

June 28, 2016

Mr. Vito Nuccio  
Reactor Administrator  
Department of the Interior  
U.S. Geological Survey  
PO Box 25046, MS 911  
Denver, CO 80225-0046

SUBJECT: U.S. GEOLOGICAL SURVEY – REQUEST FOR ADDITIONAL INFORMATION  
REGARDING THE REVIEW OF THE LICENSE RENEWAL OF THE U.S.  
GEOLOGICAL SURVEY TRIGA RESEARCH REACTOR (TAC NO. ME1593)

Dear Mr. Nuccio:

The U.S. Nuclear Regulatory Commission (NRC) is continuing its review of the U.S. Geological Survey (USGS) application dated January 5, 2009 (a redacted version of the safety analysis report is available on the NRC's public Web site at [www.nrc.gov](http://www.nrc.gov) under Agencywide Documents Access and Management System Accession No. ML092120136), as supplemented, for the renewal of Facility Operating License No. R-113 for the USGS TRIGA Research Reactor.

During our review, questions have arisen for which additional information is needed. The enclosed request for additional information (RAI) identifies the additional information needed to continue our review. We request that you provide responses to the enclosed RAI within 30 days from the date of this letter.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.30(b), "Oath or affirmation," you must execute your response in a signed original document under oath or affirmation. Your response must be submitted in accordance with 10 CFR 50.4, "Written communications." Information included in your response that is considered sensitive or proprietary, that you seek to have withheld from the public, must be marked in accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding." Any information related to security should be submitted in accordance with 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements." Following receipt of the additional information, we will continue our evaluation of your renewal request.

V. Nuccio

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If you have any questions about this review, or if you need additional time to respond to this request, please contact me at (301) 415-0893, or by electronic mail at [Geoffrey.Wertz@nrc.gov](mailto:Geoffrey.Wertz@nrc.gov).

Sincerely,

***/RA by Alexander Adams for/***

Geoffrey A. Wertz, Project Manager  
Research and Test Reactors Licensing Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

Docket No. 50-274  
License No. R-113

Enclosure:  
As stated

cc: See next page

U.S. Geological Survey TRIGA Reactor

Docket No. 50-274

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V. Nuccio

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**ADAMS Accession No.: ML16147A642** \*concurrence via e-mail NRR-088

OFFICE	NRR/DPR/PRLB*	NRR/DPR/PRLB*	NRR/DPR/PRLB	NRR/DPR/PRLB
NAME	GWertz	NParker	AAdams	GWertz (AAdams for)
DATE	6/23/16	6/23/16	6/28/16	6/28/16

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OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR ADDITIONAL INFORMATION

REGARDING THE RENEWAL OF

THE U.S. GEOLOGICAL SURVEY TRIGA RESEARCH REACTOR

LICENSE NO. R-113; DOCKET NO. 50-274

The U.S. Nuclear Regulatory Commission (NRC) is continuing its review of the U.S. Geological Survey (USGS) TRIGA Reactor (GSTR) license renewal application dated January 5, 2009 (a redacted version of the safety analysis report (SAR) is available on the NRC's public Web site at [www.nrc.gov](http://www.nrc.gov) under Agencywide Documents Access and Management System (ADAMS) Accession No. ML092120136), as supplemented. During our review, questions have arisen for which additional information is needed. This request for additional information (RAI) identifies the additional information needed to continue our review. Many of these RAIs below will refer to the Technical Specifications (TSs) provided by USGS letter dated April 1, 2016, (a redacted version can be found in ADAMS Accession No. ML16110A008). We request that you provide responses to this RAI within 30 days from the date of this letter.

1. The U.S. Department of Energy (DOE) Interagency Agreement for Enriched Uranium (Attachment 6), provided by your letter dated April 1, 2016, (ADAMS Accession No. ML16110A008), expired on September 31, 2015.

Section 302(b)(1)(B) of the Nuclear Waste Policy Act of 1982 states that the NRC will require, as a precondition to issuing or renewing an operating license for a research or test reactor, that the licensee has entered into an agreement with the DOE for the disposal of high-level radioactive wastes and spent nuclear fuel following cessation of operations.

Provide an active DOE fuel contract suitable for the NRC staff to use to verify that the USGS facility has a means to ensure that the fuel will be removed from the facility after operations cease.

2. The response to RAI No. 3, provided in Attachment 1 of your letter dated April 1, 2016, indicated that the analysis for the k-effective ( $k_{eff}$ ) for the fuel storage racks was performed with TRIGA fuel containing 8.5 weight percent (wt%) uranium. However, the GSTR License Renewal Application (LRA) SAR (ADAMS Accession No. ML092120136) indicates that GSTR uses both 8.5 wt% and 12 wt% uranium TRIGA fuel.

NUREG-1537, Part 1, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors – Format and Content," Section 9.2, "Handling and Storage of Reactor Fuel," and American National Standards Institute/American Nuclear Society (ANSI/ANS)-15.1-2007, "The Development of Technical Specifications for Research Reactors," provide guidance that the fuel and fueled devices shall be stored in a geometric array where  $k_{eff}$  is no greater than 0.90 for all conditions of moderation and reflection.

Indicate, by analysis, that the  $k_{eff}$  of the fuel storage racks for all fuel types used at GSTR is less or equal to 0.90, or justify why no additional information is needed.

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3. The proposed TSs do not appear to have a surveillance requirement (SR) to compare GSTR power pulse fuel temperatures and peak power levels, which is provided in the current GSTR TS D.5.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, "Standard Format and Content for Technical Specifications for Research Reactors," Section 4.1, "Reactor Core Parameters," item (3), "Pulse Limits," provides guidance that the relationship between pulse peak fuel temperature and inserted reactivity should be determined when changes are made to the core.

Provide a proposed TS SR for pulsing, or justify why no change is needed.

4. The GSTR LRA SAR, Section 11.1.6, "Radiation Monitoring," provides information associated with the Radiation Area Monitors, but does not appear to indicate the setpoints, nor the basis for the setpoints.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 3.7.1, "Monitoring Systems," item (3) "Area Monitors," provides guidance that the alarm and automatic action setpoints should be specified to ensure that personnel exposures and potential doses remain below the limits of Title 10 *Code of Federal Regulations* (10 CFR) Part 20, "Standards for Protection Against Radiation."

Provide the alarm or automatic action setpoints and a description of how the setpoints help ensure that personnel exposures and potential doses will remain below 10 CFR Part 20 limits, or justify why no change is needed.

5. Proposed TS 1.2, "Definitions," has the following items identified by the NRC staff:

- a. The proposed definition of "Licensed Area" includes a change that added "the area inside the wrought iron fence and south cooling tower wall that is near the SW corner of Building 15."

NUREG-1537, Part 1, Section 9.5, "Possession and Use of Byproduct, Source and Special Nuclear Material," provides guidance that "the applicant should clearly state the materials and areas of the facility requested to be authorized by the reactor license."

Provide a description and justification for the area identified above, or justify why no additional information is needed.

- b. The proposed definition of "Experiment," Specification 1, "Secured Experiment" appears to be missing the criteria provided in the guidance in ANSI/ANS-15.1-2007, for Secured Experiment, which states "or by forces that can arise as a result of credible malfunctions."

Revise the proposed TS definition for Secured Experiment to include the guidance in ANSI/ANS-15.1-2007, as provided above, or justify why no change is needed.

- c. The proposed definition of "Experiment," Specification 2, "Movable Experiment" indicates that it is one that is not secured. Proposed TS 3.1.1.1, "Shutdown Margin," uses the term "non-secured experiment." NRC staff is not clear if movable, not secured and non-secured experiments are all the same.

Revise the proposed TSs, as necessary, to use a consistent name associated with the definition of Movable Experiment, or justify why no changes are needed.

- d. The proposed definition of "Control Rod" states "neutron absorbing material," whereas TS 5.3.2, "Control Rods," indicate "borated graphite, B<sub>4</sub>C powder or boron." The NRC staff seeks consistent definitions to avoid confusion, and finds the information in TS 5.3.2 to better describe neutron absorbing material.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 1.2.2, "Format," provides guidance that any information used to support the TSs should be explicitly referenced.

Revise proposed definition in TS 1.2 "Control Rod" to be consistent with TS 5.3.2, or justify why no change is needed.

- e. The proposed definition of "Control Rod," Specifications 2, "Shim Rod" and Specification 3, "Transient Rod" does not indicate the means or mechanism for moving the control rod. In contrast, the Regulating Rod in Specification 1 indicated that its position may be varied manually or by the servo-controller. The NRC staff finds that additional detail would avoid future confusion.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 1.2.2, "Format," provides guidance that any information used to support the TSs should be explicitly referenced.

Revise proposed definition in TS 1.2, "Control Rod," Specification 2, "Shim Rod," and Specification 3, "Transient Rod," to indicate the means for positioning the control rod, or justify why no change is needed.

- f. The proposed definition of "Shutdown Reactivity" indicates that all control rods are inserted. "The proposed definition of "Shutdown Margin" uses the term "shutdown reactivity." However, the NRC staff finds that the definition of Shutdown Margin includes the most reactive rod in its most reactive position, which conflicts with the definition of shutdown reactivity, which states that all control rods are inserted.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 1.2.2, "Format," provides guidance that any information used to support the TSs should be explicitly referenced.

Revise the proposed definition of Shutdown Reactivity to resolve the discrepancy with its use in the definition of Shutdown Margin, delete the definition of Shutdown Reactivity (not used anywhere else in the TSs), or justify why no change is needed.

- 6. Proposed TS 3.1.1.1, "Shutdown Margin," provides a value of \$0.30 for the shutdown margin (SDM). The NRC staff has reviewed your responses to RAI No. 24.3 provided in your letters dated August 30 and November 16, 2012, and May 17, 2013 (ADAMS Accession Nos. ML12251A231, ML12334A001 and ML13162A662, respectively) and has been unable to substantiate the accuracy needed to determine the control rod worth to support a TS SDM value of \$0.30. The NRC staff noted that the RAI response indicated that the maximum error in the SDM calculation was \$0.159, or more than half of the proposed SDM limit. Given this error, a SDM of at least \$0.46 would be required.

The guidance in NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 3.1, "Reactor Core Parameters," item (2), "Shutdown Margin," suggests a value of \$0.50. The GSTR LRA SAR Section 13.2.6.2, "Accident Analysis and Determination of Consequences," states that the current GSTR TSs have a shutdown margin of \$0.55 with the most reactive rod withdrawn.

Revise proposed TS 3.1.1.1 to use a reactivity value for the Shutdown Margin consistent with the guidance and current SAR value (\$0.50 or \$0.55, respectively); provide further information which demonstrates why the proposed change to \$0.30 is acceptable; or justify why no change is needed.

7. Proposed TS 3.1.3, "Core Configuration Limitations," does not appear to include limitations on the core configuration for the removal or insertion of fuel or control rods.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 3.1, "Reactor Core Parameters," item (4), "Core Configurations," provides guidance for TS reactivity limits associated with fuel and control rod relocation.

Revise proposed TS 3.1.3 to include the guidance in NUREG-1537, Part 1, Chapter 14, Appendix 14.1 for the TS reactivity limits reference above, including appropriate SRs, or justify why no change is needed.

8. Proposed TS 3.1.4, "Fuel Parameters," Specification d., describes "significant bulges, pitting, or corrosion." It is not clear to the NRC staff how to quantify the term "significant" as it relates to visual inspection of the bulges, pitting or corrosion.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 3.1, "Reactor Core Parameters," item (6), "Fuel Parameters," provides guidance for the visual inspection of fuel.

Revise proposed TS 3.1.4 to follow the guidance in NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 3.1, "Reactor Core Parameters," item (6), "Fuel Parameters," or justify why no change is needed.

9. Proposed TS 3.2.1, "Control Rods," has the following items identified by the NRC staff:

- a. The NRC staff finds an apparent typographical error as Specification b. is listed twice.

Revise proposed TS 3.2.1, to correct the typographical error, or justify why no change is needed.

- b. Specification a. ends with an "or," but a semicolon follows Specification b., leaving it unclear to the relationship to the specification that follows (the 2<sup>nd</sup> Specification b.).

Revise the wording that links Specifications a., b., and the 2<sup>nd</sup> Specification b. to indicate if they are "and," "or," or stand-alone.

- c. The NRC staff finds that Specification b. is not clear and would be clearer if it was worded "1 second for any shim or regulating rod or..."

Revised the proposed wording in Specification b., or justify why no change is needed.

- d. The 2<sup>nd</sup> Specification b. describes a “standard control rod” which is not defined in the TS Definitions. The NRC staff is not clear if this definition differs from the definition of control rod in the TS Definitions section.

Revise the proposed wording in the 2<sup>nd</sup> Specification b. to clearly indicate what constitutes a “standard control rod,” or justify why no change is needed.

10. Proposed TS 3.2.3 has the following items identified by the NRC staff:

- a. Proposed TS 3.2.3, “Applicability” and “Objective” statements indicate the safety systems are required during “reactor operation.” The NRC staff finds that some of the Interlocks listed in Table 3.3 may be required in modes other than reactor operation.

Revise proposed TS 3.2.3, “Applicability” and “Objective” statements to ensure the proper reactor operating conditions are stated for the Interlocks listed in Table 3.3, or justify why no change is needed.

- b. Proposed TS 3.2.3, Table 3.2, “Preset Timer” Function states “SCRAM ( $\leq 15$  sec.)” The NRC staff finds that this is not a clear description and additional detail would alleviate potential future confusion.

Revise proposed TS 3.2.3, Table 3.2, “Preset Timer,” to state “SCRAM after pulse initiation ( $\leq 15$  sec),” or another similar description, or justify why no change is needed.

- c. Proposed TS 3.2.3, Table 3.2, “High voltage,” in the column “Function” states “SCRAM on loss of nominal operating voltage to required power channels.” The NRC staff is not clear which power channels are required.

Revise proposed TS 3.2.3, Table 3.2, “High voltage” in the column “Function” description to indicate the required power channels, or justify why no change is needed.

11. Proposed TSs 3.3 and 4.3, “Reactor Primary Tank Water,” does not appear to have a specification for radioactivity content of the primary tank water.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 3.3, “Coolant Systems,” item (8), “Secondary and Primary Coolant Radioactivity Limits,” and Section 4.3, “Coolant Systems,” Item (4), “Analysis of Coolants for Radioactivity,” provide guidance for TS limits associated with primary coolant radioactivity.

Revise proposed TS 3.3 and TS 4.3 to include a specification for reactor tank water radioactivity, or justify why no change is needed.

12. Proposed TS 3.5, “Ventilation and Confinement System,” provides a specification for operation of the ventilation system when the reactor is operating, but does not appear to include other situations which could result in the airborne release of radioactivity, such as the movement of fuel, fueled experiments or other material associated with experiments with the potential to become airborne.

ANSI/ANS-15.1-2007, Section 3.4.1, “Operations that Require Containment or Confinement,” items (2) through (4) provide guidance for activities other than reactor operation requiring

operation of the ventilation system. Additionally, NUREG-1537, Part II, Section 9.2, "Heating, Ventilation, and Air Conditioning," provides guidance that the operation of the ventilation system will limit normal airborne radioactive material to the limits in 10 CFR Part 20.

Revise proposed TS 3.5 to be consistent with the guidance in ANSI/ANS-15.1-2007 and NUREG-1537, or justify why no changes are needed.

13. The proposed TS 3.7.1, "Radiation Monitoring Systems," has the following items identified by the NRC staff:
- a. Proposed TS 3.7.1 states that each radiation monitoring channel in Table 3.4 has a readout in the control room and is capable of sounding an audible alarm. The environmental dosimeters are listed in Table 3.4, and the NRC staff is not clear if the environmental dosimeters have a readout in the control room or sound an audible alarm.

Revise proposed TS 3.7.1 to account for the readout and audible alarm capability of the environmental dosimeters, or justify why no change is needed.

- b. Proposed TS 3.7.1, "Radiation Monitoring Systems," Table 3.4, lists the Radiation Area Monitor as a required channel. SAR Section 11.1.7.2, "Fixed Area Monitors," indicates that there are five gamma-sensitive area monitors in the GSTR facility, and the reactor bay monitor must be operable to support GSTR operation. SAR Section 7.7.1, "Area Radiation Monitors," describes radiation levels being monitored at strategic areas through the GSTR facility.

However, it is not clear to the NRC staff how the different terms "Radiation Area Monitor," "Fixed Area Monitors," and "Area Radiation Monitors," are related since they appear to describe the same system for monitoring the gamma radiation in various locations of the GSTR facility. It is also not clear where the Radiation Area Monitor is located, or what components constitute the Radiation Area Monitor Channel required in TS 3.7.1, Table 3.4. The footnote to Table 3.4, indicates that the "monitors" may be out of service, but only describes a temporary substitute for the Area Radiation Monitor. It is not clear if this includes the Radiation Area Monitor and/or Continuous Air Monitor.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 3.7.1, "Monitoring Systems," item (3) "Area Monitors," provides guidance that a TS should require operable area radiation monitors in and near the reactor.

- i. Provide a clear (or consistent) description relating the "Radiation Area Monitor" "Fixed Area Monitors" and "Area Radiation Monitors" for NRC staff understanding of the different names, what constitutes a Radiation Area Monitor Channel, or justify why no change is needed.
- ii. Revise proposed TS 3.7.1, Table 3.4, to clearly articulate the radiation monitor needed to support the GSTR operation, and its location, if needed to differentiate it from other area radiation monitors, or justify why no change is needed.
- iii. Revise proposed TS 3.7.1, Table 3.4, Footnote, to clearly articulate those monitors which can be temporarily replaced with a substitute monitor.

- c. Proposed TS 3.7.1, has a footnote, indicated by an "\*" that states "Monitors..." The NRC staff is not clear how this note relates to the number of channels in Table 3.4, or if this note indicates that multiple monitors can be out-of-service simultaneously, including all monitors which comprise a channel as listed in Table 3.4.

Revise proposed TS 3.7.1, footnote, to clearly indicate the number of monitors which may be out-of-service simultaneously, explain how that relates to the number of channels provided in Table 3.4, or justify why no change is needed.

14. Proposed TS 3.8.1, "Reactivity Limits," Specifications a. and b., provide reactivity limits for a single moveable experiment and a single secured experiment, respectively. There does not appear to be a TS that provides a limit on the sum of all experiments.

The guidance in NUREG-1537, Part 1, refers to ANSI/ANS-15.1-2007, and U.S. Nuclear Regulatory Commission Regulatory Guide (RG) 2.2, "Development of Technical Specifications for Experiments in Research Reactors," November 1973. ANSI-15.1-2007, 3.8.1, "Reactivity Limits," item (2) provides guidance that "the sum of the absolute values of the reactivity worths of all experiments," should be indicated as a limit. RG 2.2, C.1.A, "Reactivity Effects," item (5) provides guidance that "the sum of the magnitudes of the static reactivity worths of all unsecured experiments which coexist should not exceed the maximum value of potential reactivity worth authorized for a single secured removable experiment (e.g., proposed TS 3.8.1, Specification b., \$3.00)."

Propose a TS limit for the sum of the absolute reactivity values for all experiment, or justify why no change is needed. Include an assessment of the reactivity value for the proposed TS limit consistent with the guidance described above.

15. Proposed TS 4, "Surveillance Requirements," states "All bases for the following surveillance requirements can be found in the operating procedures within the Reactor Operations Manual or in Safety Analysis Report. The approved operating procedures are periodically reviewed and reapproved by the Reactor Operations Committee (ROC)." The NRC staff is not clear as to the purpose of this information, nor does it match the guidance in NUREG-1537 or ANSI/ANS-15.1-2007.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 1.2.2, "Format," provides guidance that any information used to support the TSs should be explicitly referenced.

Revise or remove the statement in TS 4.0 above, or justify why no change is needed.

16. Proposed TS 4.0, "General," has the following items identified by the NRC staff:

- a. Proposed TS 4.0, Specification 1, defers some SRs during an "extended reactor shutdown." However, "extended reactor shutdown" is not defined.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 4, "Surveillance Requirements," provides guidance that surveillances that are not required for safety while the reactor is shutdown may be deferred.

Revise proposed TS 4.0, Specification 1, "extended reactor shutdown to match the guidance in NUREG-1537, Part 1, Chapter 14, Appendix 14.1, or justify why no change is needed.

- b. Proposed TS 4.0, Specification 1, allows SRs to be deferred during reactor shutdown, except those as stated, including "section (TS) 4.7, specification 2." The NRC staff is not clear why TS 4.7, specifications 1, 3 and 4, could be deferred during reactor shutdown since the possibility could exist that other activities within the GSTR facility involving the use or handling of radioactive material, could result in the need for the CAM, ARM and environmental monitors to be maintained.

Provide a justification for the provision in TS 4.0, Specification 1 to defer the surveillance requirements of TS 4.7, Specifications 1, 3 and 4; propose a revision to TS 4.0, Specifications 1, to remove TS 4.7; or justify why no change is needed.

- 17. Proposed TS 4.1, "Reactor Core Parameters," has the following items identified by the NRC staff:

- a. Specification 2, provides a SR for the total reactivity worth of each control rod. However, the periodicity appears limited to any significant change in core or control rod configuration, and the term "significant change" is not defined.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 4.2, "Reactor Control and Safety Systems," provides guidance that the surveillance should be performed annually.

Revise proposed TS 4.1, Specification 2, to include an annual SR period and include a definition of "significant change," or justify why no changes are needed.

- b. Proposed TS 4.1, Specification 3, provides a SR for the maximum reactivity insertion rate following any significant change in core or control rod configuration. However, "significant change in core or control rod configuration," is not defined, and no other periodicity is provided.

ANSI/ANS-15.1-2007, Section 4.2, "Reactor Control and Safety Systems," item (2) provides guidance that the rod insertion and withdraw speeds should also be measured annually.

Revise proposed TS 4.1, Specification 3 to define "significant change in core or control rod configuration," and include an annual SR period, or justify why no changes are needed.

- c. Proposed TS 4.1, Specification 6, provides a SR on the transient control rod mechanical stop when pulsing is scheduled. However, no periodicity is provided by the TS, and the drive mechanism is not included in the SR.

ANSI/ANS-15.1-2007, Section 4.2, "Reactor Control and Safety Systems," item (3) provides guidance that the transient rod and mechanism should be tested and inspected annually.

Revise proposed TS 4.1, Specification 6, to include a SR for the transient rod and drive mechanism to be tested and inspected annually, or justify why no change is needed.

- d. Proposed TS 4.1, Specification 8, provides a SR for fuel element inspection at intervals of 5 years or 500 pulses.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 4.1, "Reactor Core Parameters," item (6), "Fuel Parameters," provides guidance that fuel inspections for TRIGA reactor fuel which is used to pulse should be performed annually. The NRC staff notes the low pulsing activity at GSTR and, in accordance with guidance referenced above, would consider a relaxed requirement to be acceptable (e.g., 20 percent of the fuel elements inspected each year, including some peak power fuel elements, with all the fuel elements being inspected over a 5 year period along with a requirement that if a fuel element fails the annual 20 percent inspection, all fuel elements are inspected).

Revise proposed TS 4.1, Specification 8, to include an annual SR period consistent with the guidance in ANSI/ANS-15.1-2007, or justify why no change is needed.

- 18. Proposed TS 4.2, "Reactor Control and Safety Systems," has the following items identified by the NRC staff:

- a. Proposed TS 4.2, Specification 2, provides a SR for the scram time following any repair or non-routine maintenance on the control rod drive. The NRC staff is not clear why the surveillance is limited to "non-routine" maintenance or to just the control rod drive.

ANSI/ANS-15.1-2007, Section 4.2, "Reactor Control and Safety Systems," item (4) provides guidance that scram time testing should be performed following any work on the control rods or control rod drives.

Revise proposed TS 4.2, Specification 2, to follow the guidance described above, or justify why no changes are needed.

- b. Proposed TS 4.2, Specification 3, provides a SR, for the items listed in TS Table 3.2, to perform channel checks following modifications or repairs.

ANSI/ANS-15.1-2007, Section 4.2, "Reactor Control and Safety Systems," item (6) provides guidance that an operability (channel) test should be performed following modifications or repairs. The definitions in Section 1.3 of ANSI//ANS-15.1-2007 provide guidance for the definition of a channel test.

Revise proposed TS 4.2, Specification 3, to perform a channel test following modifications or repairs, or justify why no change is needed.

- c. Proposed TS 4.2, "Specification 4, provides a SR for items in TS 3.2.3, Table 3.2, "Minimum Reactor Safety Channels," related to pulsing, and for Table 3.2 and 3.3, except for the NM-1000.

The specification is not clear to the NRC staff. It appears to cover surveillances for items needed for pulsing and for other items on a semi-annual period.

Revise proposed TS 4.2, Specification 4, to clearly indicate which of the SRs are for the items in TS 3.2.3, Tables 3.2 and 3.3.

- d. Proposed TS 4.2, Specification 4, provides an exception for the semi-annual test of the NM-1000 which is not clear to the NRC staff. Also, it is not clear which TS 4 SR is applicable to the NM-1000. Additionally, NM-1000 is not listed in TS 3.2.3, Table 3.2.

Revise proposed TS 4.2, Specification 4, to clearly indicate the SR for the NM-1000, if it is only associated with the interlock in Table 3.3, or justify why no change is needed.

- e. Proposed TS 4.2 does not appear to provide SRs for TS 3.2.3, Table 3.2.

ANSI/ANS-15.1-2007, Section 4.2, "Reactor Control and Safety Systems," provides guidance for surveillances of reactor safety and control systems, like those listed in TS 3.2.3, Table 3.2.

Provide SRs for TS 3.2.3, Table 3.2, or justify why no change is needed.

- 19. Proposed TS 4.3, "Reactor Primary Tank Water," has the following items identified by the NRC staff:

- a. Proposed TS 4.3, Specification 1, provides a SR for the reactor tank water level alarm. The NRC staff finds that proposed TS 3.3, "Reactor Primary Tank Water," provides a limiting condition of operation (LCO) for the tank level, but does not indicate an alarm.

The regulations in 10 CFR 50.36(c)(2)(ii)(a), requires installed instrumentation to detect a significant abnormal degradation of the reactor coolant boundary.

Revise proposed TS 3.3, to include an alarm for the reactor tank water level, or justify why no change is needed.

- b. Proposed TS 4.3, "Reactor Primary Tank Water," does not appear to have a channel test for the reactor tank water level alarm.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 4.3, "Coolant Systems," item (8), "Primary Coolant Sensors and Channels," provides guidance for calibration of sensors associated with the primary coolant.

Revise proposed TS 4.3 to include a channel test for the reactor tank level alarm, or justify why no change is needed.

- c. The "NOTE" is contained within proposed TS 4.3, Specification 3. The NRC staff finds that this may be a typographical error as the NOTE may be applicable to all three proposed TSs (TS 4.3, Specifications 1 through 3).

Revise the placement of the NOTE to indicate its applicability to all three proposed TS 4.3, Specifications 1 through 3, or justify why no change is needed.

- d. Proposed TS 4.3, Specification 3, requires a monthly measurement of the conductivity. Proposed TS 3.3, Specification b., provides a conductivity limit when averaged over one month. The NRC staff is unclear how a monthly surveillance can produce a monthly average give only one data point.

Revise proposed TS 4.3, Specification 3, to measure the conductivity more frequently in order to determine a monthly average, or justify why no change is needed.

20. Proposed TS 4.5, "Ventilation and Confinement System," Specification 2, provides for a channel test of the reactor bay ventilation system's ability to automatically switch to the emergency mode upon actuation of the CAM high alarm. The LCO in TS 3.5, indicates that the emergency ventilation system is operable if the emergency exhaust fan is operating and if the reactor bay minimum differential pressure is 0.1 inches water column. The NRC staff finds that the SR in TS 4.5 does not appear to test the fan or differential air pressure, only the ventilation system's ability to switch.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 4.4.2, "Confinement," provides guidance that confinement systems should have a functional test of the overall system described in the SAR.

Revise proposed TS 4.5, Specification 2, to ensure the emergency ventilation system is channel tested consistent with the requirements in the TS 3.5 LCO, or justify why no change is needed.

21. Proposed TS 4.7, "Radiation Monitoring System," has the following items identified by the NRC staff:

- a. Proposed TS 3.7.2, "Effluents," has a value for Ar-41 that could allow the reactor room airborne radioactivity levels to potentially exceed the Derived Air Concentration provided in 10 CFR Part 20. As such, the NRC staff considers the proposed "monthly" periodicity for the channel check for TS 4.7, Specification 1, for the radiation area monitor to be too infrequent to verify the airborne radiation levels and to be able to respond in accordance with the requirements in 10 CFR 20.1702, as appropriate. The NRC staff considers a daily channel check of the continuous air monitor to be a more appropriate frequency for the assessment of any potential Ar-41 activity in the reactor room.

Revise proposed TS 4.7, Specification 1, to daily, or justify why no change is needed.

- b. Proposed TS 4.7. Specification 3, provides a SR for the Ar-41 monitor, but TS 3.7.2, "Effluents," does not appear to provide an LCO for the Ar-41 monitor.

Provide an LCO for the Ar-41 monitor, or justify why no change is needed.

22. Proposed TS 4.8, "Experimental Limits," Specification 1, references "section 3.7.1," and Specification 2, references "section 3.8.2, section 3.8.3, and section 6.2.3." The NRC staff finds that a more definitive reference to the sections, such as "TS 3.7.1," would reduce potential confusion. The NRC staff finds other examples where TS sections are referenced without including the "TS," e.g., see TS 4.0, Specification 1.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 1.2.2, "Format," provides guidance that any information used to support the TSs should be explicitly referenced.

Revise proposed TS 4.8, to indicate that the sections being referenced are "TS," and review and revise similar examples in the TS, or justify why no change is needed.

23. Proposed TS 5.1, "Site and Facility Description," has the following items identified by the NRC staff:

- a. Proposed TS 5.1, Specification 1, states "The licensed area includes..." which the NRC staff finds could infer that there are other areas beyond those listed in TS 5.1, Specifications a. through c.

Revise proposed TS 5.1, Specification 1 to state "The licensed area shall be..." or justify why no change is needed.

- b. Proposed TS 5.1, Specification 2, states "The reactor bay volume is 12000 cubic feet, and is designed..." which is more precise than necessary and present compliance challenge during an NRC inspection. The NRC staff considers a nominal value for the reactor bay volume to be acceptable.

Revise proposed TS 5.1, Specification 2 to state "The reactor bay volume shall be a nominal 12000 cubic feet, and shall be designed..." or justify why no change is needed.

24. Proposed TS 5.2, "Reactor Coolant System," contains a "NOTE:" that indicates that the specifications are not required if the reactor core is defueled. The NRC staff is unclear if this this TS Note is acceptable if the core could be unloaded but fuel could still be stored in the fuel storage racks in the pool.

Explain the adequacy of the TS Note if core could be unloaded but fuel could still be stored in the fuel storage racks in the pool.

Revise proposed TS 5.2, Note, if necessary to clarify the conditions which no longer require TS 5.2, Specifications 1 and 2, or justify why no change is needed.

25. Proposed TS 5.3.1, "Reactor Core," Specification 2, states "The TRIGA core assembly may..." The NRC staff is not clear if this "may" should be "shall" in order to limit the GSTR core to the fuel described in the specification.

ANSI/ANS-15.1-2007, Section 1.3, "Definitions," provides a definition of "shall" as denoting a requirement.

Revise proposed TS 5.3.1, Specification 2, to use "shall", or justify why no change is needed.

26. Proposed TS 5.3.3, "Reactor Fuel," Specifications 1.a and 2.a, describe "nominal 20% <sup>235</sup>U enrichment," which could include highly enriched uranium (HEU) fuel, as provided in the definition for HEU in 10 CFR 50.2, "Definitions." The NRC staff recognizes that GSTR uses low enriched fuel, as described in the SAR. However, for clarity, the description provided in TS 5.3.3 should preclude any possibility for the use of HEU fuel (equal to 20 percent or greater enriched uranium-235).

Revise proposed TS 5.3.3, Specifications 1.a and 2.a to indicate that HEU fuel is not used at GSTR, or justify why no change is needed.

27. Proposed TS 5.4, "Fuel Storage," has the following items identified by the NRC staff:

- a. Specification 1 states “all fuel elements...” However, the NRC staff finds that USGS has the capability to perform fueled experiments and therefore should consider the need to store fueled experiments or devices.

ANSI/ANS-15.1-2007, Section 5.4, “Fissionable Material Storage,” provides guidance for the storage of fuel, including fuel, and fueled experiments and devices.

Revise proposed TS 5.4 to include fueled experiments and devices, or justify why no change is needed.

- b. Specification 3 states “must” rather than “shall.”

ANSI/ANS-15.1-2007, Section 1.3, “Definitions,” provides a definition of “shall” as denoting a requirement.

Revise proposed TS 5.4, Specification 3, to use “shall,” or justify why no change is needed.

- 28. Proposed TS 6.1, “Organization,” references ANSI/ANS-15.4, “Standard for the Selection and Training of Personnel for Research Reactors.” The NRC staff finds that the title referenced does not match the title of ANSI/ANS-15.4, which is titled “Selection and Training of Personnel for Research Reactors,” and does not contain “Standard for the,” in the title. Additionally, the NRC staff noted that ANSI/ANS-15.4 has been recently revised (ANSI/ANS-15.4-2016) and consideration should be given to referencing the latest version.

Revise proposed TS 6.1 to use the correct title and revision year (e.g., 2007 or 2016) for ANSI/ANS-15.4, or justify why no change is needed.

- 29. Proposed TS 6.1.1, “Structure,” has the following issues identified by the NRC staff:

- a. Proposed TS 6.1.1 references the “USNRC,” which the NRC staff finds is not consistent with the guidance in NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 6.1.1, “Structure,” and Figure 1, and ANSI/ANS-15.1-2007, Section 6.1.1, “Structure,” and Figure 1.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1 and ANSI/ANS-15.1-2007, provide guidance that does not include a reference to the USNRC.

Revise proposed TS 6.1.1 to remove USNRC, or justify why no change is needed.

- b. Proposed TS 6.1.1, refers to the reactor administration in (Figure) 1: Administrative Structure. However, the NRC staff finds that figure provided in the proposed TS is only labeled as “1: Administrative Structure,” and does not include “Figure” in the title. The NRC staff finds that it would be appropriate to add “Figure” to the title (e.g., “Figure 1: Administrative Structure”) to reduce potential confusion when referring to the administrative structure.

ANSI/ANS-15.1-2007, Section 6.1.1, “Structure,” provides guidance for the title as Figure 1.

Revise proposed TS (Figure) 1: Administrative Structure to add Figure to the title, or justify why no change is needed.

- c. Proposed TS 6.1.1, (Figure) 1: Administrative Structure, provides a position (box) for the Senior Reactor Operator-in-charge. However, the NRC staff finds that the position does not have an indicated authority level in the box.

ANSI/ANS-15.1-2007, Section 6.1.1., "Structure," provides guidance to indicate the responsibility levels for the staff responsible for the operation of the facility.

Revise proposed TS (Figure) 1: Administrative Structure to indicate responsibility level of the Senior Reactor Operator-in-charge, or justify why no change is needed.

- d. The NRC staff finds that the Radiation Safety Committee Chairperson and Health Physics Staff have been replaced in the proposed TS (Figure) 1: Administrative Structure, with the Reactor Health Physicist.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 6.1.1, "Structure," provides guidance that the TS should clearly indicate how and when the radiation safety staff communicates with facility management to resolve safety issues. Although the proposed change is consistent with the guidance in NUREG-1537, Part 1, the NRC is not clear as to the reason for the proposed change.

Provide a basis or justification for the change to the Reactor Health Physicist, or explain why no additional information change is needed.

- e. The NRC staff finds that the Reactor Health Physicist does not have a communication or a responsibility line to the Reactor Administrator (Level 1) or to the Senior Reactor Operator-in-charge.

ANSI/ANS-15.1-2007, Section 6.1.1, Figure 1, provides guidance that Radiation Safety (Health Physicist) has a reporting line to the Level 1 or 2, and a communication line to the Level 3.

Revise proposed TS (Figure) 1 to provide reporting and communication lines consistent with the guidance in ANSI/ANS-15.1-2007, or justify why no change is needed.

- f. The proposed TS (Figure) 1: Administrative Structure, Reactor Operations Committee (ROC) illustration box contains information which includes: the ROC, the chairperson, the membership, and the reactor supervisor ex-officio. The NRC staff is not clear if this information constitutes requirements.

ANSI/ANS-15.1-2007 provides guidance for the information needed in the Review/Audit illustration box of Figure 1 which does not contain information on the chairperson, the membership and the reactor supervisor ex-officio.

Revise the TS (Figure) 1: Administrative Structure, for the ROC illustration box to be consistent with the guidance in ANSI/ANS-15.1-2007.

30. Proposed TS 6.1.2, "Responsibility," describes responsibilities for the various GSTR facility management levels. However, the NRC staff finds that the Senior Reactor Operator-in-charge is not described.

ANSI/ANS-15.1-2007, Section 6.1.1, provides guidance that other organizational levels or staffing may be added to meet specific facility needs.

Revise proposed TS 6.1.2, to add the responsibility for the Senior Reactor Operator-in-charge, or justify why no change is needed.

31. Proposed TS 6.1.3, "Staffing," has the following items identified by the NRC staff:
- a. Proposed TS 6.1.3, Specification 1.b., requires a second person present within the Denver Federal Center.

ANSI/ANS-15.1-2007, Section 6.1.3, "Staffing," item (1)(b) provides guidance that the second individual be at the facility complex. However, the NRC staff finds that the Denver Federal Center appears to be much larger than the facility complex intended in the guidance provided in ANSI/ANS-15.1-2007, and as such, could substantially lengthen the time needed to respond to a GSTR emergency.

Revise proposed TS 6.1.3, Specification 1.b, to indicate the facility complex (e.g., Building 15 or GSTR facility), or justify why no change is needed.

- b. Proposed TS 6.1.3, Specification 1.e., requires a list of facility personnel and contact information. However, the NRC staff finds that the types of support staff do not appear to be included by list.

ANSI/ANS-15.1-2007, 6.1.3 item (2) provides guidance that the list shall include: management personnel; radiation safety personnel; and other operations personnel.

Revise proposed TS 6.1.3, Specification 1.e., to include the support staff types provided in the ANSI/ANS-15.1-2007 guidance, or justify why no change is needed.

- c. Proposed TS 6.1.3, Specification 2.d, "Events requiring the direction of a Senior Reactor Operator," item d., includes "irradiation facility." However, the NRC staff is not clear if irradiation facility is equivalent to experiment.

ANSI/ANS-15.1-2007, Section 6.1.3, "Staffing," provides guidance that a Senior Reactor Operator is need for the relocation of an experiment.

Revise proposed TS 6.1.3, Specification 2.d., to include experiment, or justify why no change is needed.

32. Proposed TS 6.1.4, "Selection and Training of Personnel," provides reference to ANSI/ANS-15.4-2007," and states that the title is "Standard for the Selection and Training of Personnel for Research Reactors." However, the NRC staff finds that this title does not match the title for ANSI/ANS-15.4-2007 (or the revised version, ANSI/ANS-15.4-2016).

ANSI/ANS-15.4 has the title "Selection and Training of Personnel for Research Reactors."

Revise proposed TS 6.1.4, reference to ANSI/ANS-15.4, to correct the title, or justify why no change is needed.

33. Proposed TS 6.1.2, "Responsibility," Specification a., provides responsibilities for the Reactor Administrator. However, the NRC staff finds that the Reactor Administrator is not clearly defined by position or title within the USGS organization.

ANSI/ANS-15.1-2007, Section 6.1.2, "Responsibility," provides guidance that the individual responsible for the facility's license should be identified.

Revise proposed TS 6.1.2, Specification a. to clearly identify the individual within USGS responsible for the facility's license as the Reactor Administrator, or justify why no change is needed.

34. Proposed TS 6.2.1, "Composition and Qualifications," and proposed TS 6.2.2, "Charter and Rules," provide a description of the ROC composition and qualifications, and charter and rules, and which uses the words "is" and "will" in several locations. The NRC staff finds the use of "is" and "will" to be less effective than "shall" and could result in potential confusion.

ANSI/ANS-15.1-2007, Section 1.3, "Definitions," provides a definition of "shall" as denoting a requirement.

Revise proposed TS 6.2.1 and 6.2.2 to use "shall" for requirements, or justify why no change is needed.

35. Proposed TS 6.2.2, "Charter and Rules," has the following items identified by the NRC staff:

- a. Proposed TS 6.2.2, states that "Criteria have been established for the conduct..." but the NRC staff finds that it doesn't state if the criteria is required.

ANSI/ANS-15.1-2007, Section 6.2.2, "Charter and Rules," states that the review and audit functions shall be conducted in accordance with the charter or directive.

Revise proposed TS 6.2.2 to indicate that the criteria is in effect for the conduct of the review and audit functions, or justify why no change is needed.

- b. Proposed TS 6.2.2, states "...non-Survey members..." which the NRC staff finds is not clearly defined. The NRC staff finds that a clear definition will avoid potential confusion in the future.

Revise proposed TS 6.2.2 to clarify or define the term "non-Survey members," or justify why no change is needed.

- c. Proposed TS 6.2.2, states, "A quorum for review, audit, and approval purposes shall consist of not less than one-half of the committee membership, provided that the operating staff does not constitute a majority of the committee membership." The NRC staff finds that the second reference to "committee membership" should be changed to "quorum" in order to reflect the limitations provided by the definition of quorum.

Revise proposed TS 6.2.2 to change second reference to committee membership to quorum, or justify why no change is needed.

36. Proposed TS 6.2.3, "Review and Audit Function," has the following items identified by the NRC staff:

- a. Proposed TS 6.2.3, Specification c., states, "...near a technical specification limit..." The NRC staff is not clear as to what constitutes the term "near."

Revise proposed TS 6.2.3, Specification c., to clearly indicate the criteria for the review function.

- b. Proposed TS 6.2.3, Specifications a., d., and e. and use "charter." The NRC staff is not clear as to the definition of "charter."

Revise proposed TS 6.2.3, Specifications a., d., and e. and to remove or clarify the use of the term "charter," or justify why no change is needed.

- c. Proposed TS 6.2.3, does not appear to require an audit of the Security Plan.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 6.2.4, "Audit Function," provides guidance that includes an audit of the Security Plan.

Revise proposed TS 6.2.3, to include an audit of the Security Plan, or justify why no change is needed.

- d. Proposed TS 6.2.3, states "A written report or minutes of the findings and recommendations of the review shall be submitted to the Reactor Administrator and the review and/or audit group members within 3 months after the audit has been completed."

The NRC staff is not clear as to the reference to the "review and audit group members" since it appears to be the responsibility of the ROC.

Revise proposed TS 6.2.3 to clarify the "review and audit group members," or justify why no change is needed.

- e. Proposed TS 6.2.3, states "These meetings will also include annual audits of the reactor facility and reactor records by the Committee."

The NRC staff finds it is not clear as to which "meetings" are referenced, and that this sentence may be better located within TS 6.2.3 to improve clarity.

Revise proposed TS 6.2.3 to indicate which "meetings" are referenced, or justify why no change is needed.

- 37. Proposed TS 6.4, "Procedures," has several items identified by the NRC staff:

- a. Proposed TS 6.4 does not appear to state the responsible party for the review and approval of procedures.

ANSI/ANS-15.1-2007, Section 6.4, "Procedures," provides guidance for the review and approval of procedures.

Revise proposed TS 6.4 to indicate the responsible party for the review and approval of procedures, or justify why no change is needed.

- b. Proposed TS 6.4 does not appear to provide any requirements associated with changes to procedures.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 6.4, "Procedures," provides guidance that states that the method for procedure changes should be included in the TSs, and that minor modifications or temporary changes allowed by ANSI/ANS-15.1-2007 should not be spelled out in the TSs.

Revise proposed TS 6.4 to include the method used for procedure changes, or justify why no change is needed.

- c. Proposed TS 6.4, Specification a. does not include all of the information provided in the guidance in ANSI/ANS-15.1-2007, Section 6.4, "Procedures," item (4) that states "or those that have an effect on reactor safety."

Revise proposed TS 6.4, Specification a. to include the guidance in ANSI/ANS-15.1-2007, or justify why no change is needed.

- d. Proposed TS 6.4, Specification f. does not include all of the information provided in the guidance in ANSI/ANS-15.1-2007, Section 6.4, "Procedures," item (4) specifically that states "or core reactivity."

Revise proposed TS 6.4, Specification f. to include the guidance provided in ANSI/ANS-15.1-2007, or justify why no change is needed.

- 38. Proposed TS 6.5, "Experiment Review and Approval," has the following items identified by the NRC staff:

- a. Proposed TS 6.5 uses "will" and "must" in several locations. The NRC staff considers the use of "will" and "must" could be subject to confusion and to be less effective than "shall."

ANSI/ANS-15.1-2007, Section 1.3, "Definitions," provides a definition of "shall" as denoting a requirement.

Revise proposed TS 6.5 to use "shall" to indicate requirements, or justify why no change is needed.

- b. Proposed TS 6.5 uses the phrase "as part of the 10 CFR 50.59 process," which is not clear to the NRC staff with respect to which requirements are associated with 10 CFR 50.59, "Changes, Tests and Experiments."

The regulation in 10 CFR 50.59 requires a review of any experiment not described in the final SAR in order to determine if NRC approval is required.

Revise proposed TS 6.5 to clearly indicate that all experiments require a review in accordance with the 10 CFR 50.59 review requirements, or justify why no change is needed.

- c. Based on the definition of Class II experiments provided within TS 6.5, the NRC staff is not clear why the list of experiments is needed in TS 6.5, Specifications a through g, as Class II

experiments appear to constitute all experiments other than Class I experiments. The list of experiments provided by TS 6.5, Specifications a through g, is in addition to the guidance provided in ANSI/ANS-15.1-2007, and may be more effective to maintain the criteria in an operating procedure.

Revise proposed TS 6.5 to remove the list of Specification a through g, or justify why no change is needed.

- d. The "Radiation Safety Committee," is used in proposed TS 6.5, but not defined in the TS, or identified in TS Figure 1. NRC staff finds that the role and responsibility for the Radiation Safety Committee is not clearly defined.

Revise proposed TS 6.5 to provide the role and responsibility for the Radiation Safety Committee, or justify why no change is needed.

39. Proposed TS 6.6.2, "Actions to Be Taken in the Event of an Occurrence of the Type Identified in Section 6.7.2 Other than a Safety Limit Violation," and proposed TS 6.6.2, Specification d., both refer to "Section 6.7.2." The NRC staff finds this reference is not clearly stated as it should reference "TS Section 6.7.2," or "TS 6.7.2." Additionally, Specification d., refers to NRC, rather than U.S. NRC.

NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 1.2.2, "Format," provides guidance that any sources used to support the TSs should be explicitly referenced.

- a. Revise proposed TS 6.6.2 to include "TS" in the section reference, or justify why no change is needed.
- b. Revise proposed TS 6.6.2, Specification d., to clearly refer to the "U.S. NRC," or justify why no change is needed.
- c. Review and revise other examples referencing the U.S. NRC, as appropriate, or justify why no other changes are needed.

40. Proposed TS 6.7.2, "Special Reports," has the following items identified by the NRC staff:

- a. Proposed TS 6.7.2, Specification a, does not appear to contain the US NRC address, as provided in the guidance in NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 6.7.2, "Special Reports."

Revise proposed TS 6.7.2 to include the address for the U.S. NRC as provided in the guidance in NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 6.7.2, or as provided in the proposed TS 6.7.2, b., or justify why no change is needed.

- b. Proposed TS 6.7.2, Specification a. iii, uses the term "LSSS" which is not consistent with the guidance provided in ANSI/ANS-15.1-2007, 6.7.2 (1)(c)(i).

Revise proposed TS 6.7.2, Specification a. iii, consistent with the guidance in ANSI/ANS-15.1-2007, or justify why no change is needed.

- c. Proposed TS 6.7.2, Specification a. v, uses “failure” instead of “malfunction” and appears to omit “renders” and generally does not match the wording provided in the guidance in ANSI/ANS-15.1-2007, Section 6.7.2.

Revise proposed TS 6.7.2, consistent with the guidance provided in ANSI/ANS-15.1-2007, or justify why no change is needed.

- d. Proposed TS 6.7.2, Specification a. vi, does not appear to be consistent with the wording provided in the guidance in ANSI/ANS-15.1-2007, Section 6.7.2, regarding “reactor trips.” Revise proposed TS 6.7.2, Specification a. vi, consistent with the guidance in ANSI/ANS-15.1-2007, or justify why no changes are needed.

- e. Proposed TS 6.7.2, Specification a. vii, does not appear to be consistent with the wording provided in the guidance in ANSI/ANS-15.1-2007, Section 6.7.2, regarding the “causes” the existence or development of a condition.

Revise proposed TS 6.7.2, Specification a. vii, consistent with the guidance in ANSI/ANS-15.1-2007, to include “causes,” or justify why no changes are needed.

- 41. The NRC staff finds the numbering inconsistent in the proposed TSs. In some cases, the TS specifications are numerically listed (e.g., 1, 2, 3, etc.) and in other cases they are alpha-numerically listed (e.g., a, b, c, etc.). The NRC staff finds this confusing.

NUREG-1537, Part 1, and ANSI/ANS-15.1-2007 provide guidance that uses a numerical listing. However, an alpha-numerical listing is also acceptable given it is used consistently.

Consider revising the proposed TS to use either a consistent numerical or alpha-numerical listing, or justify why no changes are needed.