

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-192/89-03
50-602/89-05

Operating License: R-92
Construction Permit: CPPR-123

Docket: 50-192
50-602

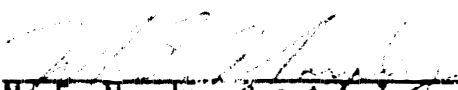
Licensee: University of Texas
College of Engineering
Department of Mechanical Engineering
Nuclear Engineering Program
Austin, Texas 78712

Facility Name: Nuclear Engineering Teaching Laboratory (NETL) (TRIGA Mark I
and Mark II)


Inspection At: NETL, Balcones Research Center and Taylor Hall
NETL (Main Campus) Austin, Texas

Inspection Conducted: July 5-6, 1989

Inspectors:


M. E. Murphy, Reactor Inspector, Test Programs
Section, Division of Reactor Safety


Date


T. O. McKernon, Reactor Inspector, Test
Programs Section, Division of Reactor Safety


Date

Accompanied by: W. C. Seidle, Chief, Test Programs Section
Division of Reactor Safety

Approved:


W. C. Seidle, Chief, Test Programs Section
Division of Reactor Safety


Date

Inspection Summary

Inspection Conducted July 5-6, 1989 (Report 50-192/89-03; 50-602/89-05)

Areas Inspected: Routine, announced inspection of component and system checkout and evaluation, preoperational testing and schedule status.

Results: Within the areas inspected, no violations or deviations were identified. Final construction punch list item correction was in progress. The construction phase inspection by the NRC is essentially complete. Some component and system checkout and evaluation had been completed. Preoperational testing had not started. Schedule slippage has occurred. The proposed fuel handling and transportation procedures for transfer of fuel elements from TRIGA I to TRIGA II appear adequate.

DETAILS

1. Persons Contacted

*B. Wehring, Director, Nuclear Engineering Teaching Laboratory
*T. Bauer, Assistant Director, Nuclear Engineering Teaching Laboratory
J. Green, Construction Inspector
M. Krause, Senior Reactor Operator

*Denotes attendance at exit interview.

2. Construction Progress

The NRC inspectors toured the facility to view work in progress, review completion status, and observe general conditions. The general contractor has vacated the premises, and final punch list item completion was being worked by NETL, University of Texas physical plant personnel, and specific subcontractors when required. The NRC inspectors noted that the licensee's progress toward facility completion generally appears sufficient to meet the proposed scheduled completion of October 1989. However, the NRC inspectors noted some areas that will require followup by the licensee and the NRC:

- ° The cooling water heat exchanger had a differential pressure, shell-to-tube side, of about 30 psig whereas the initial design was intended for about 1-5 psig. The licensee stated that the heat exchanger specifications were sufficient to provide a margin of safety for the larger differential pressure.
- ° The drive motor for the transient control rod had experienced damage during initial installation. The drive motor and mechanism was returned to the vendor for repair. The licensee's representative stated that the repaired drive mechanism was scheduled for delivery prior to August 1, 1989.
- ° The NRC inspectors and the Assistant Director, NETL, observed the heating, ventilation, and air conditioning (HVAC) effluent purge path atop the facility's roof and noted that certain ventilation intake structures were adjacent to the effluent stacks. The NRC inspectors expressed concern over a potential recirculation path of purged effluent during normal operations and during accident conditions which could result in effluent reentering the building. The intake louvers are on the south side of the building's upper structure with the effluent stacks atop the structure. The predominate wind direction is out of the south. The licensee acknowledged the NRC inspectors' observation.

The control room console installation was complete. The initial fill of the reactor pool was complete. The pool contains about 10,500 gallons of ionically pure water. Installation of physical security and communications

elements was in progress. The final HVAC system balancing remains to be completed. The remaining construction items and concerns will be tracked by the NRC inspector's review of the completed checkout and evaluation sheets.

The construction phase inspection by the NRC is essentially complete.

3. Operational Readiness Review

The NRC inspectors reviewed the status of the checkout and evaluation program. The following selected key items remain to be completed:

- o Review final installation of beam tube components
- o Leak test of each beamport cavity
- o HVAC system - equipment inspection
- o HVAC - Control Room Panel (CRP) alarms
- o Argon purge system
- o Airborne radioactivity isolation
- o Water system - pool purification
- o Water system - pool cooling
- o Bridge crane
- o Fuel handling tool
- o Fire protection equipment
- o Safety equipment
- o Communications
- o Security system
- o Security system - intrusion detection
- o Liquid radioactive waste system
- o Control rod drive - mechanical
- o Instrumentation and Control System (ICS system) - installation check
- o Radiation monitoring system

The senior reactor operator licensing examinations were successfully completed on June 16, 1989, as scheduled.

A comprehensive presentation, with slides, of the planned fuel handling and transfer of fuel elements from TRIGA I to TRIGA II was given to the NRC inspectors by the licensee's representatives. Following this presentation, the NRC inspectors toured the licensee's TRIGA I facility to observe fuel element handling equipment and the transfer areas inside and outside the facility. Subsequently, the NRC inspectors traveled one of the proposed transfer routes. The proposed fuel handling and transportation procedures appear adequate.

4. Schedule Milestones

The milestone schedule/completion dates, as published in NRC Inspection Report 50-602/89-03, have been revised and are as follows, as of July 6, 1989:

<u>Milestones</u>	<u>Scheduled Completion Dates</u>	<u>Actual</u>
Receive control room console and mechanical components	October 1, 1988	October 1, 1988
Complete HVAC balancing	July 14, 1989	
Complete physical security elements	August 1, 1989	
Complete pool water system (installation)	March 31, 1989	April 26, 1989
Complete preoperational test procedures (including GA installation and test)	August 15, 1989	
Install control room console	May 8, 1989	May 24, 1989
Install GA mechanical components (including purification system)	May 5, 1989	May 19, 1989
Install radiation monitoring equipment (installation by GA)	August 1, 1989	
License two senior reactor operators	June 16, 1989	June 16, 1989
Complete all operating procedures	September 1, 1989	
Receive operating license	October 15, 1989	
Load reactor fuel - achieve initial criticality	November 5, 1989	

5. Exit Interview

The inspection scope and findings were discussed with the Director, NETL, at the conclusion of the inspection on July 6, 1989. The licensee did not identify, as proprietary, any of the material provided to, or reviewed by, the NRC inspectors.