

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

REGION V

Report No. 50-187/80-01  
Docket No. 50-187 License No. R-90 Safeguards Group \_\_\_\_\_  
Licensee: Northrop Corporation - MRT Center  
One Research Park  
Palos Verdes Peninsula, California 90274

Facility Name: Northrop MOR Reactor (TRIGA)

Inspection at: Hawthorne, California

Inspection conducted: September 22-24, 1980

Inspectors: J. R. Curtis 10/09/1980  
J. R. Curtis, Radiation Specialist Date Signed

Approved By: F. A. Wenslawski 10/09/80  
F. A. Wenslawski, Chief, Reactor Radiation Safety Section Date Signed

Approved By: H. E. Book 10/16/80  
H. E. Book, Chief, Fuel Facility and Materials Safety Branch Date Signed

Summary:

Inspection on September 22-24, 1980 (Report No. 50-187/80-01)

Areas Inspected: Routine unannounced inspection of radiation protection and environmental controls including facility tour, examination of personnel monitoring, radiation surveys, material transfers and effluent records; followup of IE Bulletin 79-19. The inspection involved fourteen hours onsite by one NRC inspector.

Results: One item of non-compliance was identified. The licensee failed to submit personnel monitoring statistical reports as required by 10 CFR 20.407 for 1978 and 1979. This item is discussed in report Details section 4.

## DETAILS

### 1. Persons Contacted

\*Dr. W. Crandall, Chairman, Corporate Radiation Safety Committee  
\*Mr. D. Avant, Manager, Administrative Services  
\*Ms. J. Adams, Secretary, Corporate Radiation Safety Committee  
\*Mr. G. Cozens, Corporate Radiation Safety Officer/Senior Operator  
Mr. F. Blair, Reactor Operator  
Mr. J. Woods, Health Physics/Reactor Technician

\*Indicates presence at the exit interview.

### 2. Licensee Action on I. E. Bulletin 79-19, Packaging of Low-Level Waste for Transport and Burial

The licensee received and responded to IE Bulletin No. 79-19 in a timely manner. The licensee generates small volumes of very low level solid waste and accumulates very low specific activity liquid waste in a "hot" waste/hold up tank system. No solid waste shipments have been made since January 1977, and liquid waste releases in the specific activity range of  $2-3 \times 10^{-8}$  micro curies/milliliter were made to the sewer system in accordance with Los Angeles Sanitation District requirements in June and September 1980. The licensee had accumulated four 55 gallon drums of solid waste at the time of the inspection, the contractor organization previously used to transport the solid waste for disposal has stopped providing such service and no substitute contract agreements had been made by the licensee to date.

The licensee indicated that because of the low volume solid waste generation rate, the reported status of the NECO, Nevada burial site and the lack of immediate need to transfer the existing accumulation of low level solid waste for disposal, no recent action had been taken on some items referenced in their response to IE Bulletin 79-19.

In response to the inspectors focus on the current status of the licensee's solid waste handling program. The licensee representatives indicated that they would formalize their instructions and procedures for the transfer, packaging and transport of low level waste, provide training for the persons involved in waste handling and establish a program as referenced in the licensee's Bulletin 79-19 response letter. Instructions, procedures and the training program would be provided within 45 days of the inspection date.

No items of non-compliance were identified.

3. General Operations - Tour

The TRIGA pool-type reactor is housed in the high-bay section of Building 3-48 on the Northrop Aircraft Divisions property in Hawthorne. The reactor is scheduled for regular operations on Monday and Tuesday; special scheduling can and has been recently scheduled for full week operations or special runs can be specially scheduled on other days by prior arrangement.

The present regular operating staff includes the Reactor Supervisor/Corporate Radiation Safety Officer, a senior operator; a Staff Reactor Operator, and a Staff Health Physics Technician. The regular staff is supplemented by three members of the Northrop Research and Technology Management Organization located in nearby Palos Verdes who hold senior reactor operator licenses.

The principal mode of operation of the Northrop moveable core TRIGA is operation in the pulsed or steady-state mode with the reactor adjacent to the shielded exposure room. Electronic components and materials are irradiated there during reactor operation, the core is moved away and after a suitable delay, the shielded door is opened to retrieve the irradiated materials. No operations were scheduled during the inspection and so no reactor operation was observed.

The inspector toured the facility, examined records, discussed reactor operations with the staff, conducted radiation level measurements and took a swipe survey for removable contamination.

The licensee uses portable ion chamber and GM type survey meters for radiation monitoring. A thin window GM tube type instrument is maintained for contamination checks near the reactor room exit. The instruments were operational and had been recently calibrated. Radiation areas were identified with appropriate signs and barriers. Radioactive materials were appropriately labeled or controlled by being stored in locked, properly identified storage facilities. A large number of sulfur dosimeters used for neutron measurement had been processed in the recent past. There was no evidence of P-32 contamination related to this task. The swipe survey results indicated that sample floor and work surfaces were free of removable contamination.

4. Record Review

The inspector examined the following records:

- a. Reactor Log Book
- b. Personnel Monitoring/Film Badge Report Records
- c. Area Film Badge Survey
- d. Radiation Survey Records
- e. Radioactive Material Transfers
- f. Radioactive Liquid Waste Sampling and Release Records

Results reported were consistent with summary reports and the NOR Annual Report, submitted to NRC February 14, 1980 (Ref. #327-80-10). There were no large unexpected or unusual radiation levels reported in the operations monitoring or routine surveys conducted at the facility. Records of material transfers reflected appropriate radiation surveys and compliance with applicable DOT radiation level limitations and labeling requirements.

Personnel monitoring records indicated that exposures were lower to date in 1980 than previous years, consistent with individual recent assignments and the operating schedule. Exposure limits of the 10 CFR 20 regulatory requirements were not exceeded nor approached.

The licensee failed to submit a statistical summary report of personnel monitoring information on the six staff personnel for whom personnel monitoring was provided for the years 1978 and 1979. The licensee representative who provides NRC reports and personnel monitoring reports for terminating personnel did not recall receiving the special notification requesting the report and failed to meet the requirements as stated in the amended 10 CFR 20.407. When this failure was called to the attention of the licensee representatives, they indicated the reports for 1978 and 1979 would be generated and submitted (OI-80-01-01).

One item of non compliance was identified in this area.

5. Radioactive Waste - Effluents

A small volume of slightly activated or possibly contaminated solid waste is generated in the course of reactor operations at the facility. These consist of discarded protective coverings, paper tape, cables, capsules and holding fixtures that are activated or contaminated during sample and exposure room irradiations. They are collected in labeled containers, packaged and stored for transfer to a commercial waste disposal contractor. The solid waste generation rate has been low and the quantity of stored waste to date is small. No shipments have been made since the last inspection in 1978 and none are planned in the immediate future.

Liquid wastes, generated principally during limited cleanup, filter change or infrequent laboratory operations, are collected in a waste holdup tank and stored for decay prior to sampling and release or transfer for disposal. Three batches of liquid waste have been released since the last inspection, in August 1979, June 1980 and September, 1980. Sampling and analysis records indicated levels in the  $8 \times 10^{-9}$  to  $3 \times 10^{-8}$  micro curie per milliliter activity range. The releases were made according to requirements imposed by the Los Angeles Sanitation District.

Gaseous effluents are monitored continuously during reactor operation. Argon-41 releases are determined based on indicated concentrations and conservatively estimated using the maximum concentration times the total generation time. Actual release concentrations rise to a maximum over a period of 30 to 45 minutes of reactor operation in extended runs. Releases during operation are recorded and tallied once per month and cumulative totals are summarized in the annual operating report. Records of concentrations of Argon-41 released indicated levels in the  $5 \times 10^{-11}$  to  $3 \times 10^{-10}$  micro curie per cubic centimeter range, resulting in monthly releases in the millicurie range and annual releases around four curies.

No items of non-compliance were identified in this area.

#### 6. Emergency Response Planning

A new Emergency Plan for the Northrop Reactor was generated and submitted to NRC recently in the recommended format.

In June 1980 during preparation for calibration of the stack monitor, electrical transients caused an alarm in the morning and a second in the afternoon. In each case the reactor staff responded to the alarm according to the Emergency response plan and evacuated after notifying the Northrop Control Center of the alarm. Corporate emergency response support was mobilized and responded. The Reactor Supervisor/Corporate Radiation Safety Officer was in the facility, notified the Control Center, evacuated the building to the evacuation area, observed other response activity and discussed the response afterwards. Based on observations and a critique by participants, improved response routes were proposed. When the second alarm sounded in the afternoon the staff responded as per plan and the support group also responded. As a result of the two erroneous alarms and the licensee organizations response, observations and critiques, constructive changes to improve response are being initiated.

No items of non-compliance were identified.

#### 7. Exit Interview

At the conclusion of the inspection, the inspector met with licensee management representatives, discussed the scope and findings of the inspection. The licensee representatives indicated that the procedural and training aspects of their low level waste handling program would be formalized and the plan submitted within 45 days.

When advised of the item of non-compliance in failure to report personnel monitoring results as required in 10 CFR 20.407 they indicated that the data would be compiled and the reports submitted as soon as the information was retrieved from the records.