

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-128/88-02

Operating License: R-83

Docket: 50-128

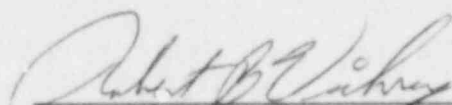
Licensee: Texas A&M University (TAMU)
Nuclear Science Center
College Station, Texas 77843

Facility Name: Nuclear Science Center (NSC) - TRIGA Reactor (1 megawatt)

Inspection At: TAMU-NSC, College Station, Texas 77843

Inspection Conducted: April 5-7, 1988

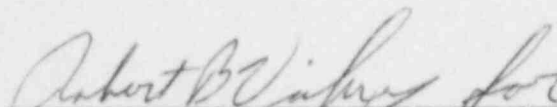
Inspectors:



R. B. Vickrey, Reactor Inspector
Operational Programs Section

4/28/88

Date



R. Evans, Reactor Inspector, Operational
Programs Section

4/28/88

Date

Approved:



J. E. Gagliardo, Chief, Operational Programs
Section

4/28/88

Date

Inspection Summary

Inspection Conducted April 5-7, 1988 (Report 50-128/88-02)

Areas Inspected: Routine, unannounced inspection of review and audit, experiments, procedures, organization, logs and records, plant status, requalification program, surveillance, and site tour.

Results: Within the eight areas inspected, no violations or deviations were identified.

DETAILS1. Persons ContactedTAMU

- *D. E. Feltz, Director, Nuclear Science Center
- *J. A. Reuscher, Director, Research Reactor Programs
- *K. L. Peddicord, Head of Nuclear Engineering
- *G. A. Schlapper, Nuclear Engineering
- K. Crawford, Manager, Reactor Operations
- G. Stasny, Senior Reactor Operator

*Denotes those present at the exit interview.

2. Review and Audit (40745)

The NRC inspector reviewed the records of the Reactor Safety Board (RSB) to verify that:

- . a quorum was present for review and audit committee meetings,
 - . the audits were conducted in accordance with Technical Specifications (TS),
 - . identified problems were appropriately resolved,
 - . design changes were reviewed and approved in accordance with the TS, and
- frequency of meetings had been met.

The NRC inspector noted that the RSB takes an active interest in review of audits, proposed standard operating procedure (SOP) changes and deviations, facility modifications, and experiment authorization (EA) proposals and revisions.

No violations or deviations were identified.

3. Experiments (69745)

The NRC inspector reviewed the facility's 1987 annual report, EA Log, operations log, RSB minutes, and interviewed several licensed operators to verify that:

- experiments and changes were reviewed and approved in accordance with TS and licensee procedural requirements,
- potential hazards and remedial action was identified,
- reactivity effects were predicted and measured,
- experiments did not represent an unreviewed safety question,
- reactivity limits were not exceeded, and
- irradiated items were accounted for.

The NRC inspector reviewed the following new or revised experiments for proper review, approval, and authorization.

- E-18 safety evaluation of the use of water-filled nonfuel elements in reactor core loadings, as revised on February 1, 1988.
- E-19 thermal column experiment for the exposure of film to fission fragments produced from the irradiation of contained U_{235} fission plates, approved July 31, 1986, authorization implemented August 14 and December 5, 1986.
- E-20 D_2O moderated rotisserie irradiation device, approved July 22, 1987, authorization implemented April 4, 1988.
- E-20 safety evaluation of a noble fission gas product irradiator/generator, approved January 29, 1988, authorization pending.

The NRC inspector observed the testing of the D_2O moderated rotisserie irradiation device during a scheduled 40-hour run in which temperature and pressure measurements were being recorded for evaluation. The NRC inspector observed that the operating personnel were aware of their limitations and requirements. It was noted that when the pressure increase trend started to change, the trend was analyzed in anticipation of reaching the test limit prior to completion of the test.

The NRC inspector noted that actions were being taken by the licensee in relation to beam port experiments. On April 1, 1988, a memorandum was addressed to the RSB members dealing with disclosure and acceptance of responsibility for failure to fully implement procedures for control of beam port experiments. The memorandum actions and proposed measures included:

- intensive training for responsible individuals of procedures for review, approval, and surveillance of all experiments,
- examination of existing procedures for the above in order to make changes to include ALARA, Regulatory Guides (RGs), and other documents, and

- establishment of a monitoring program for TS 6.0 administrative responsibilities.

Except for dosimetry measurements by the Nuclear Science Center (NSC) and Health Physics (HP) staff, the licensee will not conduct beam port activities involving neutron diffraction studies until after a Radiological Safety Office (RSO) review has been completed.

On April 6, 1988, the NSC director addressed a memorandum to the RSB chairman concerning the RSB subcommittee for beam port experiment review. The goals of this memorandum were to establish a subcommittee at the request of the RSB to:

- conduct a detailed review of beam port experiments at the NSC,
- evaluate in particular, the beam port No. 1 experiment conducted by a particular experimenter to determine the adequacy of existing procedures,
- recommend modifications/changes to procedures to include requirements for reviews, approvals, conduct and surveillance of beam port experiments, and
- review draft changes to procedures prepared by NSC operations and HP staff prior to a final report to the chairman of the RSB.

The memorandum also addresses two future subcommittee meetings to:

- tour the beam port area (lower research area) to obtain knowledge of existing experiments and planned future experiments,
- discuss control of beam port experiments with NSC operations and HP staff,
- review existing procedures and evaluate for adequacy,
- provide to NSC staff and HP staff the subcommittee recommendations for modification/changes to procedures to aid in the preparation of draft changes to procedures,
- conduct a review of draft changes to procedures provided to the subcommittee by NSC operations and HP staff prior to their submittal to the RSB, and
- ensure these procedures include recommendations by the RSO resulting from the review of NSC procedures/practices to comply with 10 CFR 20.203(c)(2).

No violations or deviations were identified.

4. Procedures (42745)

The NRC inspector reviewed the facility procedures for technical adequacy and proper documentation of changes. The control room copy was found to be up-to-date with the latest changes approved by the RSB during their January 1988 meeting. The NRC inspector found the facility procedures to be in the prescribed format with proper review and approval in accordance with their established commitments.

No violations or deviations were identified.

5. Organization, Logs and Records (39745)

The NRC inspector reviewed the licensee's organization for compliance with TS. The following logs were reviewed for proper entries, significant documentation, proper maintenance, and availability for inspection:

- . modification authorization log,
- . beam port log,
- . irradiation cell log,
- . operations memorandum log,
- . scram log,
- . required reading log,
- . shift change log,
- . thermal column log, and
- . reactor operations log.

Items of significance, such as operator error scrams, were discussed with the operators on duty to ensure that they had reviewed significant events and received training when required.

During the review of the logs, the NRC inspector discovered that SOP III-H-2 fuel element surveillance, had three identical approval deviations. These deviations were on January 4, 1984, January 2, 1986, and January 5, 1988. The 1988 deviation was identified in the January 29, 1988, RSB minutes. The 1986 deviation was not found in the RSB minutes. The 1984 deviation was not reported in the January 19, 1984, RSB minutes but did show up in the April 30, 1984, RBS minutes. The NRC inspector discussed with the licensee their method of documenting procedure deviations for RSB review. The licensee indicated that a formal method of documenting deviations did not exist and that it was an unwritten understanding that they would be in the comments section of the Reactor Operators Log. The NRC inspector pointed out to the licensee that the 1986 deviation was a 11:03 a.m. entry in the Reactor Operator Log but was not in the comments section of the log.

The NRC inspector expressed his concern to the licensee that three identical deviations to a procedure in the last five uses of it probably warranted a procedure change. The licensee indicated their agreement with this concern. The NRC inspector informed the licensee that an established

method needed to be formalized to ensure procedure deviations were identified to the RSB. This is considered to be an open item pending NRC review of licensee's changes to establish a formal method for identifying procedure deviations (128/8802-01).

No violations or deviations were identified.

6. Plant Status

The NRC inspector was in the control room to witness the reactor startups, one loss of power scram, and one normal shutdown. The only problem that occurred was during the startup after the loss of power scram. The reactor power switch had been left in the calibrate position instead of the operate position. Neither the reactor operator or senior reactor operator immediately recognized this problem. The NRC inspector pointed out to the licensee that this was an indication of lack of attention to detail on a routine operation.

No violations or deviations were identified.

7. Requalification Training (41745)

The NRC inspector performed a review of the TAMU requalification training program, to ensure the program is conducted in accordance with regulatory and procedural requirements. A review of the TAMU operator requalification training records (files) was performed. The files were noted to include the following items:

- examinations, including scores and answers,
- documentation of number of hours of facility operation per operator,
- followup activities performed in response to unsatisfactory examination scores, and
- records of attendance at required lectures.

It was noted by the NRC inspector, some operators had only the minimum (4 hours per calendar quarter) number of hours of operation. However, all operators were observed to have up-to-date and acceptable requalification training files.

A review of the requalification training procedure, standard operating Procedure SOP X (Roman numeral ten), was also performed. Reactor Safety Board Meeting 112, in January 1988, discussed an authorized deviation from SOP X. The deviation was dated September 22, 1987, and was noted in the operations log. The deviation added a Form 526A (Requalification Program NSCR 2-Year Operator Training Program) to SOP X. The new form was noted to be included in the personnel training files; it takes into account the new requirements of 10 CFR 55.

The control room copy of SOP X was found to be an out-of-date revision of the requalification program. SOP X presently does not take into account the authorized deviation noted above. The licensee stated this was because the RSB had not been presented with or approved an updated SOP X. The licensee stated this would be done at the next RSB meeting, scheduled for July 1988. The verification of the updating of Procedure SOP X is considered to be an open item (128/8802-02). The updating of SOP X is required to ensure the new requirements of 10 CFR 55 are reflected in the TAMU facility procedures.

No violations or deviations were identified in the review of this program area.

8. Surveillance (61745)

A review of the licensee's surveillance program was conducted to ensure compliance with TS requirements. Surveillance records reviewed appeared complete (except as noted below) and tests were performed on a timely basis. A comparison of selected recorded parameters versus TS requirements was performed, with no discrepancies noted.

The review of the surveillance and maintenance forms and files resulted in several observations:

- a. Two forms, 546 and 549, were noted to have data recorded without units. Sometimes the units were handwritten in with the data, but this was not consistently performed. Other forms had data units typed in to prevent confusion.
- b. A step on Form 547 (dated July 1986) was found not to have been checked. The check was to indicate the completion of the step. Licensee representatives stated that the step had been performed, but was accidentally not checked.
- c. A Form 570 data sheet was noted not to have been dated when performed. A review of logs is necessary to identify the date of performance of the Form 570.
- d. A Form 572 data sheet was missing the SRO signature.
- e. A Form 571 was noted not to have blanks listing the name of the person performing the biennial control rod inspection. The name of the person performing the inspection should be listed on Form 571.
- f. A Form 544, log power channel semiannual maintenance, was noted to have log power recorder values recorded that deviated from recommended values by 20 percent (on form dated January 1988) or more (forms from previous years). It was noted that no allowable tolerances are given on the form or associated procedure (III.D). The licensee indicated

that they would evaluate the Form 544 (and other forms as necessary) and the recorded values and that they would establish what allowable tolerance is recommended.

The NRC inspector pointed out to the licensee that some of the above observations indicate more attention to detail is needed to ensure proper completion of the maintenance and surveillance forms.

No violations or deviations were identified.

9. Site Tour

The NRC inspectors noted an improper radiation boundary.

Yellow and magenta rope was found to be laying on the floor of the reactor facility. The sign on the rope, describing the radiation hazard, was laying face down on the floor. There was no indication if a radiation hazard was present or not, and the inspectors subsequently determined that the area was not a radiation area, but it had previously been posted because of radiation levels in the area. The improper radiation boundary was considered unacceptable by the NRC inspectors and was reported to licensee management personnel for action.

The NRC inspector also brought to the attention of the licensee that:

- a. The reactor "on" light was not operating in the Reactor Room.
- b. An NRC notice was partially covered by a poster on the bulletin board.
- c. Cleanliness and equipment in the reactor pool area needed to be improved.

The licensee acknowledged the above observations.

No violations or deviations were identified.

10. Exit Interview

The NRC inspectors met with licensee representatives, denoted in paragraph 1, on April 7, 1988, and summarized the scope and findings of the inspection. The licensee did not identify as proprietary any of the information provided to or reviewed by the NRC inspectors.