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

Title: Changes Related to LCO 3.3.5, Reactor Trip System (RTS) Manual Actuation

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

TSTF Number and Title:

TSTF-519-T, Rev 0, Increase Standardization in Condition and Required Action Notes

STS NUREGs Affected:

TSTF-519-T, Rev 0: NUREG 1430 and 1431

NRC Approval Date:

TSTF-519-T, Rev 0: 16-Oct-09 (TSTF Review)

TSTF Classification:

TSTF-519-T, Rev 0: NUREG Only Change

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

RCOL Std. Dep. Number and Title:

There are no Vogtle Electric Generating Plant Units 3 and 4 (Vogtle or VEGP) departures applicable to GTS 3.3.1.

RCOL COL Item Number and Title:

There are no Vogtle COL items applicable to GTS 3.3.1.

RCOL PTS Change Number and Title:

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

VEGP LAR DOC A024:	Reformat of GTS 3.3.1 into Seven Parts; 3.3.1 through 3.3.7; note that this maps GTS 3.3.1 requirements into interim A024-modified TS (MTS) Subsection 3.3.5, to which the other changes are applied.
VEGP LAR DOC M02:	Provision for Two or More Inoperable Divisions or Channels
VEGP LAR DOC L07:	Certain TS Required Actions Requiring the Reactor Trip Breakers (RTBs) to be Opened Are Revised into Two Required Actions

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

This section discusses changes: (1) that were applicable to previous designs, but are not to the current design; (2) that are already incorporated in the GTS; and (3) that are superseded by another change.

TSTF-519-T has already been incorporated into the AP1000 GTS regarding the Writer's Guide for Improved Standard Technical Specifications (Reference 4) placement of Notes in TS Actions tables.

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

None

V. Applicability

Affected Generic Technical Specifications and Bases:

Section 3.3.5 Reactor Trip System (RTS) Manual Actuation

Changes to the Generic Technical Specifications and Bases:

GTS 3.3.1, "Reactor Trip System (RTS) Instrumentation," is reformatted by VEGP DOC LAR A024 into multiple Specifications including interim A024-modified TS (MTS) 3.3.5, "Reactor Trip System (RTS) Manual Actuation." The reformatting relocates GTS Table 3.3.1-1 Functions 1, 15.a, 20.a, and 21.a into MTS Table 3.3.5-1 and renumbers them as Functions 1, 2, 3, and 4. The MTS format is depicted in Section XI of this GTST as the reference case in the markup of the GTS instrumentation requirements for manual actuation.

MTS 3.3.5 Function No. & STS Title	GTS 3.3.1 Function(s)
1. Manual Reactor Trip	1. Manual Reactor Trip
2. Safeguards Actuation Input from Engineered Safety Feature Actuation System - Manual	15. Safeguards Actuation Input from Engineered Safety Feature Actuation System a. Manual
3. ADS Stages 1, 2, and 3 Actuation Input from Engineered Safety Feature Actuation System - Manual	20. ADS Stages 1, 2, and 3 Actuation Input from Engineered Safety Feature Actuation System a. Manual
4. Core Makeup Tank Actuation Input from Engineered Safety Feature Actuation System - Manual	21. Core Makeup Tank Actuation Input from Engineered Safety Feature Actuation System a. Manual

References 2, 3, and 6 provide details showing the correspondence of GTS 3.3.1 Functions and STS 3.3.1 through 3.3.7 Functions.

GTS 3.3.1 Conditions B and C are reordered and relabeled as AP1000 MTS 3.3.5 Conditions A, B, and C. (DOC A024)

GTS Table 3.3.1-1 footnote (a), "With Reactor Trip Breakers (RTBs) closed and Plant Control System capable of rod withdrawal," applies to operation in MODEs 3, 4, and 5 for RTS manual actuation. GTS Table 3.3.1-1 footnote (a) is incorporated into the MTS Table 3.3.5-1 as footnote (a) MODEs 3, 4, and 5. (DOC A024)

MTS Table 3.3.5-1 footnote (a)) is further revised to "Plant Control System capable of rod withdrawal or one or more rods not fully inserted." This avoids undesirable plant secondary effects due to interlock actuation. (DOC L07)

MTS 3.3.5 Conditions B and C are revised by adding a second condition statement for the condition "one or more Functions with two manual actuation channels inoperable." Otherwise,

LCO 3.0.3 would apply when the LCO is not met and the associated Actions are not met or an associated Action is not provided. (DOC M02)

The requirement to open RTBs associated with MTS 3.3.5 Condition C is replaced by two Actions to “initiate action to fully insert all rods” and “place the Plant Control System in a condition incapable of rod withdrawal.” This provides flexibility to avoid potentially undesirable effects of opening RTBs and initiating certain interlocks. (DOC L07)

GTS SR 3.3.1.12 is retained and renumbered as MTS SR 3.3.5.1. (DOC A024)

The Bases are revised to reflect these changes.

The following tables are provided as an aid to tracking the various changes to GTS 3.3.1 Conditions, Required Actions, Functions, Applicability Footnotes, and Surveillance Requirements that result in interim A024-modified TS (MTS) 3.3.5 and as further changed, STS 3.3.5.

Changes to Conditions

GTS 3.3.1 Condition	MTS 3.3.5 Condition	STS 3.3.5 Condition	Other STS Subsections Addressing the Listed Condition	Additional DOC Changes
A	→	→	3.3.1	---
B	A	A	GTS Condition B is split into 2 Conditions	---
B	B	B	---	M02 L07
C	C	C	---	M02 L07
D	→	→	3.3.1	---
E	→	→	3.3.1	---
F	→	→	3.3.3	---
G	→	→	3.3.3	---
H	→	→	3.3.3	---
I	→	→	3.3.2	---
J	→	→	3.3.2	---
K	→	→	3.3.1	---
L	→	→	3.3.4, 3.3.6	---
M	→	→	3.3.1	---
N	→	→	3.3.7	---
O	→	→	3.3.7	---
P	→	→	3.3.4, 3.3.6	---
Q	→	→	3.3.2	---
R	→	→	3.3.2	---

Changes to Functions

---------- Function [Modes(footnote)] ----------			STS 3.3.5	Other STS Subsections	Additional
GTS 3.3.1	MTS 3.3.5	STS 3.3.5	Conditions	and Additional Changes	DOC Changes
1 [1,2]	1 [1,2]	1 [1,2]	A, B	---	---
1 [3(a),4(a),5(a)]	1 [3(a),4(a),5(a)]	1 [3(a),4(a),5(a)]	A, C	---	---
15.a [1,2]	2 [1,2]	2 [1,2]	A, B	---	---
20.a [1,2,3(a),4(a),5(a)]	3 [1,2,3(a),4(a),5(a)]	3 [1,2,3(a),4(a),5(a)]	A, B, C	---	---
21.a [1,2,3(a),4(a),5(a)]	4 [1,2,3(a),4(a),5(a)]	4 [1,2,3(a),4(a),5(a)]	A, B, C	---	---

Changes to Applicability Footnotes

GTS 3.3.1 Footnote	MTS 3.3.5 Footnote	STS 3.3.5 Footnote	STS 3.3.5 Function	STS Subsections Also Addressing Listed footnote	Additional Changes DOC Number
a	a	a	1,3,4	3.3.2, 3.3.4, 3.3.6, 3.3.7	L07

Changes to Surveillance Requirements

GTS 3.3.1 SR	MTS 3.3.5 SR	STS 3.3.5 SR	STS Subsections Also Addressing the Listed SR	Example Surveillance No. Surveillance Description
3.3.1.1	→	→	3.3.1, 3.3.2, 3.3.3	3.3.1.1 CHANNEL CHECK
3.3.1.2	→	→	3.3.1	3.3.1.2 Compare calorimetric heat balance to NI channel output
3.3.1.3	→	→	3.3.1	3.3.1.3 Compare calorimetric heat balance to delta-T power calculation
3.3.1.4	→	→	3.3.1	3.3.1.4 Compare incore detector measurement to NI AXIAL FLUX DIFFERENCE
3.3.1.5	→	→	3.3.1	3.3.1.5 Calibrate excore channels
3.3.1.6	→	→	3.3.7	3.3.7.1 Perform TADOT
3.3.1.7	→	→	3.3.4, 3.3.6	3.3.4.1 ACTUATION LOGIC TEST
3.3.1.8	→	→	3.3.1, 3.3.2	3.3.1.6 Perform COT
3.3.1.9	→	→	3.3.1, 3.3.2, 3.3.3	3.3.1.7 Perform COT
3.3.1.10	→	→	3.3.1	3.3.1.8 CHANNEL CALIBRATION
3.3.1.11	→	→	3.3.1, 3.3.2, 3.3.3	3.3.1.9 CHANNEL CALIBRATION
3.3.1.12	3.3.5.1	3.3.5.1	3.3.1	3.3.1.10 Perform TADOT
3.3.1.13	→	→	3.3.1, 3.3.2, 3.3.3	3.3.1.11 Verify RTS RESPONSE TIME within limits

VI. Traveler Information

Description of TSTF changes:

Not Applicable

Rationale for TSTF changes:

Not Applicable

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

The Vogtle Electric Generating Plant Units 3 and 4 (VEGP) technical specifications upgrade (TSU) License Amendment Request (VEGP TSU LAR) (Reference 2) proposed changes to the initial version of the VEGP PTS (referred to as the current TS by the VEGP TSU LAR). As detailed in VEGP TSU LAR Enclosure 1, administrative change number 24 (DOC A024) reformats current TS 3.3.1 into multiple Specifications as follows:

- 3.3.1, “Reactor Trip System (RTS) Instrumentation”;
- 3.3.2, “Reactor Trip System (RTS) Source Range Instrumentation”;
- 3.3.3, “Reactor Trip System (RTS) Intermediate Range Instrumentation”;
- 3.3.4, “Reactor Trip System (RTS) Engineered Safety Feature Actuation
- 3.3.5, “Reactor Trip System (RTS) Manual Actuation”;
- 3.3.6, “Reactor Trip System (RTS) Automatic Trip Logic”; and
- 3.3.7, “Reactor Trip System (RTS) Trip Actuation Devices.

Since current TS 3.3.1, “Reactor Trip System (RTS) Instrumentation,” is identical to GTS 3.3.1, it is appropriate for this GTST to consider the proposed changes to current TS 3.3.1 as changes to GTS 3.3.1 for incorporation in AP1000 STS 3.3.5. VEGP LAR DOC A024 is extensive, but retains the intention of current TS 3.3.1 while improving operational use of the TS. The numerous Functions, Conditions and extensive bases discussion associated with PTS 3.3.1 are repackaged into seven smaller parts. Therefore, the changes implemented by DOC A024 are presented in the attached Subsection 3.3.5 markup, in Section XI of this GTST, as the “clean” starting point for this GTST and are identified as interim A024-modified TS (MTS) 3.3.5. The specific details of the reformatting for MTS 3.3.5 can be found in VEGP TSU LAR (Reference 2), in Enclosure 2 (markup) and Enclosure 4 (clean). The NRC staff safety evaluation regarding DOC A024 can be found in Reference 3, VEGP LAR SER. The VEGP TSU LAR was modified in response to NRC staff RAIs in Reference 5 and the Southern Nuclear Operating Company RAI Response in Reference 6.

VEGP LAR DOC M02 addresses the fact that MTS 3.3.5, “Reactor Trip System (RTS) Manual Actuation,” does not specify Actions for inoperability of two inoperable manual initiation channels. This results in entry into LCO 3.0.3 when two channels are inoperable.

VEGP LAR DOC L07 revises the Action to open the RTBs into a two-step process to “initiate action to fully insert all rods,” and “place the Plant Control System in a condition incapable of rod withdrawal.”

A more detailed description of the changes by each of the above DOCs can be found in Reference 2, VEGP TSU LAR in Enclosure 1; the NRC staff safety evaluation can be found in

Reference 3, VEGP LAR SER. The VEGP TSU LAR was modified in response to NRC staff RAIs (Reference 5) by Southern Nuclear Operating Company's RAI Response in Reference 6.

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

The reformatting per VEGP LAR DOCs A024 and A028, except where addressed in other DOCs, addresses inconsistencies in formatting and approach between current TS 3.3.1 and current TS 3.3.2, respectively. Simplification and clarification are proposed for each Specification. In breaking down each current Specification into specific subsets of the Protection and Safety Monitoring System (PMS) function, improved human factored operator usability results.

These improvements also reflect the general approach currently in use in the Improved Standard Technical Specifications (STS) for Babcock and Wilcox Plants, NUREG-1430, Rev. 4. That is to separate the functions for [sensor] instrumentation, Manual Actuation, Trip/Actuation Logic, and Trip Actuation Devices (e.g., Reactor Trip Breakers (RTBs)) into separate Specification subsections. Furthermore, the Actions for some ESFAS Functions generally involve a more complex presentation than needed for other Functions, such that simple common Actions are not reasonable. Such Functions are also provided with separate Specification subsections.

When TS instrument function tables are utilized to reference Actions, the generally preferred format of the Actions for an instrumentation Specification in NUREG-1430 is to provide the initial Actions that would be common to all of the specified functions (typically for bypassing and/or tripping one or two inoperable channels), then the "default" Action would direct consulting the function table for follow-on Actions applicable to the specific affected function. These follow-up Actions generally reflect the actions to exit the Applicability for that function.

This format also allows splitting the default Actions from the initial preferred actions. This general approach is the standard format for other Specifications and for Instrumentation Specifications for other vendors' Improved STS.

VEGP LAR DOC M02 directly provides for the default Actions of LCO 3.0.3 without allowing for the additional hour that LCO 3.0.3 permits prior to initiating shutdown. This provides clarity for the operator and is more restrictive than LCO 3.0.3.

When the RTBs are opened, certain other interlocks can be initiated. The initiation of the associated interlocks may have an undesirable secondary effect on the ease of operation of the plant such as the initiation of the P-4 interlock, which, in the event of low Reactor Coolant System (RCS) temperature, can result in isolation of main feedwater to the steam generators. VEGP LAR DOC L07 provides additional operator flexibility to achieve the same intent as opening the RTBs.

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

Not Applicable

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

Not Applicable

VII. GTST Safety Evaluation

Technical Analysis:

AP1000 GTS LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4, and states:

> When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable,
>
> a. MODE 3 within 7 hours; and
> b. MODE 4 within 13 hours; and
> c. MODE 5 within 37 hours.

GTS 3.3.1 and 3.3.2 Functions with applicability statements that include MODE 1, 2, 3, or 4, generally have no Actions specified for addressing a loss of function condition, such as when all required channels are inoperable. Upon discovery of such a condition, LCO 3.0.3 would apply. The intent of LCO 3.0.3 (as stated in the TS Bases) is to "impose time limits for placing the unit in a safe MODE or other specified condition when operation cannot be maintained within the limits for safe operation as defined by the LCO and its ACTIONS."

The Actions for inoperable RTS and ESFAS instrumentation provide restoration time and/or compensatory action allowances (e.g., place the inoperable channel in trip); but only for inoperability of some of the channels (e.g., 1 or 2 out of 4 required channels, typically). If these restoration and/or compensatory actions cannot be met in the required time, "default" actions are provided, which are designed to place the unit in a safe MODE or other specified condition - typically, actions that result in exiting the Applicability for that Function.

The shutdown actions of LCO 3.0.3 are typical of "default" actions throughout the TS that direct plant shutdown to exit the Applicability, with the exception that LCO 3.0.3 includes an additional 1 hour before the shutdown is required to be initiated.

The revisions described in VEGP LAR DOC M02 address multiple-channel inoperability. The revisions will immediately impose the "default" Actions for that Function - without allowance for the 1 hour delay that is provided in LCO 3.0.3. Furthermore, the Function-specific "default" actions (currently, or proposed to be, specified for some Functions) impose requirements intended to establish safe operation that are not necessarily required by LCO 3.0.3. Since each Function-specific default action is specifically considering that Function's safety-basis, such default actions necessarily result in more appropriate actions than the general default actions of LCO 3.0.3. Specifically, the Actions for each new Condition associated with VEGP LAR DOC M02 for RTS and ESFAS Functions applicable in MODES1, 2, 3, or 4, are compared to LCO 3.0.3, and in each case, the new Actions are equivalent to or more restrictive than the actions of LCO 3.0.3.

STS 3.3.5, Conditions B and C lead to new default actions to be in Mode 3 in 6 hours (from Mode 1 or 2), which is more restrictive than the time allowed by LCO 3.0.3. Further default actions require fully inserting all rods within 6 hours and placing the Plant Control System in a condition incapable of rod withdrawal within 6 hours (from MODE 3, 4, or 5), which are actions not required by LCO 3.0.3.

GTS 3.3.1 and 3.3.2 actions do not specify conditions that explicitly address multiple inoperable channels (that is, more than two inoperable channels or divisions, in most cases), and therefore default to LCO 3.0.3. In each instance, the proposed actions to address these conditions are more restrictive than the LCO 3.0.3 actions because completion times for reaching lower operational modes are shorter by 1 hour. In addition, Function-specific actions, where specified, are more appropriate for the affected Function than the unit-shutdown actions of LCO 3.0.3 alone. Therefore, the changes specified by VEGP LAR DOC M02 do not introduce any adverse impact on public health and safety.

VEGP LAR DOC L07 revises the Action to open the RTBs into a two-step process to “initiate action to fully insert all rods,” and “place the Plant Control System in a condition incapable of rod withdrawal.” Each of the current TS 3.3.1 required actions to open the reactor trip breakers (RTBs) is intended to ensure that control rods cannot be withdrawn thereby eliminating the possibility for control rod related positive reactivity additions and associated heat input into the reactor coolant. Additionally, all control rods are inserted by opening the RTBs. Therefore, replacing each required action to open RTBs with the two actions, which require initiating action to fully insert all rods and placing the Plant Control System in a condition incapable of rod withdrawal, maintains the intent of the existing action requirements. VEGP LAR DOC L07 replaces the specific method of precluding rod withdrawal and ensuring all rods are inserted while maintaining the requirement for establishing the plant conditions equivalent to opening the RTBs. The revised actions still ensure rod withdrawal is precluded and all rods are inserted; therefore, the detail to open the RTBs is not required to be in the TS to provide adequate protection of the public health and safety.

To ensure that when the revised required actions are taken the unit is removed from the operational modes or other specified conditions in the Specification’s Applicability, conforming revisions to the Applicability statements are made. The equivalent condition to the current Applicability statements that include “RTBs closed” is the condition of Plant Control System capable of rod withdrawal. However, since rods could have been withdrawn prior to making the Plant Control System incapable of rod withdrawal, the revised Specifications include the additional condition of “or one or more rods not fully inserted.” This change also aligns with the required actions to both “fully insert all rods" and “place the Plant Control System in a condition incapable of rod withdrawal.” The equivalent condition to the current Applicability statements that include “RTBs open” is the condition of “Plant Control System capable of rod withdrawal and all rods fully inserted.”

Removing the specific method of precluding rod withdrawal and establishing all rods inserted, and defining this condition solely in terms of the RTB status, from the TS is acceptable because this type of information is not necessary to be included to provide adequate protection of public health and safety. STS 3.3.5 retains requirements to ensure that control rod withdrawal is prohibited and all rods are inserted, when required.

The remaining changes, including VEGP LAR change A024, are editorial, clarifying, grammatical, or otherwise considered administrative. These changes do not affect the technical content, but improve the readability, implementation, and understanding of the requirements, and are therefore acceptable.

References to Previous NRC Safety Evaluation Reports (SERs):

VEGP TSU LAR SER (Reference 3)

VIII. Review Information

Evaluator Comments:

None

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Review Information:

Availability for public review and comment on Revision 0 of this traveler approved by NRC staff on Thursday, May 29, 2014.

NRC Final Approval Date:

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

The database does not yet recognize non-breaking hyphens or spaces. For Rev. 0 of this GTST, it was necessary to manually insert (1) non-breaking hyphens as necessary to interlock designations such as P-10 to avoid breaking across the end of a line; and (2) non-breaking spaces as necessary to (a) keep symbols such as “≥” with the subsequent value; and (b) avoid stranding a number value on a subsequent line, such as MODE 5.

X. References Used in GTST

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

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

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

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

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

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

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

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

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

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

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

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

3.3 INSTRUMENTATION

3.3.5 Reactor Trip System (RTS) Manual Actuation

LCO 3.3.5 The RTS manual actuation channels for each Function in Table 3.3.5-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one manual actuation channel inoperable.	A.1 Restore manual actuation channel to OPERABLE status.	48 hours
B. Required Action and associated Completion Time of Condition A not met in MODE 1 or 2. **OR** **One or more Functions with two manual actuation channels inoperable in MODE 1 or 2.**	B.1 Be in MODE 3. ~~AND~~ ~~B.2 Open reactor trip breakers (RTBs).~~	6 hours ~~7 hours~~

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A not met in MODE 3, 4, or 5. **OR** **One or more Functions with two manual actuation channels inoperable in MODE 3, 4 or 5.**	**C.1 Initiate action to fully insert all rods.** **AND** **C.2 Place the Plant Control System in a condition incapable of rod withdrawal.**	**1 hour** **1 hour**

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.5.1	----------NOTE---------- Verification of setpoint is not required. ---------- Perform TADOT.	24 months

Table 3.3.5-1 (page 1 of 1)
Reactor Trip System Manual Actuation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS
1. Manual Reactor Trip	1,2,3[(a)],4[(a)],5[(a)]	2
2. Safeguards Actuation Input from Engineered Safety Feature Actuation System - Manual	1,2	2
3. ADS Stages 1, 2, and 3 Actuation Input from Engineered Safety Feature Actuation System - Manual	1,2,3[(a)],4[(a)],5[(a)]	2 switch sets
4. Core makeup Tank Actuation Input from Engineered Safety Feature Actuation System - Manual	1,2,3[(a)],4[(a)],5[(a)]	2 switch sets

(a) With ~~Reactor Trip Breakers (RTBs) closed and~~ Plant Control System capable of rod withdrawal **or one or more rods not fully inserted**.

B 3.3 INSTRUMENTATION

B 3.3.5 Reactor Trip System (RTS) Manual Actuation

BASES

BACKGROUND

A description of the RTS Instrumentation is provided in the Bases for LCO 3.3.1, “Reactor Trip System (RTS) Instrumentation.”

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The RTS functions to maintain the SLs during all AOOs and mitigates the consequences of DBAs in all MODES in which the RTBs are closed.

This LCO requires all RTS Manual Actuation channels performing an RTS Function, listed in Table 3.3.5-1, to be OPERABLE.

The safety analyses and OPERABILITY requirements applicable to the RTS Manual Actuation Functions are discussed below:

1. Manual Reactor Trip

The Manual Reactor Trip Function ensures that the main control room operator can initiate a reactor trip at any time by using either of two reactor trip actuation devices in the main control room. A Manual Reactor Trip accomplishes the same results as any one of the automatic trip Functions. It can be used by the reactor operator to shutdown the reactor whenever any parameter is rapidly trending toward its Trip Setpoint. The safety analyses do not take credit for the Manual Reactor Trip.

The LCO requires two Manual Reactor Trip actuation channels to be OPERABLE in MODES 1 and 2, and in MODES 3, 4, and 5 ~~with RTBs closed and~~ **when the Plant Control System (**PLS**) is** capable of rod withdrawal**, or one or more rods are not fully inserted**. Two independent actuation channels are required to be OPERABLE so that no single random failure will disable the Manual Reactor Trip Function.

In MODE 1 or 2, manual initiation of a reactor trip must be OPERABLE. These are the MODES in which the shutdown rods and/or control rods are partially or fully withdrawn from the core. In MODE 3, 4, or 5, the manual initiation Function must also be OPERABLE if the shutdown or control rods are withdrawn or the

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

PLS is capable of withdrawing the shutdown or control rods. In MODES 3, 4, and 5, manual initiation of a reactor trip does not have to be OPERABLE if the PLS is not capable of withdrawing the shutdown or control rods **or all rods are fully inserted**. If the rods cannot be withdrawn from the core, there is no need to be able to trip the reactor because all of the rods are inserted. In MODE 6, neither the shutdown rods nor the control rods are permitted to be withdrawn and the CRDMs are disconnected from the control rods and shutdown rods. Therefore, the manual initiation Function does not have to be OPERABLE.

2. Safeguards Actuation Signal from Engineered Safety Feature Actuation System - Manual

The Safeguards Actuation Signal from ESFAS ensures that if a reactor trip has not already been generated by the RTS, the ESFAS automatic actuation logic will initiate a reactor trip upon any signal which initiates the Safeguards Actuation signal. This is a condition of acceptability for the Loss of Coolant Accident (LOCA). However, other transients and accidents take credit for varying levels of ESFAS performance and rely upon rod insertion, except for the most reactive rod which is assumed to be fully withdrawn, to ensure reactor shutdown.

The LCO requires two manual channels of Safeguards Actuation Input from ESFAS to be OPERABLE in MODES 1 and 2.

A reactor trip is initiated every time a Safeguards Actuation signal is present. Therefore, this trip Function must be OPERABLE in MODES 1 and 2, when the reactor is critical, and must be shutdown in the event of an accident. In MODE 3, 4, 5, or 6, the reactor is not critical.

3. ADS Stages 1, 2 and 3 Actuation Input from Engineered Safety Feature Actuation System - Manual

The LCO requirement for this Function provides a reactor trip for any event that may initiate depressurization of the reactor.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

The LCO requires two manual actuation switch sets for the ADS Stages 1, 2 and 3 Actuation Input from Engineered Safety Feature Actuation System to be OPERABLE. Two OPERABLE manual actuation switch sets are provided to ensure that a random failure of a single logic channel will not prevent reactor trip.

This trip Functions must be OPERABLE in MODE 1 or 2 when the reactor is critical. In MODE 3, 4, or 5, this RTS trip Function must be OPERABLE when ~~the RTBs are closed and~~ the PLS is capable of rod withdrawal**, or one or more rods are not fully inserted**.

4. Core Makeup Tank (CMT) Actuation Input from Engineered Safety Feature Actuation System - Manual

The LCO requirement for this Function provides a reactor trip for any event that may initiate CMT injection.

The LCO requires two manual actuation switch sets for the CMT Actuation Input from Engineered Safety Feature Actuation System to be OPERABLE. Two OPERABLE manual actuation switch sets are provided to ensure that random failure of a single logic channel will not prevent reactor trip.

This trip Functions must be OPERABLE in MODES 1 and 2 when the reactor is critical. In MODE 3, 4, and 5 this RTS trip Function must be OPERABLE when ~~the RTBs are closed and~~ the PLS is capable of rod withdrawal**, or one or more rods are not fully inserted**.

The RTS Manual Actuation instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

ACTIONS

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed on Table 3.3.5-1.

A.1

Condition A applies to the RTS Manual Actuation Features identified in Table 3.3.5-1. Condition A addresses the situation where one or more Functions have one manual actuation channel inoperable. One manual actuation channel consists of an actuation switch and the associated hardware (such as contacts and wiring) up to but not including the eight Reactor Trip Breakers. With one manual actuation channel inoperable, the inoperable channel must be restored to OPERABLE status within 48 hours. In this Condition, the remaining OPERABLE device is adequate to perform the safety function.

B.1 ~~and B.2~~

Condition B addresses the situation where the Required Action and associated Completion Time of Condition A are not met in MODE 1 or 2**, or there are one or more Functions with two manual actuation channels inoperable in MODE 1 or 2**. Required Action~~s~~ B.1 ~~and B.2~~ direct**s** that the plant must be placed in MODE 3 within 6 hours ~~(54 hours total time) followed by opening the RTBs within 1 additional hour (55 hours total time)~~. The allowed Completion Time for Required Action~~s~~ B.1 ~~and B.2~~ is reasonable, based on operating experience to reach the specified condition from full power conditions in an orderly manner and without challenging plant systems.

C.1 and C.2

Condition C addresses the situation where the Required Action and associated Completion Time of Condition A is not met in MODE 3, 4, or 5, or there are one or more Functions with two manual actuation channels inoperable in MODE 3, 4, or 5. Required Action C.1 requires that action be initiated to fully insert all control rods within 1 hour, and Required Action C.2 requires that the Plant Control System be placed in a condition incapable of rod withdrawal within 1 hour. The allowed Completion Times are reasonable, based on operating experience, to reach the specified condition in an orderly manner and without challenging plant systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1

SR 3.3.5.1 is the performance of a TADOT of the RTS inputs for Manual Reactor Trip, and from the ESF logic for Safeguards Actuation, ADS Stage 1, 2, and 3 Actuation, and CMT Actuation. This TADOT is performed every 24 months. The test shall independently verify the OPERABILITY of the undervoltage and shunt trip mechanisms for the Manual Reactor Trip Function for the Reactor Trip Breakers.

The Frequency is based on the known reliability of the Functions and the multichannel redundancy available, and has been shown to be acceptable through operating experience.

The SR is modified by a Note that excludes verification of setpoints from the TADOT. The Functions affected have no setpoints associated with them.

REFERENCES None

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

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

3.3 INSTRUMENTATION

3.3.5 Reactor Trip System (RTS) Manual Actuation

LCO 3.3.5 The RTS manual actuation channels for each Function in Table 3.3.5-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one manual actuation channel inoperable.	A.1 Restore manual actuation channel to OPERABLE status.	48 hours
B. Required Action and associated Completion Time of Condition A not met in MODE 1 or 2. OR One or more Functions with two manual actuation channels inoperable in MODE 1 or 2.	B.1 Be in MODE 3.	6 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A not met in MODE 3, 4, or 5. OR One or more Functions with two manual actuation channels inoperable in MODE 3, 4 or 5.	C.1 Initiate action to fully insert all rods. AND C.2 Place the Plant Control System in a condition incapable of rod withdrawal.	1 hour 1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.5.1	----------NOTE---------- Verification of setpoint is not required. ---------- Perform TADOT.	 24 months

Table 3.3.5-1 (page 0 of 1)
Reactor Trip System Manual Actuation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS
1. Manual Reactor Trip	1,2,3[(a)],4[(a)],5[(a)]	2
2. Safeguards Actuation Input from Engineered Safety Feature Actuation System - Manual	1,2	2
3. ADS Stages 1, 2, and 3 Actuation Input from Engineered Safety Feature Actuation System - Manual	1,2,3[(a)],4[(a)],5[(a)]	2 switch sets
4. Core makeup Tank Actuation Input from Engineered Safety Feature Actuation System - Manual	1,2,3[(a)],4[(a)],5[(a)]	2 switch sets

(a) With Plant Control System capable of rod withdrawal or one or more rods not fully inserted.

B 3.3 INSTRUMENTATION

B 3.3.5 Reactor Trip System (RTS) Manual Actuation

BASES

BACKGROUND

A description of the RTS Instrumentation is provided in the Bases for LCO 3.3.1, “Reactor Trip System (RTS) Instrumentation.”

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The RTS functions to maintain the SLs during all AOOs and mitigates the consequences of DBAs in all MODES in which the RTBs are closed.

This LCO requires all RTS Manual Actuation channels performing an RTS Function, listed in Table 3.3.5-1, to be OPERABLE.

The safety analyses and OPERABILITY requirements applicable to the RTS Manual Actuation Functions are discussed below:

1. Manual Reactor Trip

   The Manual Reactor Trip Function ensures that the main control room operator can initiate a reactor trip at any time by using either of two reactor trip actuation devices in the main control room. A Manual Reactor Trip accomplishes the same results as any one of the automatic trip Functions. It can be used by the reactor operator to shutdown the reactor whenever any parameter is rapidly trending toward its Trip Setpoint. The safety analyses do not take credit for the Manual Reactor Trip.

   The LCO requires two Manual Reactor Trip actuation channels to be OPERABLE in MODES 1 and 2, and in MODES 3, 4, and 5 when the Plant Control System (PLS) is capable of rod withdrawal, or one or more rods are not fully inserted. Two independent actuation channels are required to be OPERABLE so that no single random failure will disable the Manual Reactor Trip Function.

   In MODE 1 or 2, manual initiation of a reactor trip must be OPERABLE. These are the MODES in which the shutdown rods and/or control rods are partially or fully withdrawn from the core. In MODE 3, 4, or 5, the manual initiation Function must also be OPERABLE if the shutdown or control rods are withdrawn or the PLS is capable of withdrawing the shutdown or control rods. In

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

MODES 3, 4, and 5, manual initiation of a reactor trip does not have to be OPERABLE if the PLS is not capable of withdrawing the shutdown or control rods or all rods are fully inserted. If the rods cannot be withdrawn from the core, there is no need to be able to trip the reactor because all of the rods are inserted. In MODE 6, neither the shutdown rods nor the control rods are permitted to be withdrawn and the CRDMs are disconnected from the control rods and shutdown rods. Therefore, the manual initiation Function does not have to be OPERABLE.

2. Safeguards Actuation Signal from Engineered Safety Feature Actuation System - Manual

The Safeguards Actuation Signal from ESFAS ensures that if a reactor trip has not already been generated by the RTS, the ESFAS automatic actuation logic will initiate a reactor trip upon any signal which initiates the Safeguards Actuation signal. This is a condition of acceptability for the Loss of Coolant Accident (LOCA). However, other transients and accidents take credit for varying levels of ESFAS performance and rely upon rod insertion, except for the most reactive rod which is assumed to be fully withdrawn, to ensure reactor shutdown.

The LCO requires two manual channels of Safeguards Actuation Input from ESFAS to be OPERABLE in MODES 1 and 2.

A reactor trip is initiated every time a Safeguards Actuation signal is present. Therefore, this trip Function must be OPERABLE in MODES 1 and 2, when the reactor is critical, and must be shutdown in the event of an accident. In MODE 3, 4, 5, or 6, the reactor is not critical.

3. ADS Stages 1, 2 and 3 Actuation Input from Engineered Safety Feature Actuation System - Manual

The LCO requirement for this Function provides a reactor trip for any event that may initiate depressurization of the reactor.

The LCO requires two manual actuation switch sets for the ADS Stages 1, 2 and 3 Actuation Input from Engineered Safety Feature Actuation System to be OPERABLE. Two OPERABLE manual actuation switch sets are provided to ensure that a random failure of a single logic channel will not prevent reactor trip.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

This trip Functions must be OPERABLE in MODE 1 or 2 when the reactor is critical. In MODE 3, 4, or 5, this RTS trip Function must be OPERABLE when the PLS is capable of rod withdrawal, or one or more rods are not fully inserted.

4. Core Makeup Tank (CMT) Actuation Input from Engineered Safety Feature Actuation System - Manual

The LCO requirement for this Function provides a reactor trip for any event that may initiate CMT injection.

The LCO requires two manual actuation switch sets for the CMT Actuation Input from Engineered Safety Feature Actuation System to be OPERABLE. Two OPERABLE manual actuation switch sets are provided to ensure that random failure of a single logic channel will not prevent reactor trip.

This trip Functions must be OPERABLE in MODES 1 and 2 when the reactor is critical. In MODE 3, 4, and 5 this RTS trip Function must be OPERABLE when the PLS is capable of rod withdrawal, or one or more rods are not fully inserted.

The RTS Manual Actuation instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

ACTIONS

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed on Table 3.3.5-1.

A.1

Condition A applies to the RTS Manual Actuation Features identified in Table 3.3.5-1. Condition A addresses the situation where one or more Functions have one manual actuation channel inoperable. One manual actuation channel consists of an actuation switch and the associated hardware (such as contacts and wiring) up to but not including the eight Reactor Trip Breakers. With one manual actuation channel inoperable, the inoperable channel must be restored to OPERABLE status within 48 hours. In this Condition, the remaining OPERABLE device is adequate to perform the safety function.

BASES

ACTIONS (continued)

B.1

Condition B addresses the situation where the Required Action and associated Completion Time of Condition A are not met in MODE 1 or 2, or there are one or more Functions with two manual actuation channels inoperable in MODE 1 or 2. Required Action B.1 directs that the plant must be placed in MODE 3 within 6 hours . The allowed Completion Time for Required Action B.1 is reasonable, based on operating experience to reach the specified condition from full power conditions in an orderly manner and without challenging plant systems.

C.1 and C.2

Condition C addresses the situation where the Required Action and associated Completion Time of Condition A is not met in MODE 3, 4, or 5, or there are one or more Functions with two manual actuation channels inoperable in MODE 3, 4, or 5. Required Action C.1 requires that action be initiated to fully insert all control rods within 1 hour, and Required Action C.2 requires that the Plant Control System be placed in a condition incapable of rod withdrawal within 1 hour. The allowed Completion Times are reasonable, based on operating experience, to reach the specified condition in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1

SR 3.3.5.1 is the performance of a TADOT of the RTS inputs for Manual Reactor Trip, and from the ESF logic for Safeguards Actuation, ADS Stage 1, 2, and 3 Actuation, and CMT Actuation. This TADOT is performed every 24 months. The test shall independently verify the OPERABILITY of the undervoltage and shunt trip mechanisms for the Manual Reactor Trip Function for the Reactor Trip Breakers.

The Frequency is based on the known reliability of the Functions and the multichannel redundancy available, and has been shown to be acceptable through operating experience.

The SR is modified by a Note that excludes verification of setpoints from the TADOT. The Functions affected have no setpoints associated with them.

BASES

REFERENCES None