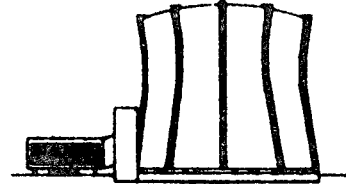


TEXAS ENGINEERING EXPERIMENT STATION

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July 28, 2010

Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

2010-0042

Subject: Response to NRC Requests for Additional Information Questions 9 and 11, Chapter 14- Technical Specifications, from the Texas A&M University System, Texas Engineering Experiment Station, Nuclear Science Center Reactor (NSCR, License No. R-83, Docket 50-128)

To Whom It May Concern:

The Texas A&M University System, Texas Engineering Experiment Station (TEES), Nuclear Science Center (NSC, License No. R-83) operates a LEU, 1MW, TRIGA reactor under timely renewal. In December, 2003 the NSC submitted a Safety Analysis Report (SAR) as part of the license renewal process. In December, 2005 a conversion SAR (Chapter 18) was submitted resulting in an order to convert from the NRC. In July 2009, the NSC submitted an updated SAR, dated June 2009, to the Nuclear Regulatory Commission (NRC). This updated 2009 version of our SAR incorporated the information from the conversion SAR and the startup of the new LEU reactor core. On June 24, 2010 the NRC submitted a Request for Additional Information as a part of the review process. This request included thirty-seven questions related to the NSC's SAR submittal. Attached to this letter are the NSC's response to Questions 9, and 11 of the NRC's non-financial RAIs. Please note in the attachment that text from the NRC's June 24th letter has been italicized and the NSC's non-italicized response immediately follows each question.

If you have any questions, please contact Jim Remlinger or me at 979-845-7551.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 28, 2010.

W. D. Reece  
NSC, Director

Xc: 2.11/Central File  
Chris Cowdrey, NRC Project Manager

A020  
NRC

Texas A&M University System  
Texas Engineering Experiment Station  
Nuclear Science Center  
License No. R-83  
Docket No. 50-128

Responses to Request for Additional Information  
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9. NUREG-1537 states that the format and content of the TS follow that of ANSI/ANS 15.1. ANSI/ANS-15.1-2007, Section 6.7.2 discusses special reporting requirements for operational occurrences. TAMU TS 14.1.31(3) lists a reportable occurrence as "A reactor safety system component malfunction that renders or could render the reactor safety system incapable of performing its intended safety function unless the malfunction or condition is discovered during maintenance tests or periods of reactor shutdowns." ANSI/ANS-15.1, Section 6.7.2 does not include the stipulation for conditions discovered during maintenance. Please consider removing the stipulation or provide a basis for including this stipulation.

NSC Response: The Nuclear Science Center will modify the TS 14.1.31(3) [now TS 14.1.39(3)] to remove the stipulation and conform to the American National Standards Institute (ANSI), American Nuclear Society (ANS) 15.1. ANSI/ANS-15.1-2007, Section 6.7.2.

**14.1.39 Reportable Occurrence**

3. A reactor safety system component malfunction that renders or could render the reactor safety system incapable of performing its intended safety function. If the malfunction or condition is caused by maintenance, then no report is required. (*Note:* Where components or systems are provided in addition to those required by the technical specifications, the failure of the extra components or systems is not considered reportable provided that the minimum numbers of components or systems specified or required perform their intended reactor safety function.)

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11. NUREG-1537 states that the format and content of the TS follow that of ANSI/ANS 15.1. ANSI/ANS-15.1-2007, Section 3.2(1) includes guidance on establishing LCOs for minimum number of operable control rods (defined in terms of scram time). Please discuss whether TAMU TS 14.3.2 is consistent with the standard guidance.

NSC Response: TAMU TS 14.3.2 does not define an LCO for minimum number of operable control rods. We will modify the TS 14.3.2.3 Scram Time to include this LCO.

### **14.3.2.3 Minimum Number of Operable Scrammable Control Rods**

#### Applicability

This specification applies to the minimum number of operable scrammable control rods in the core, where operable is specified in terms of maximum scram time from the instant that the fuel temperature safety channel variable reaches the Limiting Safety System Setting.

#### Objective

The objective is to achieve prompt shutdown of the reactor to prevent fuel damage.

#### Specification

During standard operation all scrammable control rods shall be operable. The scram time measured from the instant a simulated signal reaches the value of the LSSS to the instant that the slowest scrammable rod reaches its fully inserted position shall not exceed 1.2 seconds. During core manipulations, i.e. core loading and unloading, all installed scrammable control rods shall be operable.

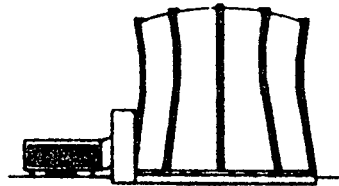
#### Basis

This specification ensures that the reactor will be promptly shutdown when a scram signal is initiated. Experience and analysis have indicated that for the range of transients anticipated for a TRIGA reactor, the specified scram time is adequate to assure the safety of the reactor.

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Subject: Response to NRC Requests for Additional Information Questions 12 and 17, Chapter 14- Technical Specifications, from the Texas A&M University System, Texas Engineering Experiment Station, Nuclear Science Center Reactor (NSCR, License No. R-83, Docket 50-128)

To Whom It May Concern:

The Texas A&M University System, Texas Engineering Experiment Station (TEES), Nuclear Science Center (NSC, License No. R-83) operates a LEU, 1MW, TRIGA reactor under timely renewal. In December, 2003 the NSC submitted a Safety Analysis Report (SAR) as part of the license renewal process. In December, 2005 a conversion SAR (Chapter 18) was submitted resulting in an order to convert from the NRC. In July 2009, the NSC submitted an updated SAR, dated June 2009, to the Nuclear Regulatory Commission (NRC). This updated 2009 version of our SAR incorporated the information from the conversion SAR and the startup of the new LEU reactor core. On June 24, 2010 the NRC submitted a Request for Additional Information as a part of the review process. This request included thirty-seven questions related to the NSC's SAR submittal. Attached to this letter are the NSC's response to Questions 12, and 17 of the NRC's non-financial RAIs. Please note in the attachment that text from the NRC's June 24th letter has been italicized and the NSC's non-italicized response immediately follows each question.

If you have any questions, please contact Jim Remlinger or me at 979-845-7551.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 27, 2010.

W. D. Reece  
NSC, Director

Xc: 211/Central File  
Chris Cowdrey, NRC Project Manager

Texas A&M University System  
Texas Engineering Experiment Station  
Nuclear Science Center  
License No. R-83  
Docket No. 50-128

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*12. TAMU TS 14.3.2, Table 14-2, establishes the function for the Fuel Element Temperature and High Power Level safety channels as “Scram at LSSS” and “Scram at 125%” respectively. Please consider changing to statements where the safety channels are required to scram “prior to exceeding” rather than “at” the designated limit.*

The NSC proposes to change the technical specification wording to show that the Fuel Element Temperature and High Power Level safety channels will “Scram  $\leq$  the LSSS” and “Scram  $\leq$  125%”.

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*17. NUREG-1537 states that the format and content of the TS follow that of ANSI/ANS 15.1. ANSI/ANS-15.1-2007, Section 3.7.1 provides a time limit for alternate methods of radiation monitoring with a channel out of service. Please review the notes associated with TAMU TSs 14.3.5.1 and 14.3.5.3, and consider adding time limits consistent with the standard guidance or provide a basis for not including time limits.*

The NSC proposes to make changes to applicable technical specification(s) to include the following:

Note: When required monitors are inoperable, or for periods of maintenance, the intent of this specification will be satisfied if this monitor is replaced for a period of no more than 1 week with a portable gamma sensitive instrument having its own alarm which shall be kept under visual observation. If two of the above monitors are not operating, the reactor will be shutdown.