U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 5-264/83-02(DRMSP)

Docket No. 50-264

License No. R-108

Licensee: Dow Chemical U.S.A. 1803 Building Midland, MI 48640

Facility Name: TRIGA Reactor

Inspection At: TRIGA Reactor Site, Midland, MI

Inspection Conducted: June 29-30, 1983

Inspector: W. B. Grant for

Approved By: L. R. Greger, Chief Facilities Radiation Protection Section

Inspection Summary

Inspection on June 29-30, 1983, (Report No. 50-264/83-02(DRMSP)) Areas Inspected: Routine, unannounced inspection of radiation protection and radwaste management programs including: qualifications; audits; training; radiation protection procedures; instruments and equipment; exposure control; posting, labeling, and control; surveys; notifications and reports; records of effluents; radioactive waste; and transportation activities. The inspection involved ten inspector-hours onsite by one NRC inspector.

Results: No items of noncompliance or deviations were identified.

7/29/83 Date 1/29/83

DETAILS

1. Persons Contacted

*R. Croyle, Manager, Industrial Hygiene Services

- *K. Kelly, Assistant Reactor Supervisor
- F. Knoll, Research Manager
- T. Parsons, Health Physicist
- T. Quinn, Senior Reactor Operator

*Denotes those present at the exit meeting.

2. General

This inspection, which began at 12:45 p.m. on June 29, 1983, was conducted to examine the routine operational radiation protection and radwaste management programs at the DOW Chemical, USA TRIGA Reactor. Records, Logs, instrument calibrations, and area radiation monitor tests were found to be current. The reactor was operated during the inspection. No problems were noted.

3. C.ganization

The reactor staff consists of a reactor supervisor and two assistant reactor supervisors who are also senior reactor operators, five senior reactor operators and one reactor operator trainee. Mr. F. J. Knoll has replaced Mr. J. M. Macki as Research Manager in Building 1602 and as Chairman of the Reactor Operations Committee. No problems were identified.

4. Licensee Audits

Minutes of the Reactor Operations Committee (ROC) and the Radiation Safety Committee (RSC) meetings held since September 1980 were reviewed. Membership and meeting frequencies for both committees were as required in Technical Specifications 1.2 and 1.4.

5. Training

Except for the reactor staff, no other individuals frequent the reactor area. The reactor staff receives radiation protection training, which meets the requirements of 10 CFR 19.12, during annual operator requalification.

No items of noncompliance were identified.

6. Radiation Protection Procedures

The inspector reviewed procedures contained in the "TRIGA Operations Manual," including calibration procedures for the area radiation monitor, continuous air monitor, and pool water monitor.

No items of noncompliance were identified.

In October 1982, a mechanical failure of the pump vanes on the CAM during reactor operation caused an apparent violation of technical specifications. The reactor had operated for about one hour and had been shut down when the licensee noted that the CAM was not operating. The reactor had performed normally; the area monitor in the reactor room had not alarmed; and operation of the reactor after pump repair did not indicate abnormal levels of airborne radioactive materials. Therefore, no abnormal conditions were believed to have existed while the CAM was inoperable. Corrective actions appear adequate. This matter was discussed at the exit meeting.

No items of noncompliance were identified.

8. Exposure Control

a. External Exposure

The vendor's film badge reports were reviewed for the period September 1980 to date. The largest whole body and extremity doses received in a calendar year were 140 mrems and 220 mrems, respectively. No problems were noted.

b. Internal Exposure

The licensee has no routine bioassay program for the reactor staff. They rely on the CAM, contamination surveys, and pool activity measurements to indicate any problems. The inspector reviewed records of these indicators. Except as noted in Section 7.c, no problems were noted.

No items of noncompliance were identified.

9. Posting and Labeling

The licensee's compliance with posting and labeling requirements specified in 10 CFR 19.11 and 10 CFR 20.203 were reviewed.

No items of noncompliance were identified.

10. Transportation Activities

According to the licensee, no radioactive material has been received under the TRIGA license since September 1980. The inspector reviewed records of radioactive shipments made since September 1980. No problems were noted.

The licensee has not submitted a quality assurance program in accordance with 10 CFR 71, Appendix E, and has no plans to do so. No shipment containing greater than Type A quantities has been made.

No items of noncompliance were identified.

7. Instruments and Equipment

a. Portable Survey Instruments

Operable and calibrated instruments capable of detecting beta, gamma, and neutron radiation are available at the reactor. Additional instruments are available from the Industrial Hygiene Office as needed. Records indicated that ionization type and neutron instruments are calibrated quarterly and Geiger-Mueller type meters annually. No problems were noted.

b. Area Radiation Monitor

Records indicate that the monitor was calibrated in March and August of CY 1981, 1982, and in March of CY 1983. The monitor is calibrated with a 10 mg radium source. (Technical Specification G.3 specifies an annual calibration frequency.)

c. Continuous Air Monitor (CAM)

The inspector reviewed records of calibration and alarm setpoint checks performed since September 1980 and noted that the frequency was as required by Technical Specification G.3. No problems were noted.

Technical Specification G.2 requires a CAM with readout and audible alarm to be operating in the reactor room when the reactor is operating. An apparent violation of the technical specification occurred in March 1981 and again in October 1982. In March 1981, the licensee noted that the CAM readout indicated abnormally low. Investigation by the licensee determined that defective "O" ring seals on the filter holder prevented proper seating of the holder and permitted air to bypass the filter. Therefore, only a portion of the particulates contained in the sampled air was collected on the filter. The licensee determined that no more than 90 percent of the sampled air bypassed the filter, and since the remaining 10 percent would have caused the instrument to alarm before exceeding regulatory limits, no violation of the technical specification occurred. The licensee's corrective actions were:

- (1) The filter-in lock was adjusted so that it can not be closed unless the filter holder is properly seated.
- (2) The vacuum relief valve was relocated behind the rotometer so that the rotometer will only measure air that passes through the filter.
- (3) A new reactor start-up checkout procedure was implemented providing for momentary plugging of the air intake to measure any bypass air with the rotometer. The licensee's investigation and corrective actions appear adequate. This matter was discussed at the exit meeting.

11. Surveys

Contamination and radiation surveys are performed monthly in portions of the facility, and quarterly in the remaining areas. Results of these surveys were reviewed. Occasional low-level contamination is found in known contamination areas.

No items of noncompliance were identified.

12. Notifications and Reports

Review of records and discussions with representatives indicated compliance with 10 CFR 19 and 10 CFR 20 requirements.

No items of noncompliance were identified.

13. Radioactive Waste

a. Liquid Radwaste

No radioactive liquid effluents are released from the reactor. Any liquids generated are collected and transferred to the Industrial Hygiene Office for solidification and disposal.

b. Gaseous Radwaste

The licensee has no gaseous effluent monitor. A calculation of the theoretical amount of Ar-41 generated, presented in Section H.5 of the Safety Analysis Report, indicates that 10 CFR 20 limits would not be exceeded during continuous operation of the rabbit system; the system is operated only a few hours per week.

Particulate effluents would be detected by the CAM. No significant particulate activity has been noted.

c. Solid Radwaste

Solid radioactive waste generated at the reactor facility is collected by the Industrial Hygiene Office and transferred (under NRC Byproduct Material License No. 21-00165-06) to a licensed disposal company.

No items of noncompliance were identified.

14. Exit Meeting

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on June 30, 1983. The inspector summarized the scope and findings of the inspection. The licensee acknowledged the inspector's comments concerning the operation of the continuous air monitor. (Paragraph 7.c)