WALKER DEPARTMENT OF MECHANICAL ENGINEERING
Nuclear Engineering Teaching Laboratory

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March 07, 2023

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dr. Mohamed Shams, Director
Division of Advanced Reactors and Non-Power Production and Utilization Facilities
Office of Nuclear Reactor Regulation
11555 Rockville Pike, Rockville, MD 20852-2738

SUBJECT: Reply to a Notice of Violation (Docket No. 50-602)

Dear Dr. Shams:

This letter is in response to the Notice of Violation (NOV) dated January 25, 2023 provided to the Nuclear Engineering Teaching Laboratory (NETL) at the University of Texas at Austin (UT-Austin). This NOV was for a Severity Level IV violation and was identified in US Nuclear Regulatory Commission (NRC) Special Inspection Report No. 05000602/2022201.

The NETL Technical Specifications (Section 6.2.3, "Review Function") states, in part, that the Nuclear Reactor Committee shall review "[d]eterminations that proposed changes in equipment, systems, tests, experiments, or procedures do not involve an unreviewed safety question". The NOV states that the Nuclear Reactor Committee failed to review determinations for proposed facility changes to equipment, tests, and procedures. Specifically, it states that facility personnel implemented three changes that were not assessed by the Nuclear Reactor Committee, as required, for unreviewed safety questions. These changes included a fire alarm and sprinkler system upgrade completed on March 10, 2020; a security system change completed on May 28, 2020; and a roof and purge pump replacement completed on December 13, 2020. We understand discussions in an exit interview are not official findings, but none of the items in the NOV were discussed as potential violations in the exit interview. Thus, below we provide some description of these three changes and how it was determined by the NETL staff as well as the NETL Nuclear Reactor Committee that these did not require a 50.59 review.

Reason for the Severity Level IV Violation:
The US NRC Special Inspection Team at The University of Texas in November 2022 identified this violation based on three forms related to 10CFR50.59 review that did not have a signature from the Nuclear Reactor Committee [referred to as the Reactor Oversight Committee (ROC) at UT-Austin]. However, the forms were intended to document review of material in the Safety Analysis Report by the NETL Reactor Manager relevant to the activities, with the cited items specifically annotated on the form as not requiring a 50.59 review (specifically, the words "50.59 not required" was annotated on each form). The forms in question are attached to this letter. Nuclear Reactor Committee determination that the activities do not involve an unreviewed safety question was not

required, although each of these activities was presented to the Nuclear Reactor Committee during routine scheduled meetings and the committee members were fully aware of all of these activities.

NETL Technical Specifications have not been updated to reflect the changes in regulations (and current acceptable practice) in implementing 10CFR50.59, which consists of three categories: (1) activities that do not require review in the 50.59 process, (2) activities that require the 50.59 process but do not result in adverse effects, and (3) activities that require detailed evaluation for the impact of adverse effects. The form was used in these instances to document Safety Analysis Report information for activities not considered changes under the current regulatory regime for 10CFR50.59. There are no specific instructions for the form specifying ROC approval is required for activities not subject to the 50.59 process.

Below is an evaluation of each of the three forms of interest:

1. **Roof and purge pump replacement completed on December 13, 2020.** One form referred to a modification to a fan on the reactor building roof. The roof was replaced as a scheduled maintenance action at UT-Austin. Following roof replacement, a decrease in flow of an exhaust fan required by Technical Specifications was noted and corrected by modifying the fan linkage to the motor. NEI 21-06 (Guidelines for 10 CFR 50.59 implementation at Non-Power Production or Utilization Facilities) states "Maintenance activities are not subject to 10 CFR 50.59, but are subject to technical specifications." The form was used to document the review of the Safety Analysis information for operational characteristics and requirements associated with the fan. This activity restored the fan to the design basis and therefore is not subject to the 10CFR50.59 process. The form was annotated "50.59 not required." The planning and implementation of this maintenance was presented, reviewed, and discussed by the ROC on the following dates and is annotated in the committee meeting minutes:

   09 Nov 2018 - Contractor requirement review for NETL roof replacement
   19 Nov 2019 - Roof replacement funded as capital project
   20 Apr 2020 - Roof installation scheduled
   30 Nov 2020 - Roof installation complete, final acceptance pending

2. **Security system change completed on May 28, 2020.** One form referred to relocating the interface between facility security systems and the University Police Department dispatch stations as corrective action for an event. The definition of change in NEI 21-06 is "a modification or addition to, or removal from, the facility or procedures that affects: (1) a design function, (2) a method of performing or controlling the function, or (3) an evaluation that demonstrates that intended functions will be accomplished." The form was used to document the review of the Safety Analysis information for design basis information. The Safety Analysis description does not include the location of the server, and design functions were not modified by relocating the server. The form was annotated "50.59 not required" because the activity did not affect any design function, method of performing or controlling the design function, or evaluation that demonstrates the functions will be accomplished. The planning and implementation of this relocation of the server was presented, reviewed, and discussed by the ROC on the following dates and is annotated in the committee meeting minutes:

   02 May 2018 - Reviewed security event
   09 Nov 2018 - Planned response to security event reviewed
   15 Apr 2019 - Progress on security event reviewed
   19 Nov 2019 - Relocation of sever initiated

20 Apr 2020 - Progress of server relocation, completion pending
30 Nov 2020 - Server relocation complete
07 May 2021 - Security event closed with a non-cited violation

3. **Fire alarm and sprinkler system upgrade completed on March 10, 2020.** One form reflected modification of the fire protection system. The Safety Analysis Report states that "the National Fire Protection Code, will determine requirements that relate to fire safety for significant facility operation hazards." However, the installed fire suppression and alarm did not meet the Life Safety Code, and a modification was required to meet the Code. NEI 21-06 states "Installation and post-modification testing of approved facility changes are indistinguishable, in terms of their impact on the facility, from maintenance activities that restore SSCs to their as-designed condition." Since the modification restored design function of the fire safety system, it was understood to be exempt from the 50.59 process. The form was used to document the review of the Safety Analysis Report that identified the design function, and the form annotated "50.59 not required." The planning and implementation of this was presented, reviewed, and discussed by the ROC on the following dates and is annotated in the committee meeting minutes:

   19 Nov 2019 - Sprinkler upgrade, alarm system planning
   20 Apr 2020 - Sprinkler upgrade complete, alarm system planning continues

Corrective Steps that Have Been Taken and the Results Achieved:
An analysis following the correspondence of the NOV showed that NETL does not currently have unambiguous instructions for completing the form to document the 10CFR50.59 process. Utilization of the form when 10CFR50.59 reviews are not applicable has created confusion. The form used by NETL, although stating "50.59 not required" still had a blank place for the ROC to sign. This led to confusion that perhaps the ROC was not aware of the changes being implemented, or that their approval was required prior to implementation.

Corrective Steps Remaining to Be Taken:
A procedure revision is in progress (for ADMN-1) that will provide clear direction on the 10CFR50.59 based on NEI 2-06 and the change management process with unambiguous forms for completion.

Date When Full Compliance Will Be Achieved:
We expect the procedure revision to be completed no later than June 30, 2023.

We believe all of the measures implemented above will bring the University of Texas at Austin NETL facility into full compliance.

I declare under penalty of perjury that the foregoing is true and correct.

W. S. Charlton
Director, Nuclear Engineering Teaching Laboratory
John J. McKetta Energy Professor, Walker Department of Mechanical Engineering
University of Texas at Austin

ATTACHMENTS: 50.59 Forms Referred to in NOV

Roof · Replacement/Purge Pump.

PAFormat3.doc | Date: 4/8/10

Attachment | Number – Rev.: | ADMN-1 3.00

admn1-a2.doc | Procedure Title: | NETL Procedure Outline and Control

10 CFR 50.59 Evaluation

Briefly describe the modification, revision, test, or experiment		
NETL Roof was replaced which included replacement of stock & Purge Pump. Stock and pump replaced with original dimensions and characteristics. No		
	NO	YES
(1) Is the procedure or equipment described in the SAR?		✓
(2) Does the procedure or equipment have the potential to affect any procedure, parameter, or equipment described in the SAR?		✓
If the answer to both (1) and (2) is no, then no further Action is required except a signature; if the answer to either (1) or (2) is yes then continue to (3) and (4):		
(3) List the chapters and sections of the SAR for which the procedure or equipment described in the SAR, and/or where the procedure, parameter, or equipment affected by the change is described in the SAR.		
SAR 7-2 Thru 7-9, Tech Spec 3.3.2.C pg16 Tech Spec 3.3.3.b pg 17 Tech Spec 5.1.2/5.1.3 pg 24		
	NO	YES
(4) Does the change require NRC review and approval prior to implementation according to the criteria below (if yes circle the affected criteria) and refer to NRC	✓	
		Date
Performed By:	J E Hall	13Dec2020
ROC Review:		

CRITERIA

Modifications and revisions to UT TRIGA reactor facilities and equipment that are described in the *SAR and updates*[1] and procedures that control or affect those facilities and equipment may be changed, altered or revised without prior NRC review and approval if the change does not:

(a) NO Require a change to the Technical Specifications or license,

(b) NO Result in more than minimal increase in frequency of occurrence of *SAR accident analysis[2]*.

(c) NO Result in more than minimal increase in likelihood of occurrence of a malfunction of *SSC[3]* important to safety that was previously evaluated in approved *SAR and updates[1]*.

(d) NO Result in more than minimal increase in consequences of *SAR accident analysis[2]*;

(e) NO Result in more than minimal increase in consequences of malfunction of an *SSC[3]* important to safety previously evaluated in approved *SAR and updates[1]*;

(f) NO Create possibility for accident of different type than those in *SAR accident analysis[2]*;

(g) NO Create possibility for malfunction of *SSC[3]* important to safety with different result than any previously evaluated in *SAR and updates[1]*;

(h) NO Result in design basis limit for fission product barrier described in the *SAR and updates[1]* being exceeded or altered; or

(i) NO Result in departure from method of evaluation described in *SAR and updates[1]* that was used either to establish design bases or in the safety analyses.

NO 10CFR50.59 required

10CFR50.59 Evaluation | Stamp(Original-Red, Copy-Blue)

Date of Change | | | | |

NETL Dir. Approval | | | | |

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Page 1 of 2

ADDITIONAL GUIDANCE

NOTE [1]: SAR and updates is the approved Safety Analysis Report and any changes accomplished under 10CFR50.59 without prior NRC review and approval not currently incorporated in the SAR.
NOTE [2]. SAR accident analysis refers to (1) reactivity accident, (2) loss of reactor coolant, and (3) fission product release from clad rupture as analyzed in the SAR and updates.
NOTE [3]: SSC means structures, systems, and components

Records of facility changes, procedure changes, and of tests and experiments made without prior NRC review and approval accomplished under the authorization of 10CFR50.59:

a. Must include a written evaluation which provides the bases for the determination that the change, test, or experiment does not require a license amendment.
b. Must be submitted to the NRC at intervals not to exceed 24 months.
c. Must be maintained until the termination of an operating license for facility changes,
d. Must be maintained for a period of 5 years for changes in procedures and records of tests and experiments..

There are specific requirements in regulations for changes to the Emergency Plan, Radiological Protection Program, and Physical Security Plan.

DEFINITIONS

Change: A change is a modification or addition to, or removal from, the facility or procedures that affects a design function, method of performing or controlling the function, or an evaluation that demonstrates that intended functions will be accomplished.

Departure from a method of evaluation described in the FSAR (as updated) used in establishing the design bases or in the safety analyses:

a. Changing any of the elements of the method described in the FSAR (as updated) unless the results of the analysis are conservative or essentially the same; or

b. Changing from a method described in the FSAR to another method unless that method has been approved by NRC for the intended application.

Tests or experiments not described in the final safety analysis report (as updated) means any activity where any structure, system, or component is utilized or controlled in a manner which is either:

a. Outside the reference bounds of the design bases as described in the final safety analysis report (as updated) or
b. Inconsistent with the analyses or descriptions in the final safety analysis report (as updated).

NETL SECURITY SYSTEM

PAFormat3.doc Date: 4/8/10

Attachment Number – Rev.: ADMN-1 3.00

admn1-a2.doc Procedure Title: NETL Procedure Outline and Control

10 CFR 50.59 Evaluation

Briefly describe the modification, revision, test, or experiment		
Transitioned security system from BACS web to Reconascense. All Alarms, Tampers & Durress were retained		
	NO	YES
(1) Is the procedure or equipment described in the SAR?		✓
(2) Does the procedure or equipment have the potential to affect any procedure, parameter, or equipment described in the SAR?		✓
If the answer to both (1) and (2) is no, then no further Action is required except a signature; if the answer to either (1) or (2) is yes then continue to (3) and (4):		
(3) List the chapters and sections of the SAR for which the procedure or equipment described in the SAR, and/or where the procedure, parameter, or equipment affected by the change is described in the SAR		
SAR 7.3.5 Discusses phones + video, The security system exceeds all requirement of this paragraph. Areas discussed in SAR 7.3.5 were not Touched (cameras, phones, intercom) NOT DISUSSED in Tech Specs		
	NO	YES
(4) Does the change require NRC review and approval prior to implementation according to the criteria below (if yes circle the affected criteria) and refer to NRC	✓	

		Date
Performed By:	L E Hall L.E. Hall	28 MAY 2010
ROC Review:		

CRITERIA

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(b) NO Result in more than minimal increase in frequency of occurrence of *SAR accident analysis[2]*;

(c) NO Result in more than minimal increase in likelihood of occurrence of a malfunction of *SSC[3]* important to safety that was previously evaluated in approved *SAR and updates[1]*,

(d) NO Result in more than minimal increase in consequences of *SAR accident analysis[2]*;

(e) NO Result in more than minimal increase in consequences of malfunction of an *SSC[3]* important to safety previously evaluated in approved *SAR and updates[1]*,

(f) NO Create possibility for accident of different type than those in *SAR accident analysis[2]*.

(g) NO Create possibility for malfunction of *SSC[3]* important to safety with different result than any previously evaluated in *SAR and updates[1]*;

(h) NO Result in design basis limit for fission product barrier described in the *SAR and updates[1]* being exceeded or altered; or

(i) NO Result in departure from method of evaluation described in *SAR and updates[1]* that was used either to establish design bases or in the safety analyses.

NO 50.59 required

10CFR50.59 Evaluation Stamp(Original-Red, Copy-Blue)

Date of Change

NETL Dir. Approval

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ADDITIONAL GUIDANCE

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d. Must be maintained for a period of 5 years for changes in procedures and records of tests and experiments,.

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b. Changing from a method described in the FSAR to another method unless that method has been approved by NRC for the intended application.

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a. Outside the reference bounds of the design bases as described in the final safety analysis report (as updated) or
b. Inconsistent with the analyses or descriptions in the final safety analysis report (as updated).

TITLE	DATE

SCREENING: The following guidance provides criteria to screen the proposed change from further assessing need for NRC review. If the change does not affect (1) a design function of SSC, (2) a method of performing or controlling design function, (3) evaluation for demonstrating the design function will be accomplished, then it is not necessary to continue the evaluation.

SSC Affected	SSC Design function	Failure Mode(s)	Accident scenario(s)

SAFETY ANALYSIS & ACCIDENT RESPONSE/MITIGATION	YES	NO
Decrease SSC design function reliability when failure would initiate an accident		
Decrease SSC design function reliability when failure would mitigate accident		
Reduce redundancy, reliability or defense in depth		
Add or delete an automatic or manual design function of an SSC		

HUMAN INTERFACE	YES	NO
Convert an automatic feature to manual or vice versa		
Adversely affect ability to perform required actions		
Adversely affect time response of required actions		

INTERFACE OUTSIDE THE PROPOSED CHANGE	YES	NO
Degrade seismic or environmental qualification		
Affect method of evaluation used to establish design basis or safety analysis		
Introduce an unwanted or previously unreveiwed system or material interaction		
(Not described in SAR) indirect effects on electrical distribution		
(Not described in SAR) indirect effects structural integrity		
(Not described in SAR) indirect effects on environmental conditions		
(Not described in SAR) indirect effects on other SAR design functions		

COMMENTS: _____

_____

_____

PERFORMED BY: _____ DATE: _____

If any of the above answers are YES, then proceed to the EVALUATION section.

FIRE ALARM UPGRADE

PAFormat3.doc | Date: 4/8/10

Attachment Number – Rev.: ADMN-1 3.00

admn1-a2.doc Procedure Title: NETL Procedure Outline and Control

10 CFR 50.59 Evaluation

Briefly describe the modification, revision, test, or experiment		
UPGRADE TO FIRE ALARM AND SPRINKLER SYSTEM. ADDED WET RISER, ADDITIONAL ALARMS AND STROBES. CONNECTED TO UNIVERSITY MASS ALERT SYSTEM NOTHING REMOVED.		
	NO	YES
(1) Is the procedure or equipment described in the SAR?		X
(2) Does the procedure or equipment have the potential to affect any procedure, parameter, or equipment described in the SAR?		X
If the answer to both (1) and (2) is no, then no further Action is required except a signature; if the answer to either (1) or (2) is yes then continue to (3) and (4):		
(3) List the chapters and sections of the SAR for which the procedure or equipment described in the SAR, and/or where the procedure, parameter, or equipment affected by the change is described in the SAR.		
SAR CH 7 7.3.2, 7.3.3 Pg 7-11, 7-12 There is no description in Tech Specs.		
	NO	YES
(4) Does the change require NRC review and approval prior to implementation according to the criteria below (if yes circle the affected criteria) and refer to NRC	X	
		Date
Performed By:	J E Hall	10 MAR 2010
ROC Review:		

CRITERIA

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(g) No Create possibility for malfunction of *SSC[3]* important to safety with different result than any previously evaluated in *SAR and updates[1]*;

(h) NO Result in design basis limit for fission product barrier described in the *SAR and updates[1]* being exceeded or altered; or

(i) No Result in departure from method of evaluation described in *SAR and updates[1]* that was used either to establish design bases or in the safety analyses.

NO 10CFR50.59 required.

10CFR50.59 Evaluation Stamp(Original-Red, Copy-Blue)

Date of Change |____|____|____|____|

NETL Dir. Approval |____|____|____|____|

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ADDITIONAL GUIDANCE

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a. Outside the reference bounds of the design bases as described in the final safety analysis report (as updated) or
b. Inconsistent with the analyses or descriptions in the final safety analysis report (as updated).

TITLE	New Fire Alarm & Sprinkler system	DATE	10 MAR 2020

SCREENING: The following guidance provides criteria to screen the proposed change from further assessing need for NRC review. If the change does not affect (1) a design function of SSC, (2) a method of performing or controlling design function, (3) evaluation for demonstrating the design function will be accomplished, then it is not necessary to continue the evaluation.

SSC Affected	SSC Design function	Failure Mode(s)	Accident scenario(s)

SAFETY ANALYSIS & ACCIDENT RESPONSE/MITIGATION	YES	NO
Decrease SSC design function reliability when failure would initiate an accident		✓
Decrease SSC design function reliability when failure would mitigate accident		✓
Reduce redundancy, reliability or defense in depth		✓
Add or delete an automatic or manual design function of an SSC		✓

HUMAN INTERFACE	YES	NO
Convert an automatic feature to manual or vice versa		✓
Adversely affect ability to perform required actions		✓
Adversely affect time response of required actions		✓

INTERFACE OUTSIDE THE PROPOSED CHANGE	YES	NO
Degrade seismic or environmental qualification		✓
Affect method of evaluation used to establish design basis or safety analysis		✓
Introduce an unwanted or previously unreveiwed system or material interaction		✓
(Not described in SAR) indirect effects on electrical distribution		✓
(Not described in SAR) indirect effects structural integrity		✓
(Not described in SAR) indirect effects on environmental conditions		✓
(Not described in SAR) indirect effects on other SAR design functions		✓

COMMENTS: System upgraded to modern code. Dry Standpipe converted to wet standpipe (7.3.3 SAR) Halon removed converted to sprinkler (7.3.3 SAR

PERFORMED BY: J E Hall DATE: 10 MAR 2020

If any of the above answers are YES, then proceed to the EVALUATION section.

E-Plan directs shutdown of reactor for events such as fire.