Wilcox (BWOG) Inserts 1, 2, and 3, as appropriate, of TSTF-264, that CHANNEL CHECK agreement criteria includes an expectation of one decade of indication overlap when transitioning between neutron flux instrumentation (power range neutron flux, intermediate range neutron flux, and source range neutron flux). APOG attendees disagreed with adding this indication

overlap criterion because it is not included in Westinghouse STS. SPSB staff agreed to withdraw the proposed change. **B2**

E. Required Action Bases phrasing, "Be in at least MODE 3." (Topic 25 third bullet)

The attendees discussed the use of "at least" in the Bases for required actions that specify placing the unit in Mode 3 within 6 hours. SPSB staff had proposed to globally remove this phrase from the GTS Bases; the comment resolution table included examples of this phrase in Bases passages from Specification 3.4.16 Required Action C.1, Specification 3.6.4 Required Action B.1, Specification 3.7.10 Required Action E.1, Specification 3.8.3 Required Action B.1, and Specification 3.8.5 Required Action E.1. There may be other occurrences of this phrase in the GTS Bases.

Topic 25 third bullet was applicable to the following APOG Comment Nos.

-	-	-	-	-	-	-	-	288	-
-	-	-	353	-	-	-	-	-	-
-	-	-	-	-	-	-	-	438	-
-	-	-	-	-	-	-	457	-	-
-	471	-	-	-	-	-	-	-	-

The APOG attendees recalled that during development of the operating reactor improved STS, e.g., NUREG-1431, Rev. 0) industry and NRC staff had agreed to inserting this phrase to preclude an interpretation that a heat up of the reactor coolant system to Mode 3 would be required in the event the associated Condition was entered in Mode 4 or Mode 5. SPSB staff agreed to maintain the phrase where it occurs in the GTS Bases. **C1**

IV. STS Section-specific Issues

A. Section 3.0, LCO 3.0.3 Bases change (Topic 7)

Topic 7 referenced APOG Comment No. **50**. APOG had proposed adding the following sentence to the Bases for LCO 3.0.3 at the end of the paragraph after the paragraph labeled "c."

> Compliance with the time limits of Specification 3.0.3 rely on the use of nonsafety-related systems, which are not governed by Technical Specification LCOs.

The APOG attendees stated that this addition was reasonable because even though the normal residual heat removal system (RNS) is not designated as a safety related system in the AP1000 design, it is the normally used means for reactor coolant system cool down following the transition from using the secondary heat sink of steam generators and feedwater. The residual heat removal (RHR) system in a Westinghouse plant, such as VEGP Unit 1, is designated as a safety related system, and so such a statement would not be appropriate. The SPSB attendees pointed out that the same addition would also apply to the Bases for other shutdown required action completion times, and suggested replacing "rely" with "may rely." **C1**

APOG was requested to consider adding a similar sentence to Bases for other shutdown required action completion times following completion of STS Rev. 0. ..... **E2**

B. Section 3.3 Instrumentation

1. <u>I&C terminology consistency (Topic 11)</u>

SPSB staff suggested making STS Section 3.3 instrument names of functions, components, and equipment more consistent within AP1000 STS, and with RCOL FSAR Chapter 7, plant-specific TS (PTS), and PTS Bases, design documents, and plant procedures.

Topic 11 referenced the following APOG Comment Nos. Numbers in italics and underlined were not originally selected for discussion during the 2/25/15 meeting.

-	-	-	-	-	-	-	-	-	119
-	-	-	-	-	-	-	-	-	129
130	-	-	-	134	135	-	-	-	-
-	-	-	-	144	-	-	-	-	-
-	-	172	-	-	-	176	-	178	-
-	-	202	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	269
-	-	-	-	-	-	-	-	-	
310	-	-	-	-	-	-	-	-	319
-	-	-	-	-	-	476	-	-	-
-	-	*<u>492</u>*	-	-	-	-	-	-	-

Attendees discussed the following APOG-2014-008 editorial comments, for which SPSB had proposed additional or alternative edits in the comment draft resolution table (Background Document 3), to determine which kinds of edits APOG can support and which kinds of edits APOG wants to defer until after STS Rev. 0, to allow for additional review.

- **119** Bases of Specifications 3.3.1, 3.3.2, 3.3.3 (consistent NIS neutron flux function nomenclature). **C1**
- **119** Bases of Specifications 3.3.1, 3.3.2, 3.3.3 (use of “as-left” in phrase “allowed as-left tolerance” in Channel Operational Test (COT) and Channel Calibration Bases). . **B1**
- **119** Bases of Specifications 3.3.1, 3.3.2, 3.3.3 (consistent and appropriate use of Protection and Safety Monitoring System (PMS) and PMS). **C1**
- **119** Bases of Specifications 3.3.1, 3.3.2, 3.3.3 (use of possessives “division’s”; “monitor’s”; and “channel’s”). **B2, E1**
- **119** Bases of Specifications 3.3.1, 3.3.2, 3.3.3 - Consistent use of P-6 setpoint, P-10 setpoint (not interlock) – SPSB staff proposed to not use ‘interlock” as a synonym for, or in combination with “setpoint” but agreed, that if the Specification’s *applicability or actions* uses it in this way, to leave the word interlock in the Bases. **B2**

  Use of phrases such as “above P-10,” “above the P-10 interlock,” “above the P-10 setpoint,” and “above the P-10 interlock setpoint” will be considered for consistency improvements post STS Rev. 0. ..... **E1, E2**
- **119** Bases of Specifications 3.3.1, 3.3.2, 3.3.3 (clarification of Bases for 24-month Frequency). ..... **A**
- **129** Bases of Specification 3.3.1 (additional clarifying edits under discussion of “Pressurizer Pressure, P-11” in “ASA, LCO, and Applicability” section). ..... **A**
- **135** Bases of Specifications 3.3.1, 3.3.2, 3.3.3 (withdrew edits that added cross references to other NIS Function channels, but kept other clarifying edits under discussion of SR 3.3.1.7, SR 3.3.2.2, SR 3.3.3.2 - Channel Operational Test). **C1**

- **136** Bases of SR 3.3.1.9 (clarify description of Channel Calibration for Power Range Neutron Flux detectors). **C1**
- **144** Clarify "ASA, LCO, and Applicability" section of Bases of Specification 3.3.2 regarding consistent use "Source Range Neutron Flux" monitors, detectors, channels, functions. ..... **A**
- **172** Bases of Specification 3.3.8 (interlock operability discussions). **B2**
- **172** Bases of Specification 3.3.8 (additional clarifying edits). **B1**
- **176** Clarify third paragraph under heading "Pressurizer Water Level – High 2" of "ASA, LCO, and Applicability" section of Bases for STS 3.3.8. ..... **C1**
- **178** Bases of Specifications 3.3.8, 3.3.10, 3.3.11, 3.3.13, and 3.3.14 (use of IPC). ... **B1**
- **178** Bases of Specifications 3.3.8, 3.3.10, 3.3.11, 3.3.13, and 3.3.14 (use of PMS)..... **C1**
- **178** Bases of Specifications 3.3.8, 3.3.10, 3.3.11, 3.3.13, and 3.3.14 use of possessive ("channel's"; "division's"; "monitor's"; except for "generator's"). **B2**
- **178** Bases of Specifications 3.3.8, 3.3.10, 3.3.11, 3.3.13, and 3.3.14 (use of "as-left" in phrase "allowed as-left tolerance" in Bases for COT and Channel Calibration). .. **B1**
- **202** Bases of Specification 3.3.15 (use of PMS). **C1**
- **269** Use of "Protection Logic Cabinet" in Bases for SR 3.4.11.5 is correct. **C1**
- **310** Use of "Protection Logic Cabinet" in Bases for SR 3.5.6.9 is correct. **C1**
- **319** Use of "Protection Logic Cabinet" in Bases for SR 3.5.6.9 is correct. **C1**
- **476** Clarify electrical power distribution system terminology for buses and distribution panels in "SRs" section of Bases for Specification 3.8.6. ..... **B2**
- **492** Bases of Specifications 3.3.1, 3.3.2, 3.3.3, 3.9.3 (consistent NIS neutron flux function nomenclature). **C1**

SPSB proposed edits to Bases of Specifications 3.3.1, 3.3.2, 3.3.3, 3.3.8, 3.8.6, and 3.9.3 for consistency and clarity (example comments are listed for each item):

- Consistent use of "Source Range Neutron Flux," source range neutron flux (Function, channel, monitor, detector, High). **119**, **135**, **144**, **492** **C1**
- Consistent use of "Intermediate Range Neutron Flux," intermediate range neutron flux (Function, channel, detector, High). **119**, **135** **C1**
- Consistent use of "Power Range Neutron Flux," power range neutron flux (Function, High Setpoint, Low Setpoint, channel, detector). **119**, **130, 136** **C1**
- Consistent use of "excore nuclear instrument channel." **119**, **135, 136** **B1**
- Remove use of acronym "NIS" (nuclear instrumentation system) when used to modify source range, intermediate range, or power range neutron flux detector, channel, or Function. **119**, **136** **C1**
- Use of term instrument channel. **119**, **135** **B2**
- Use of term Low, Low 1, Low 2, Low 3, Low 6. **172** **E2**
- Use of term High, High 1, High 2, High 3. **172** **E2**
- Use of term trip Setpoint, Trip Setpoint, setpoint, Setpoint. **119**, **135**, **144** **C1**
- Use of term PMS; protection and safety monitoring system, and Protection and Safety Monitoring System. **119**, **178**, **202** **C1**

- Protection Logic Cabinets - How are PMS cabinets, integrated protection cabinets (IPCs), and Protection Logic Cabinets related? Is "PMS Logic Cabinet" more accurate than "Protection Logic Cabinet"? **178**, **269**, **310**, **319** **E2**
- Use of term PMS division. **119, 130** **C1**
- Use of term Division, division. **119** **E2**
- Avoid use of "interlock" as synonym for "setpoint." SPSB staff proposed to not use 'interlock" as a synonym for, or in combination with "setpoint" but agreed, that if the Specification's *applicability or actions* uses it in this way, to leave the word interlock in the Bases. **119**, **176** **B2**
- Providing reference to RTS or ESFAS table and Function number, or RTS or ESFAS LCO number in parenthesis following first mention of Function by its title in a Specification's Bases. **135** **C1**
- Use of term Integrated Protection Cabinets, IPCs. **269**, **310**, **319** **E2**

2. <u>Bases discussions of ESFAS Interlocks (Topics 13, 13.1, 13.3, 13.5, 13.6.b)</u>

Topic 13 referenced APOG comment **172**.

A reorganization of reactor trip system (RTS) and engineered safety features actuation system (ESFAS) plant-specific TS requirements was approved in COL Amendment 13 (Background Documents 6 and 7) for VEGP Units 3 and 4. During the review of this reorganization, SPSB staff had disagreed with Southern Nuclear Operating Company (SNC) about excluding the existing discussions of when each ESFAS interlock is required to be operable from the "ASA, LCO, and Applicability" section of the Bases for plant-specific TS Subsection 3.3.8. SPSB staff understands that Bases changes associated with Amendment 13 included omission of such discussions. To the contrary, in the GTST for STS Specification 3.3.8, SPSB staff proposed maintaining, with suitable edits, the interlock Function applicability discussions from the Bases for GTS Subsection 3.3.2 in the Bases for STS Subsection 3.3.8. In comment **172**, the APOG objected to this proposal. During the meeting, it was agreed to omit the proposed material from the Bases for STS Rev. 0. ..... **B2**

In the GTST for STS 3.3.8, in the "ASA, LCO, and Applicability" section of Bases for GTS 3.3.8, the discussions of ESFAS interlock Function applicability provide information that clarifies the role of these interlocks in supporting their dependent ESFAS Functions by enabling them and blocking them; the interlocks are described in the GTST as follows:

- P-4 (GTST Section XI page 60 and Section XII page 133)
- P-6 (GTST Section XI page 61 and Section XII page 134)
- P-11 (GTST Section XI page 62 and Section XII page 135)
- P-12 (GTST Section XI page 62 and Section XII page 135)
- P-19 (GTST Section XI page 63 and Section XII page 136)

As previously stated, SPSB staff had proposed retaining the GTS Subsection 3.3.2 Bases applicability discussions of the interlocks, with editorial improvements, in the Bases for STS Subsection 3.3.8. Citing the VEGP Units 3 and 4 Amendment 13 rationale for relocating the explicit (GTS/PTS LCO 3.3.2) requirements for the ESFAS interlocks, the APOG attendees (1) objected to the proposed applicability discussions; and (2) asserted that the Bases for Channel Calibration and Channel Operational Test surveillances for ESFAS Functions provided sufficient discussion of the role of the interlocks in meeting operability requirements for the supported Functions. Although SPSB staff agreed to omit these interlock applicability discussions from STS Rev. 0, it plans to revisit the issue for consideration in a future STS revision. **E1**

APOG attendees disagreed with the SPSB staff proposal to provide in parenthesis a nominal value for an interlock setpoint following the initial mention of the interlock in a Specification's Bases, asserting it could create confusion, since actual setpoint values documented in the setpoint program may be different. SPSB staff agreed and withdrew the proposal. **C1**

APOG attendees agreed with the SPSB staff proposal to provide a reference to RTS or ESFAS Specification Table and Function numbers, or RTS or ESFAS LCO number, in parenthesis following first mention of a Function by its title in a Specification's Bases. Note that the updated GTSTs may not include this information everywhere it would be appropriate in the Bases for STS Rev. 0. ..... **C1**

Topic 13.1 referenced APOG comment **172**.

SPSB staff asked APOG to respond to the following query: "Regarding the state of the P-19 interlock Function above and below its setpoint. AP1000 Functional Diagram APP-PMS-J1-106 shows that the output of the RCS Hot Leg Pressure channel is logically reversed, so that if RCS wide range pressure is above the P-19 setpoint, the detector output is TRUE; but this signal is made FALSE by a NOT gate. What is the correct way to describe the state of P-19 above its setpoint? Enabled or disabled? As [P-11 logic is] depicted on APP-PMS-J1-111, this same question also applies to the P-11 interlock Function." Attendees agreed to defer this item to a future discussion, since it had no bearing on production of STS Rev. 0. ..... **E1, E2**

Topic 13.3 referenced the following APOG Comment Nos.

-	-	172	-	-	-	-	-	-	-
-	-	-	-	-	405	-	-	-	-
-	-	-	-	-	425	-	-	-	-
-	-	-	-	-	-	-	-	438	-

SPSB suggested that the Reactor Trip, P-4 interlock discussion in the "ASA, LCO, and Applicability" section of Bases for STS Specification 3.3.8 include a statement to make clear which of the four ESFAS Actuation Divisions are used in the actuation logic for the turbine trip on a reactor trip (P-4) actuation signal. Alternatively, such information can be provided in the Turbine Trip discussion for each of the three turbine trip actuation signals:

- Reactor Trip (P-4) (LCO 3.3.12)
- Feedwater Isolation – Manual Initiation (Table 3.3.9-1, Function 5)
- SG Narrow Range Water Level – High 2 (Table 3.3.8-1, Function 23)

Adding such information in the discussion of each ESF Actuation Function would be beneficial for understanding which ESF components would be disabled by an inoperable or bypassed ESFAS actuation division. APOG and SPSB agreed to consider this suggestion for a subsequent revision of the AP1000 STS. **E1, E2**

Topic 13.5 referenced the following APOG Comment Nos.

-	-	172	-	-	-	-	-	178	-
-	-	-	-	-	-	-	-	*188*	-
-	*191*	-	-	-	*195*	-	*197*	-	-
-	-	202	-	-	-	-	207	-	-

Regarding the STS SR 3.3.8.2 Channel Operational Test (COT) Bases proposed paragraph on the role of interlocks (added in support of relocating LCOs for interlock Functions), SPSB suggested adding the following sentence (shown as a markup of the second sentence) after the fourth sentence:

> This portion of the COT **also** ensures the associated Function is not **enabled** ~~bypassed~~ when required to be **blocked** ~~enabled~~ **by verifying the capability to manually bypass the Function as permitted by the interlock**.

SPSB staff asserted that the proposed sentence is complementary to the paragraph's second sentence and clarifies that the COT verifies both the enabling and blocking roles of the interlocks. The same sentence was also proposed for the same interlock paragraph in the Bases for the COT required by STS SR 3.3.10.2, SR 3.3.11.2, SR 3.3.13.2, and SR 3.3.14.2.

SPSB staff also suggested adding the following similar sentence (shown as a markup of the second sentence) after the fourth sentence of the interlock paragraph in the Bases for Channel Calibration required by SR 3.3.8.3, SR 3.3.10.3, SR 3.3.11.3, SR 3.3.13.3, and SR 3.3.14.3:

> This portion of the CHANNEL CALIBRATION **also** ensures the associated Function is not **enabled** ~~bypassed~~ when required to be **blocked** ~~enabled~~ **by verifying the capability to manually bypass the Function as permitted by the interlock**.

SPSB staff further suggested adding the following similar sentence (shown as a markup of the second sentence) after the fourth sentence of the interlock paragraph in the Bases for Actuation Logic Test required by STS SR 3.3.15.1 and SR 3.3.16.1:

> This portion of the ACTUATION LOGIC TEST **also** ensures the associated Function is not **enabled** ~~bypassed~~ when required to be **blocked** ~~enabled~~ **by verifying the capability to manually bypass the Function as permitted by the interlock**.

The APOG representatives disagreed that these SRs should include verification that the associated Function can also be blocked by the interlock. Accordingly, SPSB staff agreed to withdraw the proposed statements from consideration for STS Rev. 0. Attendees agreed to defer this item for consideration subsequent to STS Rev. 0. ..... **B2, E1**

Topic 13.6.b referenced the following APOG Comment Nos.

-	-	202	-	-	-	-	207	-	-

Last sentence of last paragraph of STS Bases for SR 3.3.15.1 and SR 3.3.16.1 ends with the phrase "which will report a failure within these cabinets to the operator"; SPSB staff requested that APOG explain to which specific cabinets "these cabinets" refer. Attendees agreed to defer this item for consideration subsequent to completion of STS Rev. 0. ..... **E2**

3. <u>ESFAS Function names – consistency between plant-specific TS, STS, FSAR, plant design documents, plant procedures, and labeling of control room flat screen controls (Topic 13.4)</u>

Topic 13.4 referenced the following APOG Comment Nos.

-	-	172	-	-	-	-	-	-	-
-	-	-	-	-	405	-	-	-	-
-	-	-	-	-	425	-	-	-	-
-	-	-	-	-	-	-	-	438	-

This topic applied to the Bases for AP1000 STS wherever an ESFAS instrument Function title is stated; it also applied to instrument Function titles such as in STS Table 3.3.8-1. SPSB staff observed that the VEGP Units 3 and 4 plant-specific TS Section 3.3, and FSAR Chapter 7 titles for various instrument Functions did not match the titles in unofficial plant design drawings and functional diagrams (material based on VEGP Units 3 and 4 information) used for AP1000

training at the NRC Technical Training Center. Such title mismatches included the following instrument Functions:

TS and FSAR title	Training Document title
CMT Level – Low 1	CMT Level – Low 3
CMT Level – Low 2	CMT Level – Low 6
Hot Leg Level – Low 1	Hot Leg Level – Low 2
Hot Leg Level – Low 2	Hot Leg Level – Low 4
SG NR Water Level – High 2	SG NR Water Level – High 3
SG NR Water Level – Low	SG NR Water Level – Low 2
SG WR Water Level – Low	SG WR Water Level – Low 2
Startup Feedwater Flow – Low	Startup Feedwater Flow – Low 2
Cold Leg Temperature – Low	Cold Leg Temperature – Low 2
Steam Line Pressure – Low	Steam Line Pressure – Low 2
Pressurizer Pressure – High	Pressurizer Pressure – High 2
Pressurizer Pressure – Low	Pressurizer Pressure – Low 2
Reactor Coolant Flow – Low	Reactor Coolant Flow – Low 2
RCP Bearing Water Temp – High	RCP Bearing Water Temp – High 2
RCP Speed – Low	RCP Speed – Low 2

APOG attendees explained that VEGP Units 3 and 4 and Summer Units 2 and 3 had recognized this issue and planned to resolve it through the license amendment process once detailed design is finalized. Attendees agreed to maintain the VEGP Units 3 and 4 plant-specific TS Amendment 13 nomenclature in STS Rev. 0; and make conforming changes in a subsequent revision. **E2**

4. Omission of P-9 (RCS Average Temperature) interlock from RTS and ESFAS Bases discussions (Topic 13.2)

Topic 13.2 referenced APOG comment **172**.

SPSB staff noted that the P-9 interlock Function (RCS Average Temperature) is not described in the Bases of GTS Subsections 3.3.1 and 3.3.2, nor in the Bases for VEGP Units 3 and 4 plant-specific TS Subsections 3.3.1 and 3.3.8. This interlock Function, when in the disabled state above its ~200°F setpoint, automatically unblocks (on a divisional basis) a number of ESFAS Functions (e.g., steam generator narrow and wide range water level instrument functions) and also automatically unblocks the Steam Generator Narrow Range Water Level – Low 2 Reactor Trip Function. The APOG attendees indicated that discussion of P-9 would be added to the Bases (and FSAR) following implementation by Westinghouse of a change to related Tier 2 information in the AP1000 DCD. Attendees agreed that conforming changes would be considered for the STS after completion of STS Rev. 0. ..... **E2**

5. Bases for Channel Check for excore nuclear instrument neutron flux indication overlap (Topic 29)

Topic 29 referenced comment **534**, which SPSB staff had added to the APOG-2014-008 comments.

SPSB staff suggested modifying the Channel Check Bases for STS SR 3.3.1.1, SR 3.3.2.1, and SR 3.3.3.1 to incorporate Babcock & Wilcox (BWOG) Inserts 1, 2, and 3, as appropriate, of TSTF-264-A, that Channel Check agreement criteria include an expectation of one decade of indication overlap when transitioning between neutron flux instrumentation (power range neutron flux, intermediate range neutron flux, and source range neutron flux). APOG attendees disagreed with adding this indication overlap criterion because it is not included in

Westinghouse STS (NUREG-1431, Rev. 4). SPSB staff agreed to withdraw the proposed change. **B2**

6. Bases for SR 3.3.1.9, Channel Calibration, do not describe how PRHR HX outlet isolation valve position indication is calibrated (Topic 12)

Topic 12 referenced APOG comment **136**.

Since STS SR 3.3.1.9, Channel Calibration, is specified for STS Table 3.3.1-1 Function 12, PRHR Actuation reactor trip Function (one or both PRHR HX discharge valves not fully closed), SPSB staff asserted that the Bases for this SR ought to explicitly discuss what a "calibration" of the PRHR HX discharge valve position indicators (four per valve) entails. APOG was requested to consider providing such a description or explain how the definition of Channel Calibration captures it. Attendees agreed to defer this item for consideration until after completion of STS Rev. 0. ..... **E1, E2**

7. Excore power range neutron flux detector calibration using incore neutron flux detectors (SR 3.3.1.5) only specified for Overtemperature ΔT RTS Function in Table 3.3.1-1. (Topic 12)

Topic 12 referenced APOG comment **136**.

SPSB staff requested APOG to explain why STS SR 3.3.1.5, Power Range Neutron Flux detector calibration, is only specified for the Overtemperature ΔT reactor trip Function in STS Table 3.3.1-1, since the Power Range Neutron Flux detectors are also inputs to other reactor trip Functions. It was agreed to defer this item for consideration until after completion of STS Rev. 0. ..... **E1, E2**

8. Discuss how Channel Operational Test (COT) is addressed for P-4 permissive logic; and Bases for SR 3.3.12.1, Trip Actuating Device Operational Test (TADOT) (Topic 13.6.a)

Topic 13.6.a referenced the following APOG Comment Nos.

-	-	-	-	-	-	-	-	178	-
-	-	-	193	-	-	-	-	-	-

SPSB staff asserted that the Bases for STS SR 3.3.12.1, TADOT of P-4, is unclear. SPSB staff requested that APOG explain why the Bases for this SR mention the [integrated protection cabinets] IPCs. Since P-4 supports several ESFAS functions by enabling them, as well as initiating other ESFAS functions, SPSB staff also requested that APOG explain why a COT, which would include verification of the proper functioning of P-4 for those enabled functions, is not specified in STS Subsection 3.3.12. Attendees agreed to defer this item for consideration until after completion of STS Rev. 0. ..... **E1, E2**

C. Section 3.4 Reactor Coolant System (RCS)

1. Bases for Subsections 3.4.4 and 3.4.8 — discussion of RCS flow requirements (Topics 14, 17)

Topic 14 referenced the following APOG Comment Nos.

-	-	-	-	-	-	-	-	-	239
-	-	-	253	-	-	-	-	-	-

Topic 17 referenced the following APOG Comment No.

-	-	252	-	-	-	-	-	-	-

○ **239** APOG proposed deleting the second paragraph of the "LCO" section of the Bases for GTS Subsection 3.4.4, "RCS Loops," which states:

> With the RTBs in the open position, the PLS is not capable of rod withdrawal; therefore only a minimum RCS flow of 3,000 gpm is necessary to ensure removal of decay heat from the core in accordance with LCO 3.4.8, Minimum RCS Flow.

Instead of deleting the second paragraph of the "LCO" section of the Bases for GTS Subsection 3.4.4, SPSB suggested moving it to the "Applicability" section of the Bases (with appropriate non-related consistency changes) Even though this statement does not directly relate to meeting LCO 3.4.4, it is appropriate to point out the RCS flow requirements when LCO 3.4.4 does not apply. To be consistent with a similar paragraph in the Bases for Subsection 3.4.5, "RCS Loops – MODE 3" of NUREG-1431, Rev. 4, the appropriate location of this paragraph is in the "Applicability" section of the Bases for AP1000 STS 3.4.4. The APOG representatives disagreed with this proposed addition to the "Applicability" section of the Bases for GTS Subsection 3.4.4. SPSB staff agreed to withdraw the suggestion. **B2**

○ **252** APOG proposed deleting the third paragraph of the "Background" section of the Bases for GTS Subsection 3.4.8, "Minimum RCS Flow." In addition, SPSB staff proposed adding the following paragraph in its place, to explain why LCO 3.4.8 requires one RCP to be in operation.

> **The purpose of this LCO is to ensure at least one RCP is in operation with a total flow through the core of at least 3,000 gpm, which is the minimum flow necessary to ensure adequate mixing of primary system coolant with makeup coolant inadvertently injected at boron concentrations less than required to maintain the specified SDM.**

APOG representatives pointed out that the changes to the first paragraph in the "LCO" section of Bases for GTS Subsection 3.4.8, which were proposed in comment **253,** already provide the information included by the above paragraph. SPSB staff agreed to withdraw the proposed paragraph. **B2**

○ **253** APOG proposed revising the first paragraph in "LCO" section of Bases for GTS Subsection 3.4.8, "Minimum RCS Flow," to describe the minimum core flow requirement of LCO 3.4.8, as follows:

> The requirement that **at least one RCP be in operation with** a minimum ~~RCS~~ **core** flow **of ≥ 3,000 gpm** ~~be maintained~~ provides assurance that in the event of an inadvertent BDE, the diluted water will be properly mixed with the primary system coolant, and the increase in core reactivity will be detected by the source range **neutron flux** instrumentation. **A core flow of < 3,000 gpm is considered equivalent to no RCP in operation.**

Note that additional editorial changes proposed by SPSB staff that are denoted by bold green will be included in STS Rev. 0. ..... **C1**

2. Bases for Subsection 3.4.7 discussion of RCS steady-state conditions (Topic 16)

Topic 16 addressed the following APOG Comment Nos.

-	-	-	-	-	245	-	247	-	-
-	-	-	-	-	*255*	-	-	258	-
260	-	-	-	-	-	-	-	-	-

- **245** APOG proposed revising the description of RCS "steady state operation" in Bases for SR 3.4.7.1 to match its definition in DCD Rev. 19, Section 5.2.5.3.2, second paragraph, third sentence, which states:

  > Steady-state is defined as stable reactor coolant system pressure, temperature, power level, pressurizer level, and reactor coolant drain tank and in-containment refueling water storage tank levels.

  Accordingly, APOG-2014-008 comment **245** proposed changing the fourth paragraph of the Bases for GTS SR 3.4.7.1, as indicated:

  > Steady state operation is required to perform a proper inventory balance since calculations during maneuvering are not useful. For RCS operational LEAKAGE determination by inventory balance, steady state is defined as stable RCS pressure, temperature, power level, pressurizer **level,** and ~~makeup tank levels, and with no makeup or letdown~~**reactor coolant drain tank and in-containment refueling water storage tank levels**.

  SPSB staff suggested additional changes relating to description of "steady state operation" for (1) RCS operational LEAKAGE determination by inventory balance, and (2) RCS primary to secondary LEAKAGE determination.

  > . . . steady-state is defined as stable ~~reactor coolant system~~ **RCS** pressure, **average** temperature, **and makeup and letdown flows, reactor** power level, pressurizer level, and reactor coolant drain tank and in-containment refueling water storage tank levels.

  SPSB staff noted that since AP1000 controls pressurizer level in a band, letdown and makeup flow is infrequent compared to a 4-loop Westinghouse PWR; so those flows may not be needed in the description:

  > . . . steady-state is defined as stable ~~reactor coolant system~~ **RCS** pressure **and average** temperature, **reactor** power level, pressurizer level, and reactor coolant drain tank and incontainment refueling water storage tank levels; **steady-state also means no makeup flow and no letdown flow**.

  Attendees agreed to consider whether additional changes to this definition, such as suggested above, are warranted following completion of STS Rev. 0. ..... **E2**

  Attendees agreed that the Bases of AP1000 STS Rev. 0 should match the above quoted FSAR description, as proposed by the APOG in comment **245** in the Bases for STS SR 3.4.7.1. ..... **C1**

- **247** Attendees agreed that the Bases of AP1000 STS Rev. 0 should match the above quoted FSAR description. As proposed by the APOG in comment **247**, the second sentence of the second paragraph of the Bases for STS SR 3.4.7.2, states:

> … For RCS primary to secondary LEAKAGE determination, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and **reactor coolant drain tank and in-containment refueling water storage tank levels,** ~~makeup tank levels,~~ **and** makeup and letdown~~, and RCP seal injection and return~~ flows.

By including the criteria of "stable makeup and letdown flows" the sentence does not conform to the above quoted FSAR description of RCS steady state operation. SPSB staff proposed the following markup of the GTS bases sentence:

> … For RCS primary to secondary LEAKAGE determination, steady state is defined as stable RCS pressure, temperature, power level, pressurizer **level,** and **reactor coolant drain tank and in-containment refueling water storage tank levels**~~, makeup tank levels, **and** makeup and letdown, and RCP seal injection and return flows~~.

Since this markup is consistent, the indicated changes will be included in Bases for STS SR 3.4.7.2. ..... **C1**

- ***255*** In Specification 3.4.9, Applicability Note 1 is corrected by replacing "MODE 1 with RTP > 20%" with "MODE 1 with THERMAL POWER > 20% RTP." **C1**
- **258** Bases for Specification 3.4.9 – RCS "steady state operation"; attendees agreed to match FSAR Section 5.2.5.3.2 description in the first paragraph of the Bases for Required Actions B.1 and B.2 in STS Rev. 0. ..... **C1**
- **260** Bases for Specification 3.4.9 – RCS "steady state operation"; attendees agreed to match FSAR Section 5.2.5.3.2 description in the third paragraph of the Bases for Required Actions C.1.1, C.1.2, and C.2 in STS Rev. 0..... **C1**

3. <u>"References" section of Bases for Subsection 3.4.12 (Topic 18)</u>

Topic 18 referenced APOG comment **271**.

SPSB staff requested APOG to consider whether Reference 1, "AP1000 Probabilistic Risk Assessment, Appendix A," in the "References" section of the Bases for GTS Subsection 3.4.12 should be modified to reflect a plant-specific version? (Note that this question applies to all subsections that include this reference.) APOG attendees agreed to followup on this question following completion of STS Rev. 0. ..... **E2**

D. Section 3.6 Containment

1. <u>Use of terms "isolation valves" and "isolation devices" in Subsection 3.6.3 and other Specifications for containment isolation valves in closed systems. (Topic 19)</u>

Topic 19 referenced the following APOG Comment Nos.

-	-	-	343	344	345	-	-	-	-

SPSB staff had proposed changes in the Bases for Subsection 3.6.3 to make consistent the use of terms denoting containment isolation valves, isolation devices, and blind flanges in pipes that penetrate containment. APOG attendees disagreed with these changes. SPSB staff withdrew the changes. **B2**

2. Bases for Subsections 3.4.13, 3.6.6 and 3.6.7 – terminology (Topic 20)

Topic 20 referenced the following APOG Comment Nos.

-	-	-	-	-	*276*	-	-	-	-
-	-	-	-	-	-	-	-	328	-
-	-	-	333	-	-	-	-	-	-
370	-	-	-	-	-	-	377	-	-

SPSB proposed the following wording changes, by comment number:

- **328** (also **276**, **333, 370, 377**) APOG had proposed replacing "reactivity control assemblies" with "control rods" in STS 3.4.13 Bases for Required Actions C.1 and C.2 and Required Actions D.1 and D.2 in comment **276**; STS 3.5.7 Bases for Required Actions F.1 and F.2 in comment **328;** STS 3.5.8 Bases for Required Actions F.1 and F.2 in comment **333**; STS 3.6.7 Bases for Required Actions B.1.1, B.1.2, and B.2 in comment **377**. For consistency, SPSB proposed the same change in STS 3.6.6 Bases for Required Actions E.1, E.2, F.1 and F.2 in response to comment **370,** as shown in the following markup. **C1**

  > . . . Sources of positive reactivity addition include boron dilution, withdrawal of ~~reactivity~~ control ~~assemblies~~ **rods**, and excessive cooling of the RCS.

- **370** In first paragraph of Bases for Required Actions E.1 and E.2 of STS Subsection 3.6.6 (previously included in Bases for GTS 3.6.7, "Passive Containment Cooling System (PCS) – Shutdown"), SPSB staff proposed replacing "increase the RCS level to a pressurizer level" with "increase RCS inventory by establishing a pressurizer level"; "close the RCS" with "close the RCS pressure boundary"; "in this case" with "in this condition"; and "action to suspend" with "action to immediately suspend," as indicated in the following markup by the lined-out orange, and bold green text.

  > . . . With the RCS pressure boundary open ~~and/~~or pressurizer level < 20%, action must be initiated, immediately, to increase ~~the~~ RCS **inventory** ~~level to~~ **by establishing** a pressurizer level ≥ 20% and to close the RCS **pressure boundary** so that ~~the~~ Passive Residual Heat Removal Heat Exchanger (PRHR HX) operation is available. In this **condition** ~~case~~, the time to RCS boiling is maximized by maximizing ~~the~~ RCS inventory and maintaining RCS temperature as low as practical. Additionally, action to **immediately** suspend positive reactivity additions is required to ensure that the SDM is maintained. Sources of positive reactivity addition include boron dilution, withdrawal of ~~reactivity~~ control ~~assemblies~~ **rods**, and excessive cooling of the RCS.

  SPSB staff will include these changes in STS Rev. 0. ..... **C1**
  APOG representatives agreed to consider similar changes post STS Rev. 0. ..... **E2**

- **370** In second paragraph of Bases for Required Actions F.1 and F.2 of Subsection 3.6.6, SPSB staff proposed replacing "alternative cooling capabilities" with "alternate cooling capabilities." **B1, E2**

- **370** In first paragraph of Bases for Required Actions F.1 and F.2 of STS Subsection 3.6.6 (previously included in Bases for GTS 3.6.7), SPSB staff proposed replacing "increase the refueling cavity water level" with "increase RCS inventory by establishing a refueling cavity water level"; replacing "in this case" with "in this condition," and replacing "action to suspend" with "action to immediately

suspend," as indicated in the following markup by the lined-out orange, and bold green text.

> . . . Action must be initiated, immediately, to increase **RCS inventory by establishing a** ~~the~~ refueling cavity water level ≥ 23 feet above the top of the reactor vessel flange. In this **condition** ~~case~~, the time to RCS boiling is maximized by maximizing ~~the~~ RCS inventory and maintaining RCS temperature as low as practical. Additionally, action to **immediately** suspend positive reactivity additions is required to ensure that the SDM is maintained. Sources of positive reactivity addition include boron dilution, withdrawal of ~~reactivity~~ control ~~assemblies~~ **rods**, and excessive cooling of the RCS.

SPSB staff will include these changes in STS Rev. 0. ..... **C1**
APOG representatives agreed to consider similar changes post STS Rev. 0. ..... **E2**

- **377** In the GTST for GTS 3.6.8, "Containment Penetrations," SPSB staff had proposed to revise the second paragraph of the GTS 3.6.8 (STS 3.6.7) Bases for Required Actions B.1.1, B.1.2, and B.2, as indicated by the lined-out red and bold blue text in the following markup. In comment **377** the APOG proposed revising the last sentence, as indicated by the lined-out black and bold black text. In the APOG comment draft resolutions (Background Document 3), SPSB staff proposed additional changes for consistency with other changes as proposed in comment **370**, as indicated by the lined-out blue, lined-out orange, and bold green text. In addition, SPSB staff proposed splitting the paragraph into three, as shown.

> In MODE 5, action must be initiated, immediately, to ~~be in MODE 5 with~~ **establish** a pressurizer level ≥ 20% ~~and to close~~ **with** the RCS **intact** so that ~~the~~ PRHR HX operation is available. **The time to RCS steaming to containment is maximized by maximizing RCS inventory, and allowing PRHR HX operation.**
>
> In MODE 6, action must be initiated, immediately, to ~~be in MODE 6 with the refueling~~ **increase ~~the~~ RCS inventory by establishing a** ~~reactor~~ **refueling** cavity water level ≥ 23 feet above the top of the reactor vessel flange. The time to RCS steaming to containment is maximized by maximizing RCS inventory~~, and allowing PRHR HX operation~~.
>
> Additionally, **in either MODE** action to **immediately** suspend positive reactivity additions is required to ensure that the SDM is maintained. Sources of positive reactivity addition include boron dilution, withdrawal of ~~reactivity~~ control **rods** ~~assemblies~~, and excessive cooling of the RCS.

SPSB staff will include these changes in STS Rev. 0. ..... **C1**
APOG representatives were requested to consider similar changes post STS Rev. 0. ..... **E2**

3. <u>Bases for SR 3.6.9.2 (Topic 21)</u>

Topic 21 referenced APOG comment **378**.

APOG proposed deleting the last sentence (denoted below by dark red font) of the last paragraph of the Bases for GTS 3.6.9.2 (STS SR 3.6.8.2) with the following rationale: "This sentence, describing compliance to the SRP, is confusing and not necessary in this context.

The paragraph begins with "Agitation of the test solution is prohibited," which is not related to ensuring compliance with the SRP." The last paragraph states:

> Agitation of the test solution is prohibited, since an adequate standard for the agitation intensity cannot be specified. The test time of 4 hours is necessary to allow time for the dissolved TSP to naturally diffuse through the sample solution. In the post LOCA sump area, rapid mixing would occur due to liquid flow, significantly decreasing the actual amount of time before the required pH is achieved. This would ensure compliance with the Standard Review Plan requirement of a pH ≥ 7.0 by the onset of recirculation after a LOCA.

NUREG-0800 Standard Review Plan (SRP) Section 6.5.2, page 6.5.2-5, Section II. ACCEPTANCE CRITERIA, SRP Acceptance Criteria paragraph 1.G. Design Requirements for Fission Product Removal states:

> Long-term iodine retention may be assumed only when the equilibrium sump solution pH, after mixing and dilution with the primary coolant and ECCS injection, is above 7. This pH value should be achieved by the onset of the spray recirculation mode.

SPSB staff asserted that the word "This" in the last sentence does not refer to agitation but to "rapid mixing" in the [containment] sump during post LOCA conditions. Beginning with the third sentence of the Bases last paragraph, SPSB suggested the following revision, as a separate paragraph, to describe how TSP baskets ensure post-accident sump water will satisfy the pH limit, consistent with the FSAR design description.

> In the post LOCA sump area, rapid mixing would occur due to liquid flow, significantly decreasing the actual amount of time before the required pH is achieved. **Good mixing with the sump water is expected due to both basket construction and because the baskets are placed in locations conducive to recirculation flows post-accident.** This **rapid mixing** would ensure ~~compliance with~~ **satisfying** the Standard Review Plan ~~requirement~~ **acceptance criterion** of **achieving** a pH ≥ 7.0 **in the containment sump water inventory** by the onset of recirculation after a LOCA.

SPSB staff decided to accept the proposal to delete the last sentence. **B2**
APOG representatives agreed to consider the staff's proposal post STS Rev. 0. ..... **E2**

E. Section 3.7 Plant Systems

1. Figures B 3.7.6-1 and B 3.7.6-2 (Topic 22)

Topic 22 referenced the following APOG Comment Nos.

-	-	-	-	-	-	-	-	-	*419*
420	-	422	423	-	-	-	-	-	-

APOG proposed revising GTS Bases Figures B 3.7.6-1 and B 3.7.6-2 to (1) add "Acceptable" region labels, and (2) swap the order of the Figures to align with Writer's Guide convention. SPSB staff requested that APOG supply updated Bases figures in Word format. Attendees agreed to implement change (2) in STS Rev. 0. ..... **C1**
Attendees agreed to implement change (1) post STS Rev. 0. ..... **E2**

2. Use of acronyms for loss of feedwater (LOF), feedwater line break (FLB), and steam line break (SLB) (Topic 23)

Topic 23 referenced the following APOG Comment Nos.

-	-	-	-	*424*	425	-	-	-	-
-	-	-	-	-		-	-	438	439

- **424** In the Background" section of the Bases for Subsection 3.7.7, APOG had proposed to capitalize event names and define acronyms for Feedline Break (FLB), Steam Line Break (SLB); SPSB staff also proposed to capitalize Steam Generator Tube Rupture (SGTR). **B1**
- **425** In "ASA" and "Applicability" sections of the Bases for Subsection 3.7.7, APOG had proposed revising the use of the acronyms "FLB" for Feedwater Line Break [also Feedline Break], and "SLB" for Steam Line Break in accordance with Writer's Guide: after an acronym is defined, use it exclusively. **C1**
- **438** (comment **439** also) In the "LCO" section of Bases for STS Subsection 3.7.10, SPSB proposed to revise third paragraph with a new acronym, "LOF" for loss of feedwater. APOB disagreed with using "LOF"; SPSB withdrew the proposal. **B2**
- **438** (comment **424** also) SPSB staff also proposed that STS Bases not use the GTS term "Feedline Break" as a synonym for "Feedwater Line Break (FLB)." APOB disagreed with not using "Feedline Break"; SPSB withdrew the proposal. **B2**

3. Bases for Subsection 3.7.10 regarding actuation instrumentation Functions for steam generator PORV, PORV block valve, and blowdown isolation valves (Topic 24)

Topic 24 referenced APOG comment **438**.

SPSB staff noted that the "Background," "Applicable Safety Analyses," "LCO," and "Actions" sections of the Bases for Subsection 3.7.10 indicate that the PORV block valves and the inboard isolation valve on each SG blowdown line are also designated containment isolation valves. However, the PORV block valves do not close on a containment isolation signal. SPSB asserted that the Bases ought to explain why the PORV block valves do not close on a containment isolation signal. SPSB staff withdrew proposed changes to insert statements regarding the supporting ESFAS isolation signals for these valves. **B2**
APOG attendees agreed to consider this suggestion post STS Rev. 0. ..... **E2**

F. Section 3.8 Electrical Power Systems

1. TSTF-500 (Topic 4)

Topic 4 referenced the following APOG Comment Nos.

-	-	-	-	-	-	16	-	-	-
-	-	-	-	-	-	-	-	478	-
480	*481*	-	-	-	-	-	-	-	-

SPSB staff had proposed to incorporate TSTF-500 (approved in 2009) into the AP1000 STS; affected Subsections were LCO 3.8.1, "DC Sources – Operating"; LCO 3.8.2, "DC Sources – Shutdown"; LCO 3.8.7, "Battery Parameters"; and Specification 5.5.11, "Battery Monitoring and Maintenance Program." In comment **16,** APOG proposed omitting all changes related to TSTF-500 from the AP1000 STS Rev. 0, since all provisions related to TSTF-360 (approved in 2000) had been appropriately incorporated into GTS and Bases of AP1000 DCD Rev. 19, without any bracketed COL items.

The GTS requirements for the DC electrical power system Class 1E batteries and battery chargers were derived from corresponding provisions in Revision 2 of the operating reactor STS for Westinghouse plants (i.e., consistent with design of VEGP Unit 1), but have differences to account for the AP1000 design as compared to an operating Westinghouse plant. Since TSTF-360 was incorporated into Revision 2 (2001) of the STS for Westinghouse plants, the GTS are consistent with the provisions for Class 1E batteries and battery chargers approved in TSTF-360. Since Revisions 3.0 (2004) and 3.1 (2005) of STS for Westinghouse plants made no changes in the Revision 2 provisions for batteries and battery chargers, SPSB staff only considered TSTF-500 changes that made reference to STS Revision 3.0 or 3.1, as appropriate. TSTF-500, Revision 2, was incorporated in Revision 4.0 (2012) of STS for Westinghouse plants.

APOG pointed out in comment **16** that since the AP1000 DC [electrical power] system design differs from the design assumed for the standard plant [i.e., VEGP Unit 1] basis for TSTF-500, "the changes and possible options provided in TSTF-500 are not necessarily applicable to the AP1000 design." SPSB staff agreed that some, but not all GTST proposed changes based on TSTF-500 should be withdrawn because they are not appropriate for AP1000. The changes to be withdrawn were the following:

a. <u>TSTF-500 changes withdrawn from GTST for Subsection 3.8.1, "DC Sources – Operating"</u>

- Change in Completion time from "7 days" to "[72] hours" for Required Action B.3 and associated Bases; and addition of associated Reviewer's Note in Bases for Required Action B.3 that discusses conditions for changing the Completion Time from "72 hours" to "7 days." (Completion Time values were finalized in AP1000 DCD Rev. 19.) **C1**
- Addition of Brackets around the following provisions in the ACTIONS table and associated Bases: ACTIONS C and D; Completion Times for Required Actions C.1 and D.1. (Completion Time values were finalized in AP1000 DCD Rev. 19.) **C1**
- Addition of discussions justifying the use of 2 amps value in Bases for Required Actions A.2 and B.2; for example:

  > Required Action B.2 requires that the battery float current be verified as less than or equal to 2 amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it ~~has~~ **is** now ~~been~~ fully ~~recharged~~ **capable of supplying the maximum expected load requirement. The 2 amp value is based on returning the battery to 95% charge and assumes a 5% design margin for the battery**. If at the expiration of the initial 24 hour period the battery float current is not less than or equal to 2 amps this indicates there may be additional battery problems and the battery must be declared inoperable.

  Since APOG representatives could not confirm during the 3/26/15 teleconference that the revised justification is technically accurate for the AP1000 battery design, SPSB staff agreed to defer consideration of this change until after STS Rev. 0..... **C1, E1, E2**
- Addition of the phrase "considering the risk of operation with one or more battery charger[s] in one division inoperable" in discussion justifying 7 day Completion Time in Bases for Required Actions A.3 and B.3. Since this proposed addition is found in neither TSTF-360 nor TSTF-500, teleconference participants agreed to remove it. **C1**
- Addition of a Reviewer's Note to Bases for Required Action D.1 regarding different Completion Times for restoring an inoperable battery and an inoperable battery charger to operable status. (Completion Time value was finalized in AP1000 DCD Rev. 19.) .. **C1**

b. TSTF-500 changes withdrawn from GTST for Subsection 3.8.2, "DC Sources – Shutdown"

- Addition of Reviewer's Note to Bases for new Required Action A.3 that discusses conditions for changing the Completion Time from "72 hours" to "7 days." (Completion Time value was approved in VEGP Units 3 and 4 Amendment 13.) **C1**
- In ACTIONS table, the addition of brackets around (1) ACTION A, (2) float current value of 2 amps in Required Action A.2, and (3) the 72 hour Completion Time of Required Action A.3. (ACTION A was approved in VEGP Units 3 and 4 plant-specific TS in Amendment 13.) **C1**
- Addition of brackets to the float current value of 2 amps in Bases for Required Action A.2, and the 72-hour Completion Time value in the Bases for Required Action A.3. (Bases match values approved in VEGP Units 3 and 4 Amendment 13.) **C1**

c. TSTF-500 changes withdrawn from GTST for Subsection 3.8.7, "Battery Parameters"

- Revise LCO statement to say "Battery Parameters for Division A, B, C, and D DC electrical power subsystem batteries" instead of just "Battery Parameters for Division A, B, C, and D batteries." (Although added by TSTF-360, AP1000 nomenclature for the DC electrical power subsystem makes the suggested change unnecessary.) **C1**
- Addition of brackets around the value for battery cell float voltage (e.g., [2.07] V) whenever the cell float voltage is stated in the Specification, Bases, or both. The battery cell float voltage is specified in Conditions, Required Actions, Surveillance Requirements, and in the Bases. (Minimum battery cell float voltage value was finalized in AP1000 DCD Rev. 19.) **C1**
- Addition of brackets around the value for battery float current (e.g., [2] amps) whenever the battery float current is stated in the Specification, Bases, or both. The battery float current is specified in Conditions, Required Actions, Surveillance Requirements, and in the Bases. (Battery float current value was finalized in AP1000 DCD Rev. 19.) **C1**

The following GTST proposed changes, which were based on TSTF-500, should not be withdrawn because they are appropriate. These changes are the following:

a. TSTF-500 changes being included in Subsection 3.8.1, "DC Sources – Operating"

- In the "References" section of the Bases, Reference 8 (IEEE 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead Acid Batteries for Stationary Applications," Institute of Electrical and Electronic Engineers, June 1986.) is deleted; References 9, 10, and 11 are renumbered 8, 9, and 10. Reference to IEEE-450 (Ref. 8) in the Bases for SR 3.8.1.1 is also deleted. References to renumbered references in Bases for Required Action F.1, SR 3.8.1.2, and SR 3.8.1.3 are also renumbered. (AP1000 STS should reference NRC endorsed version of IEEE-450.) ..... **A**

b. TSTF-500 changes being included in Subsection 3.8.2, "DC Sources – Shutdown"

- Addition of new Condition A for "One or more required battery chargers in one division inoperable." The TSTF-500 brackets around ACTION A are omitted. (ACTION A was approved in VEGP Units 3 and 4 plant-specific TS in Amendment 13.) ..... **A**
- Addition of Required Actions A.1, A.2, and A.3. The TSTF-500 brackets around the Required Action A.2 value for battery float current (≤ 2 amps), and the Required Action A.3 Completion Time (72 hours) are omitted. (Battery float current value was finalized in AP1000 DCD Rev. 19.) (Required Action A.3 Completion Time value was approved in VEGP Units 3 and 4 plant-specific TS in Amendment 13.) ..... **A**
- Renumbering of GTS 3.8.2 Condition A and associated Required Actions A.1 and A.2 (A.2.1 through A.2.5) as STS 3.8.2 Condition B and Required Actions B.1 and B.2 (B.2.1

through B.2.4). Note that GTS 3.8.2 Required Action A.2.1 (suspend Core Alterations) is deleted in accordance with TSTF-471. (ACTION A and renumbering were approved in VEGP Units 3 and 4 plant-specific TS in Amendment 13.) ..... **A**

- Revision to GTS 3.8.2 Condition A (denoted here by italics) to account for the new Condition A, so that STS 3.8.2 Condition B states "One or more required DC electrical power subsystems inoperable *for reasons other than Condition A. OR Required Action and associated Completion Time of Condition A not met.*" The TSTF-500 brackets around the added text are omitted. (ACTION B, as renumbered, was approved in VEGP Units 3 and 4 plant-specific TS in Amendment 13.) ..... **A**
- Revision of the "Actions" section of the Bases to address new Required Actions A.1, A.2, and A.3, renumbered Required Actions B.1 and B.2 (B.2.1 through B.2.4), and Condition B as revised. (Bases match action requirement changes approved in VEGP Units 3 and 4 plant-specific TS in Amendment 13.) ..... **A**

c. TSTF-500 changes being included in Subsection 3.8.7, "Battery Parameters"

- Removal of Note to SR 3.8.7.6 (Approved in VEGP Units 3 and 4 plant-specific TS in Amendment 13.) ..... **A**

d. TSTF-500 changes being included in Subsection 5.5.11, "Battery Monitoring and Maintenance Program"

- The Battery Monitoring and Maintenance Program is revised to reference IEEE-450-2002 and Regulatory Guide 1.129, Revision 2 (with exceptions), to require actions to equalize and test battery cells when the electrolyte level drops below the top of plates instead of when the electrolyte level drops below the minimum established design limit, to require actions to verify that the voltages of remaining cells are > 2.07 V when one or more cells have been found with voltages < 2.13 V. The Battery Monitoring and Maintenance Program is also revised to state the license controlled program will contain limits on average electrolyte temperature, battery connection resistance, and battery terminal voltage; and a requirement to obtain specific gravity readings of all cells at each discharge test, consistent with manufacturer recommendations. (AP1000 STS should reference NRC endorsed version of IEEE-450, and have a program specification that is consistent with it.) **B1**

As describe above, SPSB staff parsed TSTF-500 changes, which they had proposed in Revision 0 of the GTSTs, between those to be withdrawn and those to be included, based on suitability to existing GTS requirements, VEGP Units 3 and 4 plant-specific TS, and the AP1000 design – without 'imposing' more restrictive requirements in the STS than are currently specified for Vogtle Units 3 and 4 and Summer Units 2 and 3 plant-specific TS with the TSU license amendment (Amendment 13). That is, TSTF-500 would be "partially" implemented and would omit optional provisions, i.e., no brackets and no reviewer's notes, while still upgrading Specification 5.5.11 to provide a common starting point for future STS NUREG changes to battery provisions. **B1**

- **480** APOG had proposed changes to the first sentence of the "Background" section of the Bases for Subsection 3.8.7, as shown by red and blue colored text below, "for consistency with the TS requirement(s) being discussed in the TS Bases. Supplying additional information, deleting statements inconsistent with the TS, or correcting obvious misstatements reduces potential for misunderstanding and misapplication."

  SPSB staff proposed additional changes to the first and third sentences of the "Background" section of the Bases for Subsection 3.8.7, as indicated as shown by orange and green colored text below (existing markup proposed in the GTST is shown in black), for clarification and consistency with incorporating the "Battery

Monitoring and Maintenance Program" and attendant Bases changes to the "Battery Parameters" STS Subsection, proposed by TSTF-500.

> **Specification** ~~LCO~~ 3.8.7, **"**Battery Parameters,**"** delineates the limits on electrolyte temperature, **electrolyte** level, float voltage**, and float current** ~~and specific gravity~~ for the DC power source batteries. . . . In addition to the limitations of this Specification, ~~the licensee controlled program also implements a program specified in~~ **Technical** Specification 5.5.11**, "Battery Monitoring and Maintenance Program," requires implementing a licensee controlled program** for monitoring various battery parameters**, including specific gravity** ~~that is based on the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice For Maintenance, Testing, And Replacement Of Vented Lead-Acid Batteries For Stationary Applications" (Ref. 3)~~.

Although these additional proposed edits were not specifically discussed during the 2/25/15 meeting and the 3/26/15 teleconference, SPSB staff will include the edits in STS Rev. 0. ..... **B1**

2. Electrical power distribution component terminology (Topics 25 first and fifth bullets, 26, 27 first bullet)

Topic 25 first bullet referenced the following APOG Comment Nos. (Note that comment **438** was mistakenly listed with Topic 25 first bullet in the meeting agenda and list of APOG discussion topics.)

-	-	-	-	-	-	-	457	-	-
-	-	-	-	464	465	466	467	-	-
-	471	-	-	474	-	-	-	-	-

Topic 25 fifth bullet referenced the following APOG Comment No.

-	-	-	-	464	-	-	-	-	-

Topic 26 referenced the following APOG Comment No.

-	-	-	-	-	-	-	467	-	-

Topic 27 first bullet referenced the following APOG Comment Nos.

-	-	-	-	-	465	-	467	-	-
-	-	-	-	474	-	-	-	-	-

a. Topic 25 first bullet

In Amendment 13, the VEGP Units 3 and 4 plant-specific TS (PTS) were revised to address inconsistencies, as described by VEGP LAR 12-02, DOC A112: Revision of GTS/PTS 3.8.5, "Distribution Systems – Operating," and GTS/PTS 3.8.6, "Distribution Systems - Shutdown," to delete "bus" from the name for subsystem "AC instrument and control" and to specify the two [AC instrument and control subsystem; DC subsystem] electrical power distribution subsystems in a list format. DOC A112 also revised wording such that the statement of a Condition ends with "Division inoperable" or "Divisions inoperable", and the statement of a Required Action ends with "Division to OPERABLE status." (DOC A112 was revised in response to NRC RAI letter No. 01, Question 16-16.)

SPSB staff noted that Subsections 3.8.3, "Inverters – Operating" and 3.8.4, "Inverters – Shutdown" appeared to have inconsistencies regarding component and subsystem terminology for the Class 1E DC electrical power distribution system and the Class 1E AC Instrument and

Control electrical power distribution system. Accordingly, SPSB staff proposed changes to Subsections 3.8.3 and 3.8.4 based on DOC A112, for consistency.

In APOG-2014-008 comment **457**, the AP1000 Utilities objected to replacing "bus[es]" with "electrical power distribution subsystem[s]" or "division" in Subsections 3.8.3 and 3.8.4. The comment asserted that: ". . . the use of 'bus[es]' [in these subsections] more naturally aligns with specific verifications of bus attributes. These uses of 'bus[es]' do not present confusion, and are consistent with the presentation in NUREG-1431." SPSB staff agreed that in most locations in Subsection 3.8.3 and 3.8.4, the term "bus" is more appropriate than the phrase "electrical power distribution subsystem." SPSB staff agreed to retain "bus" or "buses" where appropriate. **C1**

SPSB staff found it appropriate to replace "bus" or "buses" with "division[s]" or "electrical power distribution subsystem[s]," or use them together, as follows: **C1**

- **457** (also **464**) SPSB staff had proposed to insert "Class 1E" before "DC" and before "AC instrument and control" in Specification 3.8.3, LCO Notes, Required Action A.1 Note, and SR 3.8.3.1; these changes were withdrawn as unnecessary detail. **C1**
- **457** SPSB staff had proposed revising the Specification 3.8.3 Required Action A.1 Note as shown in the following markup. SPSB staff withdrew the lined out changes. .. **C1**

  A.1 ----------NOTE----------
  Enter applicable Conditions and Required Actions of LCO 3.8.5 "Distribution Systems – Operating" ~~for any division~~ with ~~an~~ any **AC** instrument and control bus de-energized.

- **457** SPSB staff proposed revising SR 3.8.3.1 and SR 3.8.4.1 as shown in the following markups. The changes convey that the SR applies to <u>all of the inverter-supplied "vital" ac buses (panels)</u> in each required division of the Class 1E AC instrument and control electrical power distribution subsystem. That is, an AC instrument and control bus is required to be operable if its division is required to be operable. During the 3/26/15 teleconference, the APOG participants objected to the changes as unnecessary differences from the Westinghouse STS, and stated that such changes should be coordinated across all applicable STS NUREGs. SPSB staff agreed to withdraw the proposed edits..... **C1**

  SR 3.8.3.1 Verify correct inverter voltage, frequency, and alignment to **<u>Withdrawn</u>** ~~required~~ ~~**the associated**~~ required AC instrument and control buses. **<u>Withdrawn</u>** ~~**in each required division of the AC instrument and control electrical power distribution subsystem.**~~

  SR 3.8.4.1 Verify correct inverter voltage, frequency, and alignment to **<u>Withdrawn</u>** ~~required~~ ~~**the associated**~~ required AC instrument and control buses. **<u>Withdrawn</u>** ~~**in each required division of the AC instrument and control electrical power distribution subsystem.**~~

- **457** SPSB staff had proposed changes to the "Background," "ASA," "LCO," "Actions," and "SRs" sections of the Bases of Subsections 3.8.3 and 3.8.4; these changes had proposed replacing "bus" or "buses" as described above, but were withdrawn..... **C1**
- **457** (also **464**) SPSB staff noted that LCO 3.8.3 Note 1, revised as proposed by comments **457** and **464**, and shown below, uses "associated **AC** instrument and

control bus" and Note 2 uses "AC instrument and control buses." However, Table B 3.8.5-1, "Class 1E AC and DC Electrical Power Distribution System," revised as proposed by comment **474**, uses "AC Instrumentation and Control ~~Buses~~ **Panels**." Based on this apparent inconsistency, SPSB staff asked whether Notes 1 and 2 should use "panel[s]" or "distribution panel[s]" in place of "bus[es]."

During the teleconference on 3/26/15, which continued the meeting of 2/25/15, participants agreed to continue to use "bus" even when "panel" may be appropriate, since AP1000 DCD Fig. 8.3.2-2 indicates that "bus" is equivalent to "panel." It was also agreed to insert "AC" in Note 1. ..... **C1**

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

One inverter may be disconnected from its associated DC bus for ≤ 72 hours to perform an equalizing charge on its associated battery, providing:

1. The associated **AC** instrument and control bus is energized from its Class 1E ~~constant voltage source~~ **voltage regulating** transformer; and
2. All other AC instrument and control buses are energized from their associated OPERABLE inverters.

○ **465** In this comment, APOG had proposed clarifying the "Background" section of the Bases for Subsection 3.8.5, "Distribution Systems – Operating," as shown by the red-colored and blue-colored text in the first, second, and third paragraphs below. SPSB staff proposed additional clarifications, as shown by green-colored and orange-colored text, for consistency with other APOG proposed changes and to address a general concern about inconsistent terminology for the Class 1E electrical power distribution system in Specifications and Bases:

— First paragraph —

The onsite Class 1E ~~and~~ DC and **uninterruptible power supply (UPS)** electrical power distribution system is divided by division into four independent **divisions of** AC and DC electrical power distribution subsystems (Divisions A, B, C, and D).

— Second paragraph, first through fourth sentences —

The Class 1E AC distribution Divisions A and D each consists of one 208/120 V **instrument and control** bus **(distribution panel)**. The Class 1E AC distribution Divisions B and C each consists of two 208/120 V **instrument and control** buses **(distribution panels)**. The **AC** buses are normally powered from separate inverters which are connected to the respective ~~Division~~ **division** Class 1E battery banks **through the Class 1E 250 VDC buses (switchboards)**. The backup **electrical power** source provided for each **division of** ~~Division for~~ the Class 1E AC instrument and control buses is a Class 1E **voltage** regulating transformer providing regulated output to the Class 1E AC instrument and control buses through a static transfer switch and a manual bypass switch. . . .

— Third paragraph, first, second, third, and sixth sentences —

The Class 1E DC distribution Divisions A and D each consists of one 250 VDC bus **(switchboard)**. The Class 1E DC distribution Divisions B and C each consists of two 250 VDC buses **(switchboards)**. The buses for the four Divisions are normally powered from their associated Division

battery chargers. . . . Additional description of this system may be found in the Bases for Specification 3.8.1, "DC Sources — Operating."

— Fourth paragraph —

The list of all required **Class 1E AC distribution and DC** distribution buses **and panels** is presented in Table B 3.8.5-1 and shown in **FSAR** Section 8.3.2 (Ref. 1).

During a teleconference on 3/26/15, which continued the meeting of 2/25/15, participants agreed to the indicated changes. **C1**

○ **466** In this comment, APOG had proposed clarifying the "Applicable Safety Analyses" section of the Bases for Subsection 3.8.5, "Distribution Systems – Operating," by inserting "instrument and control" after "AC" in the phrase "Class 1E AC and DC electrical power distribution systems" as shown by the blue-colored text in the first, third, and last paragraphs below. SPSB staff proposed additional clarifications for consistency with other APOG proposed changes and to address a general concern about inconsistent terminology for the electrical power distribution system in Specifications and Bases:

— First paragraph —

The initial conditions of Design Basis Accident (DBA) and transient analyses in **FSAR** Chapter 6 (Ref. 2) and **FSAR** Chapter 15 (Ref. 3), assume engineered safety features (ESFs) are OPERABLE. The Class 1E AC **instrument and control** and DC electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the ESFs so that the fuel, Reactor Coolant System (RCS) and containment design limits are not exceeded.

— Third paragraph —

The OPERABILITY of the Class 1E AC **instrument and control** and DC electrical power distribution systems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining at least three of the four Divisions of Class 1E AC **instrument and control** and DC **electrical** power distribution systems OPERABLE during accident conditions in the event of:

— Fourth paragraph —

The Class 1E AC **instrument and control** and DC electrical power distribution system**s** satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

During the teleconference on 3/26/15, which continued the meeting of 2/25/15, participants agreed to the additional edits, as shown by green colored font. **C1**

○ **467** In this comment, APOG had proposed clarifying the "LCO" section of the Bases for Subsection 3.8.5, "Distribution Systems – Operating," by inserting "instrument and control" after "AC" in the phrase "Class 1E AC and DC electrical power distribution systems" as shown by the blue-colored text in the first, second, and third paragraphs below. SPSB staff proposed additional clarifications, as shown by green-colored and orange-colored text, for consistency with other APOG proposed changes and to address a general concern about inconsistent terminology for the Class 1E electrical power distribution system in Specifications and Bases:

— First paragraph —

The required **electrical** power distribution subsystems listed in Table B 3.8.5-1 ensure the availability of Class 1E AC **instrument and control** and DC electrical power for the systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. The Division A, B, C, and D Class 1E AC **instrument and control** and DC electrical power distribution subsystems are required to be OPERABLE.

— Second paragraph —

Maintaining the Division A, B, C, and D **Class 1E** AC **instrument and control** and DC electrical power distribution subsystems OPERABLE ensures that the redundancy incorporated into the design of the ESFs is not defeated. Three of the four Class 1E AC **instrument and control** and DC **electrical** power distribution subsystems are capable of providing the necessary electrical power to the associated ESF components. Therefore, a single failure within any subsystem or within the electrical power distribution subsystems will not prevent safe shutdown of the reactor.

— Third paragraph (split into two paragraphs) —

OPERABLE Class 1E DC ~~electric~~ **electrical** power distribution subsystems require the associated buses **(switchboards)**, **distribution panels,** motor control centers, and electrical circuits to be energized to their proper voltage from either the associated battery bank or **battery** charger. The spare battery bank**,** ~~and/or~~ **the spare battery** charger~~s~~**, or both** may be used by one **DC electrical power distribution** subsystem for OPERABILITY.

OPERABLE Class 1E AC **instrument and control** electrical power distribution subsystems require the associated buses **(distribution panels)** to be energized to their proper voltages and frequencies from the associated inverter or **voltage** regulating transformer.

During the teleconference on 3/26/15, which continued the meeting of 2/25/15, participants agreed to the above indicated changes. **C1**

Teleconference participants also discussed the meaning of the last sentence of the second paragraph of the "LCO" section of the Bases for Subsection 3.8.5. That is, whether inserting "ESF" as shown below would clarify the intent:

> Therefore, a single failure within any **ESF** subsystem or within the electrical power distribution subsystems will not prevent safe shutdown of the reactor.

It was agreed that this potential clarification would be considered by both SPSB staff and the APOG following completion of STS Rev. 0. ..... **E1, E2**

SPSB staff observed the use of the term "electric" when "electrical" is meant in the "LCO" section of the Bases for Subsection 3.8.5. During the teleconference on 3/26/15, participants agreed to replace "electric" with "electrical." **C1**

○ **474** In this comment, APOG proposed changing the electrical power distribution subsystem type name "AC Instrumentation and Control Buses" in Table B 3.8.5-1 by replacing "Buses" with "Panels"; it was also proposed to delete the table's note, which states "Each Division of the AC and DC electrical power distribution systems is a subsystem." The comment characterized the changes as "editorial for clarity …

for consistency with the TS requirements(s) being discussed in the TS bases." SPSB staff agreed with the changes but noted additional changes to achieve full consistency. These changes were:

- Change AC distribution type name to be consistent with type name "DC Distribution Panels" and retaining "buses" in parenthesis, and changing "instrumentation" to "instrument" for consistency, as shown:

  AC Instrument~~ation~~ and Control **Distribution Panels (**Buses**)**

- Change DC distribution type name as shown:

  DC Buses **(Switchboards)**

During the teleconference on 3/26/15, which continued the meeting of 2/25/15, participants agreed to the above edits. **C1**

3. Specification 3.8.3 Action B Bases (Topic 25 second bullet)

Topic 25 second bullet referenced APOG comment **457**.

- **457** SPSB staff had proposed to edit the Bases for Required Actions B.1 and B.2 of Specification 3.8.3, but withdrew one of the changes, as shown

  > If the inoperable **Class 1E** DC electrical power **distribution** subsystem **Withdrawn, or other inoperable devices or components required for inverter OPERABILITY** cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to MODE 5 where the probability and consequences ~~on~~ **of** an event are minimized. To achieve this status …

  SPSB staff asked APOG to explain why the subject sentence does not state:

  > If the inoperable **inverter** cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to MODE 5 …

  During the teleconference on 3/26/15, which continued the meeting of 2/25/15, participants agreed that the sentence should say "inverter"; the revised markup in GTST Section XI should appear as follows. **C1**

  > If the inoperable **inverter** ~~DC electrical power subsystem~~ cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to MODE 5 where the probability and consequences ~~on~~ **of** an event are minimized. To achieve this status …

4. Specification 3.8.4 Bases use of "reactor pressure boundary" (Topic 25 fourth bullet)

Topic 25 fourth bullet referenced APOG comment **457**.

- **457** SPSB staff had proposed revising third sentence of fourth paragraph of the "Applicable Safety Analyses" section of Bases for Subsection 3.8.4, as shown

  > … The rationale for this is based on the fact that many ~~Design Basis Accidents (~~DBAs~~)~~ that are analyzed in MODES 1, 2, 3, and 4 have no specific analyses in MODES 5 and 6 because the energy contained within the reactor **coolant system** pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. …

During the teleconference on 3/26/15, which continued the meeting of 2/25/15, participants agreed to the proposed edits. **C1**

5. Proposed clarification of Bases for Specification 3.8.5 (Topic 27 second bullet)

Topic 27 second bullet referenced the following APOG Comment Nos.

-	-	-	-	-	465	-	467	-	-
-	-	-	-	474	-	-	-	-	-

- **465** *See above proposed edits to "Background" section of Bases for LCO 3.8.5.* **C1**
- **467** *See above proposed edits to "LCO" section of Bases for LCO 3.8.5.* **C1**
- **474** SPSB staff asserted that the "Background" section of the Bases for STS Subsection 3.8.5 should more clearly describe the Class 1E electrical power distribution system. During the teleconference on 3/26/15, which continued the meeting of 2/25/15, participants agreed to a few minor clarifications, as indicated above. **C1**

G. Section 5.5 Programs and Manuals

1. TSTF-500 (Topic 4)

Topic 4 referenced the following APOG Comment Nos.

-	-	-	-	-	-	16	-	-	-
-	-	-	-	-	-	-	-	478	-
480	481	-	-	-	-	-	-	-	-

As discussed in *Agenda Item IV.F.1,* the SPSB staff proposed to retain the TSTF-500 changes to Specification 5.5.11, "Battery Monitoring and Maintenance Program," as shown below. **B1**

2. TSTF-510 (Topic 1)

Topic 1 (regarding TSTF-510) referenced the following APOG Comment Nos.

-	-	292	-	-	-	-	-	-	-
-	-	-	-	-	-	516	517	-	-

- **292** SPSB staff had proposed incorporating TSTF-510, including bracketed optional provisions related to SG tube repair criteria, in STS Subsection 3.4.17 (GTS Subsection 3.4.18). In this comment, the APOG stated that this "optional (i.e., bracketed) material applicable to SG repair criteria … does not currently exist for AP1000 plants." SPSB staff agreed to remove the optional provisions from Subsections 3.4.17, 5.5.4, and 5.6.6 while maintaining the balance of TSTF-510 provisions. **C1**

  In this comment, the APOG also stated "At the time of a future submittal for NRC approval of repair criteria, the STS changes would also be appropriate to include at that time." **E2**

- **516** SPSB staff had proposed incorporating TSTF-510, including bracketed optional provisions related to SG tube repair criteria, in STS Subsection 5.5.4. In this comment, the APOG stated that this "optional (i.e., bracketed) material applicable to SG repair criteria … does not currently exist for AP1000 plants." SPSB staff agreed to remove the optional provisions while maintaining the balance of the provisions from TSTF-510. The revised GTS 5.5.4 markup to include the non-bracketed provisions is provided below. **C1**

○ **517** SPSB staff had proposed incorporating TSTF-510 including an associated reviewer's note related to paragraph 5.5.4.d.2. The note states "A licensee may elect to retain historical and existing inspection period lengths in order to not revise those inspection periods." Since this note would likely never apply to AP1000 units, SPSB agreed to omit it from STS 5.5.4.d.2. ..... **C1**

During a teleconference on 3/26/15, which continued the meeting of 2/25/15, SPSB staff asked the APOG about the sentence in paragraph 5.5.4.d.2, which inludes the phrase "applicable tube repair criteria":

> If a degradation assessment indicates the potential for a type of degradation to occur at a location not previously inspected with a technique capable of detecting this type of degradation at this location and that may satisfy the *applicable tube repair criteria*, the minimum number of locations inspected with such a capable inspection technique during the remainder of the inspection period may be prorated.

Participants agreed to retain the term "repair" instead of replacing it with "plugging" because "plugging" is the only repair method currently available for AP1000 units, and for internal consistency because "repair" is used in the LCO and action requirements of STS Subsection 3.4.17, in Specification 5.5.4.c (which equates "repair" with "plugging"), and in the first paragraph of Specification 5.5.4.d. **C1**

Markup of GTS 5.5.4 to incorporate TSTF-510 into STS 5.5.4 without optional bracketed provisions and reviewer's notes

5.5.4 Steam Generator (SG) Program

A Steam Generator Program shall be established and implemented to ensure that SG tube integrity is maintained. In addition, the Steam Generator Program shall include the following ~~provisions~~:

a. Provisions for condition monitoring assessments. Condition monitoring assessment means an evaluation of the "as found" condition of the tubing with respect to the performance criteria for structural integrity and accident induced leakage. The "as found" condition refers to the condition of the tubing during an SG inspection outage, as determined from the inservice inspection results or by other means, prior to the plugging of tubes. Condition monitoring assessments shall be conducted during each outage during which the SG tubes are inspected, or plugged, to confirm that the performance criteria are being met.

b. Performance criteria for SG tube integrity. SG tube integrity shall be maintained by meeting the performance criteria for tube structural integrity, accident induced leakage, and operational LEAKAGE.

1. Structural integrity performance criterion: All in-service steam generator tubes shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, and cool down), ~~and~~ all anticipated transients included in the design specification,~~)~~ and design basis accidents. This includes retaining a safety factor of 3.0 against burst under normal steady state full power operation primary-to-secondary pressure differential and a safety factor of 1.4 against burst applied to the design basis accident primary-to-secondary pressure differentials. Apart from the above requirements, additional loading conditions associated with the design basis accidents, or combination of accidents in accordance with the design and licensing basis, shall also be evaluated to determine if the associated loads contribute significantly to burst or collapse. In the assessment of tube integrity, those loads that do significantly affect burst or collapse shall be determined and assessed in combination with the loads due to pressure with a safety factor of 1.2 on the combined primary loads and 1.0 on axial secondary loads.

2. Accident induced leakage performance criterion: The primary to secondary accident induced leakage rate for any design basis accident, other than a SG tube rupture, shall not exceed the leakage rate assumed in the accident analysis in terms of total leakage rate for all SGs and leakage rate for an individual SG. Leakage is not to exceed 150 gpd per SG.

3. The operational LEAKAGE performance criterion is specified in LCO 3.4.7, "RCS Operational LEAKAGE."

5.5.4 Steam Generator (SG) Program (continued)

c. Provisions for SG tube repair criteria. Tubes found by inservice inspection to contain flaws with a depth equal to or exceeding 40% of the nominal tube wall thickness shall be plugged.

d. Provisions for SG tube inspections. Periodic SG tube inspections shall be performed. The number and portions of the tubes inspected and methods of inspection shall be performed with the objective of detecting flaws of any type (e.g., volumetric flaws, axial and circumferential cracks) that may be present along the length of the tube, from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet, and that may satisfy the applicable tube repair criteria. The tube-to-tubesheet weld is not part of the tube. In addition to meeting the requirements of d.1, d.2, and d.3 below, the inspection scope, inspection methods, and inspection intervals shall be such as to ensure that SG tube integrity is maintained until the next SG inspection. A~~n~~ **degradation** assessment ~~of degradation~~ shall be performed to determine the type and location of flaws to which the tubes may be susceptible and, based on this assessment, to determine which inspection methods need to be employed and at what locations.

1. Inspect 100% of the tubes in each SG during the first refueling outage following **SG** installation.

2. ~~Inspect 100% of the tubes at sequential periods of 144, 108, 72, and, thereafter, 60 effective full power months. The first sequential period shall be considered to begin after the first inservice inspection of the SGs. In addition, inspect 50% of the tubes by the refueling outage nearest the midpoint of the period and the remaining 50% by the refueling outage nearest the end of the period. No SG shall operate for more than 72 effective full power months or three refueling outages (whichever is less) without being inspected.~~ **After the first refueling outage following SG installation, inspect each SG at least every 72 effective full power months or at least every third refueling outage (whichever results in more frequent inspections). In addition, the minimum number of tubes inspected at each scheduled inspection shall be the number of tubes in all SGs divided by the number of SG inspection outages scheduled in each inspection period as defined in a, b, c and d below. If a degradation assessment indicates the potential for a type of degradation to occur at a location not previously inspected with a technique capable of detecting this type of degradation at this location and that may satisfy the applicable tube repair criteria, the minimum number of locations inspected with such a capable inspection technique during the remainder of the inspection period may be prorated. The fraction of locations to be inspected for this potential type of degradation at this location at the end of the inspection period shall be no less than the ratio of the number of times the SG is scheduled to be inspected in the inspection period after the determination that a new form of degradation could**

5.5.4 Steam Generator (SG) Program (continued)

potentially be occurring at this location divided by the total number of times the SG is scheduled to be inspected in the inspection period. Each inspection period defined below may be extended up to 3 effective full power months to include a SG inspection outage in an inspection period and the subsequent inspection period begins at the conclusion of the included SG inspection outage.

a) After the first refueling outage following SG installation, inspect 100% of the tubes during the next 144 effective full power months. This constitutes the first inspection period;

b) During the next 120 effective full power months, inspect 100% of the tubes. This constitutes the second inspection period;

c) During the next 96 effective full power months, inspect 100% of the tubes. This constitutes the third inspection period; and

d) During the remaining life of the SGs, inspect 100% of the tubes every 72 effective full power months. This constitutes the fourth and subsequent inspection periods.

3. If crack indications are found in any SG tube, then the next inspection for each **affected and potentially affected** SG for the degradation mechanism that caused the crack indication shall not exceed 24 effective full power months or one refueling outage (whichever **results in more frequent inspections** ~~is less~~). If definitive information, such as from examination of a pulled tube, diagnostic non-destructive testing, or engineering evaluation indicates that a crack-like indication is not associated with a crack(s), then the indication need not be treated as a crack.

e. Provisions for monitoring operational primary to secondary LEAKAGE.

Markup of GTS 5.5.11 to incorporate TSTF-500 into STS 5.5.11 without brackets and reviewer's notes

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5.5.11 Battery Monitoring and Maintenance Program

This Program provides **controls** for battery restoration and maintenance.~~, based on the recommendations of~~ **The program shall be in accordance with** IEEE Standard **(Std)** 450-**2002**~~1995~~, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," **as endorsed by Regulatory Guide 1.129, Revision 2 (RG), with RG exceptions and program provisions as identified below:**

a. The program allows the following RG 1.129, Revision 2 exceptions:

1. Battery temperature correction may be performed before or after conducting discharge tests.

2. RG 1.129, Regulatory Position 1, Subsection 2, "References," is not applicable to this program.

3. In lieu of RG 1.129, Regulatory Position 2, Subsection 5.2, "Inspections," the following shall be used: "Where reference is made to the pilot cell, pilot cell selection shall be based on the lowest voltage cell in the battery."

4. In Regulatory Guide 1.129, Regulatory Position 3, Subsection 5.4.1, "State of Charge Indicator," the following statements in paragraph (d) may be omitted: "When it has been recorded that the charging current has stabilized at the charging voltage for three consecutive hourly measurements, the battery is near full charge. These measurements shall be made after the initially high charging current decreases sharply and the battery voltage rises to approach the charger output voltage."

5. In lieu of RG 1.129, Regulatory Position 7, Subsection 7.6, "Restoration," the following may be used: "Following the test, record the float voltage of each cell of the string."

b. The program shall include the following provisions:~~ or of the battery manufacturer including the following:~~

1. ~~a.~~ Actions to restore battery cells with float voltage < 2.13 V**;**~~, and~~

2. **Actions to determine whether the float voltage of the remaining battery cells is ≥ 2.13 V when the float voltage of a battery cell has been found to be < 2.13 V;**

3. ~~b.~~ Actions to equalize and test battery cells that had been discovered with electrolyte level below the ~~minimum established design limit.~~ **top of the plates;**

5.5.11 Battery Monitoring and Maintenance Program (continued)

4. Limits on average electrolyte temperature, battery connection resistance, and battery terminal voltage; and

5. A requirement to obtain specific gravity readings of all cells at each discharge test, consistent with manufacturer recommendations.

Participants – Meeting on February 25, 2015

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* by phone
SNC – Southern Nuclear Operating Company
SCANA – South Carolina Electric & Gas
FPL – Florida Power and Light
WEC – Westinghouse Electric Company, LLC
EXCEL – Excel Services Corporation
SPSB – Plant Systems Branch (SPSB), Division of Safety Systems and Risk Assessment (DSRA), Office of New Reactors (NRO), Nuclear Regulatory Commission (NRC)
STSB – Technical Specifications Branch (STSB), Division of Safety Systems (DSS), Office of Nuclear Reactor Regulation (NRR), NRC

Participants – Teleconference on March 26, 2015 (10:00 am – 2:00 pm)

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