U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION V

Report No. 50-113/80-01

Docket No. 50-113 License No. R-52 Safeguards Group

Licensee: University of Arizona
College of Engineering
Tucson, Arizona 85721

Facility Name: Triga Mark I

Inspection at: Tucson, Arizona

Inspection conducted: March 18-19, 1980

Inspectors: G. B. Zwetzig, Reactor Inspector — 4/15/80 Date Signed

Date Signed

Date Signed

Approved By: B. H. Faulkenberry, Chief — 4/15/80 Date Signed
Reactor Projects Section 2
Reactor Operations and Nuclear Support Branch

Summary:

Inspection on March 18-19, 1980 (Report No. 50-113/80-01)

Areas Inspected: Routine, unannounced inspection of followup on items of noncompliance; organization, logs and records; review and audit; requalification training; procedures; surveillance; experiments; and independent inspection effort. The inspection involved 14 inspector hours onsite by one NRC inspector.

Results: Of the eight areas inspected, no items of noncompliance were identified in six areas; two items of apparent noncompliance were identified in two areas (deficiency - failure of Reactor Committee to meet quarterly - Paragraph 4, and deficiency - operation of reactor with facility ventilation system not in operation - Paragraph 8).

RV Form 219 (2)

DETAILS

1. Persons Contacted

*H. Doane, Reactor Supervisor
R. Wells, Associate Reactor Supervisor
*R. Seale, Head, Department of Nuclear Engineering and
Acting Head, Reactor Laboratory
*R. Gallagher, Dean, College of Engineering

*Denotes those present at the exit interview.

2. Followup on Item of Noncompliance

(Closed) Noncompliance (50-113/79-01): Failure to include a written safety evaluation in the records to provide the basis that a facility modification did not involve an unreviewed safety question. By letter dated February 27, 1979, the licensee submitted a written safety evaluation providing his basis for concluding that the modification (addition of a thermal column) did not constitute an unreviewed safety question. By letter dated February 9, 1979, the licensee committed to include instruction on the requirements of 10CFR50.59 in the annual operator training program.

3. Organization, Logs and Records

The inspector verified that the facility operating organization was consistent with technical specification requirements. It was noted, however, that the Reactor Laboratory Head, Dr. G. W. Nelson, was still on assignment with the International Atomic Energy Agency, and that Dr. R. L. Seale, Head of the Department of Nuclear Engineering, was continuing as Acting Head of the Reactor Laboratory. At the time of this inspection Dr. Nelson was expected to conclude his assignment with IAEA in August, 1980.

The inspector verified by observation and inspection of the operating records, on a sampling basis, that the minimum staffing required for operation was in accordance with technical specifications requirements. The inspector also examined representative samples of the following logs and operating records for evidence of significant problems:

Monthly Checklist (January-December 1979)
Annual Checklist (July 1, 1978 to June 30, 1979)
Preliminary Checklist (1979)
Critical Approach Checklist (1979)
Termination Checklist (1979)
Pulsing Check Sheet (1979)
Operators' Log (#18: 9/28/78-4/9/79; #19: 4/10-12/17/79)
Fuel Element Inventory Sheets and Summary
Recorder Strip Charts (Log and Linear Power)
Power Upgrade and Instrument Log
Irradiation Request and Material Transfer

No significant problems were revealed by the examination of representative samples of these records.

The inspector examined a portion of a facility strip chart record covering a period of approximately ten days in December, 1979. The chart recorded the facility power level on both linear and logarithmic scales. Inspection of the record did not reveal any instances, either in the steady state or pulse modes, where the reactor had been operated in a manner inconsistent with license requirements.

The inspector examined the applicable records to determine, on a sampling basis, if the following maintenance activities were being performed in accordance with regulatory or administrative requirements:

Calibration of continuous air monitor
Calibration of the water monitor
Calibration of the safety channels
Replacement of demineralizer filters and resins

On the basis of the inspection performed, the inspector did not identify any instances where performance of maintenance activities was inconsistent with regulatory or administrative requirements.

No items of noncompliance or deviations were identified.

4. Review and Audit

The inspector determined the membership of the Reactor Committee by discussion with the licensee's representative. The discussion also indicated that the membership conformed to technical specification requirements. When asked about the existence of a document formally appointing the members of the committee, the licensee's representative stated that there was no such single document; instead the members of the committee are individually appointed. At the exit interview the licensee's representative offered to mail copies of the individual appointment letters to the inspector, and the inspector requested that he do so.

The inspector reviewed the minutes of the meetings held by the Reactor Committee during 1979. Such meetings were held on January 25, April 10, May 11 and November 8, 1979. Based on the membership of the committee as verbally identified by the licensee's representative (see above), the minutes of the meeting indicated that a quorum was present at each meeting.

Review of the meeting minutes for 1979 also indicated that only one facility modification had been implemented during the year. This modification consisted of changing the rod position indication from arbitrary units of withdrawal to the actual number of inches of withdrawal. This matter was reviewed and approved by the committee and accomplished in accordance with an approved procedure for control console changes. Operational checklists were revised to reflect the new units employed in control rod position indication.

Review of the committee minutes indicated that with one exception, review responsibilities were being accomplished in accordance with license requirements. The exception relates to the fact that Technical Specification 6.2.f requires the committee to "meet at least quarterly". Contrary to this requirement, the third and fourth meetings of the committee during 1979 were on May 11 and November 8. This interval is well in excess of quarterly (every three months); neither does it satisfy the requirement for a meeting in a calendar quarter (July-September).

This is an item of apparent noncompliance at the deficiency level (80-01-01).

5. Operator Requalification Training

The inspector reviewed the approved Operator Requalification Training Program and representative samples of the requalification training records and the operating logs. Based on this review and discussions with two operators, the inspector concluded that training, training records, reactivity manipulations and supervisor evaluations appeared to conform to regulatory requirements.

No items of noncompliance or deviations were identified.

6. Procedures

The inspector reviewed the facility technical specifications and administrative and operating procedures to verify that (1) the responsibilities of operators regarding adherence to procedures and (2) the method of modifying procedures, were clearly established. The inspector also reviewed the general operating procedures contained in "Administrative, Operating and Emergency Procedures," UARR 100, and the "Procedure for the Installation and Use of the Rod Oscillator System," UARR 118, and verified that they were technically adequate to meet regulatory requirements.

The inspector verified by means of a walk through that "Procedure for Control Element Removal and Inspection," UARR 107 could accomplish its intended purpose.

It was further determined by observation that the procedures used by the operators were properly approved and properly utilized.

No items of noncompliance or deviations were identified.

7. Surveillance

The inspector verified the technical adequacy of the following procedures for implementing the corresponding technical specification surveillance requirements:

UARR 102, "Procedure for Semi-Annual Visual Inspection of the Transient Rod Drive Cylinder and Air Supply System:
UARR 104, "Procedure for Calibration of the Particulate Air Monitor"
UARR 107, "Procedure for Control Element Removal and Inspection"
UARR 108, "Procedure for Repair and Calibration of Electronic Equipment in the Console and Control Rod Drive Systems"

The inspector also verified by walk through (UARR 102) and observation that the above procedures reflected the system as currently constructed.

The inspector examined the licensee's methods for meeting two technical specification limiting conditions for operation (LCOs) for which surveillance intervals were not specified. The LCOs examined were contained in Technical Specification 3.2, which prohibits steady state operation above 10 kw if the transient rod is not fully withdrawn, and Technical Specification 3.3.b which requires the fuel temperature immediately prior to a pulse to be in equilibrium with the bulk water temperature. Conformance with these LCOs was confirmed on a sampling basis by the inspector by examination of operating records and verification of the operability of the applicable interlocks.

The inspector also examined a representative sample of the facility records to verify that scheduled surveillance had been performed as required by the technical specifications.

In examining the licensee's surveillance procedures, the inspector noted that the procedures manual did not include written surveillance procedures for determining control rod worths or for the calorimetric calibration of the safety channels - two surveillances that are required by the technical specifications. When questioned concerning this, the licensee's representative stated that written procedures for performing these surveillances are included in the laboratory manual for one of the regularly-conducted nuclear engineering courses. The inspector recommended that these procedures be adapted for formal inclusion in the facility procedures manual. The licensee agreed to consider this. This item will be followed up at a subsequent inspection. (80-01-02)

No items of noncompliance or deviations were identified.

8. Experiments

The Reactor Committee reviewed and approved three experiments in the period between July 1, 1978 and June 30, 1979. These experiments involved measurement of void coefficient of reactivity, measurement of Argon-41 generation by the reactor, and irradiation of a thermionic integrated circuit. The inspector reviewed the documentation of the void coefficient and Argon-41 experiments and concluded that the experiments had been reviewed and Committee-recommended changes had been incorporated.

The inspector also determined that, except as noted, regulatory requirements, potential hazards, reactivity effects and radiological factors had been suitably considered.

The exception arose in the case of the Argon-41 experiment where, in order to obtain maximum sensitivity, the licensee chose to turn off the exhaust fan in the reactor room (to allow Argon-41 to accumulate) while the reactor was operated at full steady state power (100 kw). Operation in this manner appears to conflict with the requirement of technical specification 3.6.a that the reactor not be operated at power levels above 10 kw when the facility ventilation system is not in operation.

This is an item of apparent noncompliance at the deficiency level. (80-01-03)

9. Independent Inspection Effort

The inspector reviewed the revision to UARR 4, "Safety Evaluation for Facility Change, Test or Untried Experiment" which had been noted by the licensee in the most recent Annual Report (period ending June 30, 1979). The inspector noted that one change related to internal review pursuant to 10CFR50.59. In particular the revision consisted of changing the wording from "changes in the facility (procedure, etc.) as described in the application..." to "changes in the facility (procedure, etc.) as described in the license..." The inspector observed that such a change was not very meaningful because the facility, procedures, etc., are not explicitly described in the license. The inspector suggested that the wording would be more meaningful if it were revised to be in accord with 10CFR50.59 which refers to "the facility (etc.) as described in the safety analysis report." The licensee's representative indicated this change would be recommended to the Reactor Committee. This item will be followed up at a subsequent inspection. (80-01-04)

No items of noncompliance or deviations were identified.

10. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on March 19, 1980. The inspector summarized the scope of the inspection and apprised the licensee representatives of the items of apparent noncompliance (discussed in Paragraphs 4 and 8). The licensee representatives acknowledged the inspector's findings but made no commitments beyond those previously noted in this report.