

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-192/88-01
50-602/88-01

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

Dockets: 50-192
50-602

Licensee: University of Texas (UT)
Austin, Texas 78712

Facility Name: Nuclear Engineering Teaching Laboratory (NETL)

Inspection At: Austin, Texas

Inspection Conducted: February 9-10, 1988

Inspectors: *Gregory A. Pick*
G. A. Pick, Reactor Inspector, Operational
Programs Section, Division of Reactor Safety

March 14, 1988
Date

Robert B. Vickrey
R. B. Vickrey, Reactor Inspector, Operational
Programs Section, Division of Reactor Safety

3/14/88
Date

Approved: *J. E. Gailliardo*
J. E. Gailliardo, Chief, Operational Programs
Section, Division of Reactor Safety

3/14/88
Date

Inspection Summary

Inspection Conducted February 9-10, 1988 (Report 50-192/88-01 and
50-602/88-01)

Areas Inspected: Routine, unannounced inspection of review and audit, experiments, health physics, emergency plan, organization, logs and records, procedures, plant status, requalification training, surveillance, and construction activities related to the Triga Mark II reactor.

Results: Within the areas inspected, two violations were identified (failure to adequately document and review procedure changes, paragraph 7, and failure to have all required procedures, paragraph 10).

DETAILS1. Persons ContactedUT

- *D. Klein, Director, Nuclear Engineering Laboratory
- *T. Bauer, Supervisor, Reactor Operations
- M. Krause, Senior Reactor Operator
- J. Green, Construction Inspector
- J. Ledbetter, Member, Nuclear Reactor Committee

*Denotes those present at the exit interview.

2. Review and Audit (40745)

The NRC inspector reviewed the records of the Nuclear Reactor Committee to verify that the committee composition conformed with the requirements of the Technical Specifications (TS), that the committee had met at the required frequency, and that the committee had reviewed the activities and material required by the TS and the committee charter. The NRC inspector found that the committee, as established by the Dean of the College of Engineering, had the required composition and had been meeting at the required frequency. The NRC inspector noted that the TS requires the committee to audit reactor operations quarterly. The committee charter requires that, during its quarterly meeting, it shall receive a report from a designated member regarding his inspection of the reactor laboratory and its operation. The minutes of the committee meetings did document tours by the designated committee members, but they did not address the required report.

The NRC inspector also noted that the "tour" by the committee members was not documented in the reactor log. The NRC inspector interviewed the reactor operator, who stated that the committee members did not routinely review the reactor logs and other records of reactor operations during their tours. A committee member was also interviewed and corroborated the fact that he did not review reactor operating records during his tour.

The NRC inspector expressed concern that the apparent failure of the committee members to review operating records during their tours did not appear to meet the intent of the TS requirements. Because more information is required regarding the conduct of tours, this matter is considered an open item (192/8801-01) and will be reviewed during a subsequent inspection.

The NRC inspector found that the committee had been closely following the schedule and planning of the new TRIGA Mark II facility. It was noted that the committee had held its last meeting (January 1988) at the new facility. The NRC inspector expressed concern, however, that the committee had not yet been actively involved in a hydrostatic test problem of the

new reactor tank discussed subsequently in this report and the committee had not yet reviewed the procedures and experiments for the new reactor.

No violations or deviations were identified.

3. Experiments (69745)

The NRC inspector reviewed the licensee's 1986 annual report to determine the scope of the experiments performed at the facility. The experiments were consistent with the TS requirements and limitation. The inspector also reviewed reactor log book entries since early 1986 to determine the adequacy of the documentation of experiments.

The NRC inspector reviewed the facility's file of approved reactor experiments. The inspector was concerned that all of the experiments had been approved prior to 1974. The experiment descriptions were very general and provided very few specific limitations on materials, quantities of materials, or activity levels permitted by irradiations. Some of the experiments did address reactivity worth and other limits of the TS.

During this review, the NRC inspector interviewed the licensed operators of the facility and found that a sample of dibromyl benzene had been irradiated in the reactor several years past. The sample had been encapsulated in plastic and the inner plastic container was subsequently ruptured by the gas pressure generated through decomposition of the sample. Another sample (about 15 grams) of dibromyl benzene was irradiated in January 1988. The operators decided to encapsulate the sample in aluminum. The irradiation was successful, but the inspector was concerned that this experiment was considered to have been covered by the previously reviewed and approved experiment and was not reviewed by the reactor committee. The licensee representatives argued that the previously approved experiments had sufficient latitude to permit this irradiation. The inspector agreed that this may be true, but it certainly did not conform to the spirit of the TS limitations and the requirements for experiment review. The inspector noted that this area should be carefully reviewed and tightly controlled for the new facility.

No violations or deviations were identified.

4. Health Physics (83743)

The NRC inspector reviewed the licensee's radiation exposure records prepared by Landauer Co. The period reviewed was 1986 and 1987. All records were available and documented the exposure history for the licensed operators present during the timeframe.

No violations or deviations were identified.

5. Emergency Plan (82745)

The NRC inspector reviewed the licensee's Emergency Plan Procedure. The senior reactor operator (SRO) was questioned about the emergency plan with regard to his participation and that of the involvement of offsite facilities. It was pointed out to licensee representatives that the emergency telephone list should also have the NRC's emergency response center number in addition to the local Region IV listing. The licensee had the emergency response center phone number in their emergency plan for the new reactor facility. The emergency telephone list had been periodically updated to reflect changes in phone numbers, deletions, and additions.

An emergency plan exercise was conducted on September 30, 1987. The NRC inspector found the exercise records to be complete and satisfactory.

No violations or deviations were identified.

6. Organization, Logs and Records (39745)

The NRC inspector reviewed the licensee's organization for compliance with TS. The reactor and maintenance log books were examined from the time period of April 11, 1986, through February 9, 1988, to ensure that operations and maintenance activities were properly conducted. Semiannual measurements of rod drop times were checked to ensure that they had been completed within the proper timeframes for 1986 and 1987.

No violations or deviations were identified.

7. Procedures (42745)

The NRC inspector reviewed the control room copy of the facility procedures. The procedures were reviewed for technical adequacy and proper documentation of changes. The NRC inspector observed that several of the procedures had temporary (pen-and-ink) changes. These temporary changes were not consistent in documenting the date of the change, approval by authorizing personnel, and approval by the reactor committee. One of the procedures in the control room procedure manual was not the latest revision approved by the Reactor Committee. Some changes had been lined out and changed with no date, initials, or other identification. It was further noted by the NRC inspector that the last date on which a procedure, in the control room procedure manual, had received a Reactor Committee Review was July of 1982. The following procedures listed below contained unacceptable methods of making changes:

- a. Reactivity calculations
- b. Fuel inspection and measurement
- c. Semiannual measurement of rod drop times
- d. Console calibration check
- e. Weekly calibration of area radiation monitors
- f. Emergency plan

TS 6.5, "Operating Procedures," under administrative controls states in part that, ". . . all such temporary changes shall be documented and subsequently reviewed by the Reactor Committee." The licensee's methods of changing procedures, including approvals, and levels of subsequent review fail to include a subsequent review by the Reactor Committee. This is an apparent violation of the above TS. (192/8801-02)

The NRC inspector found that the licensee had no alarm response procedures or procedures to identify actions to take in case of abnormal reactivity changes. These procedures are required by Section 6.5.g of the TS. In addition, there were no maintenance procedures to cover routine maintenance which could have an effect on reactor safety as required by TS 6.5.f.

The licensee's failure to have the above procedures is an apparent violation of the cited TS. (192/8801-03)

No other violations or deviations were identified.

8. Plant Status

During the inspection, the NRC inspectors witnessed the reactor startup checks and startup on February 10, 1988. The only problem that occurred during the startup was that the power level meter wasn't set at its proper multiplication factor. The SRO immediately recognized the problem, shut down the reactor, made the correction, and completed a successful startup.

No violations or deviations were identified.

9. Regualification Training (41745)

The NRC inspector reviewed the records maintained under the requalification program which included the requalification examinations given, the individual's answers, the documentation of required manipulations, and requalification data sheets for T. L. Bauer, Supervisor, Reactor Operations and M. G. Krause, SRO, for the years 1986 and 1987. The licensee still exhibited a weakness in documentation of the lectures attended, a weakness originally identified in NRC Inspection Report 50-192/86-01. The number of lectures attended each calendar quarter was documented; however, the subject of the lectures was not documented. There exists no way to assure that the required lectures, according to the UT requalification program, were attended.

Another documentation deficiency identified on the requalification data sheets was the use of check marks to identify that changes to the license, procedures, and emergency plan were reviewed by both the Supervisor, Reactor Operations and the SRO. The NRC inspector suggested that the preferred practice was to initial and date the entry identifying exactly when the changes were reviewed and to list what procedure, license amendment, and/or emergency plan section was reviewed.

No violations or deviations were identified.

10. Surveillance (61745)

The NRC inspector reviewed the various control room logs and corresponding data sheets to verify that TS required surveillances were conducted as required.

The activities reviewed included: shutdown margin, channel calibration of power level monitoring channels by the calorimetric method, channel test of each reactor safety scram channel, pool level, and pool conductivity.

The NRC inspector reviewed the data for determining the reactivity worth of each control rod. The licensee classified this as a control rod calibration using the "positive period" method; however, the licensee did not have a procedure which controls this activity. The licensee did have a procedure for a rod drop experiment. The failure to have a control rod calibration procedure is another example of the apparent violation (192/8801-03) cited in paragraph 7.

No other violations or deviations were identified.

11. Construction Activities Related to the Triga Mark II Reactor Facility

The NRC inspectors conducted a general tour of the facility observing ongoing construction activities. The facility was in a degraded state of cleanliness. This needs to be corrected before more critical construction activities begin such as coating of the aluminum tank, pouring the high density concrete shield, and filling and fueling the reactor tank.

The NRC inspector observed the helium leak testing of the tank that was being conducted to determine if any of the welds were out of specification and would require repair. The tank was sealed and contained a mixture of helium and air at atmospheric pressure. The welds were to be 100 percent tested. The documentation of these activities consisted of start time and end time for the day. It was pointed out to the licensee that much more detailed documentation would be needed to document that the integrity of the reactor tank had been verified.

No violations or deviations were identified.

12. Exit Interview

The inspection scope and findings were identified with those persons identified in paragraph 1. The licensee did not identify as proprietary any of the information provided to or reviewed by the NRC inspectors. The inspectors expressed concern regarding the cleanliness of the new reactor facility and the need for more formal controls over operating activities than those discovered at the old facility. The licensee representatives acknowledged the inspectors' concerns.