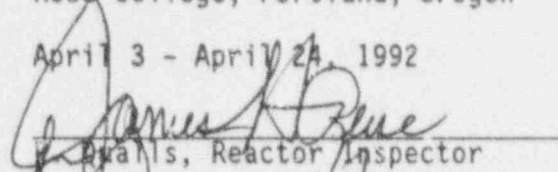
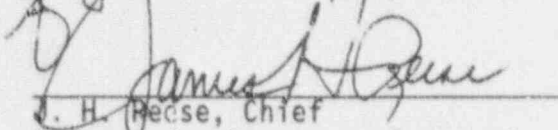


U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-288/92-01  
Docket No.: 50-288  
Licensee No.: R-112  
Licensee: Reed College  
Portland, Oregon 97202  
Facility Name: Reed Reactor Facility (RRF)  
Inspection at: Reed College, Portland, Oregon  
Inspection Conducted: April 3 - April 24, 1992  
Inspectors:   
J. H. Recse, Reactor Inspector  
Approved by:   
J. H. Recse, Chief  
Safeguards, Emergency Preparedness  
and Non-Power Reactor Branch

6/9/92  
Date Signed

6/9/92  
Date Signed

Summary

Inspection of April 3 - 24, 1992 (Report No. 50-288/92-01)

Areas Inspected: Special inspection to review and evaluate the Reed College test plan which was intended to locate the fuel element leak. Inspection Procedure 40750 was used in the course of this inspection.

Results: In the areas inspected, no violations or deviations were identified. Licensee performance was found adequate to protect the health and safety of the public.

## DETAILS

### 1. Persons Contacted

Ms. H. Watson, Acting Vice President for Public Affairs  
Mr. J. Pollock, Acting Director RRF  
Mr. M. Parrott, Health Physics Consultant  
Mr. P. Terdel, Senior Reactor Operator  
Mr. E. Argetsinger, Senior Reactor Operator

### 2. Background

On November 23, 1991, the Reed Reactor experienced a pinhole leak in one of its fuel elements. The licensee's operators took prompt action to shut down the reactor and to isolate the reactor bay. The NRC Region V Office sent two inspectors to Reed College to evaluate the licensee's response to the event. The results of that inspection are documented in Inspection Report 50-288/91-01.

On November 25, 1991, the NRC Region V Office sent to the licensee a Confirmatory Action Letter (CAL) which stated the Region's understanding that the licensee would develop a recovery plan and would get Region V concurrence prior to moving any fuel elements.

The CAL also stated the NRC's understanding that Reed would not manipulate the control rods or take the reactor critical until the cause of the radioactivity release was understood, communicated to the Region V Office and NRC concurrence is obtained.

### 3. Follow-up of Confirmatory Action Letter (92703)

NRC Inspection Report 50-288/91-01 documents the probable cause of the radioactivity release referred to in the CAL, thus satisfying paragraph 2 of the CAL.

In submittals dated March 17, March 30, and April 8, 1992 Reed described their plan for locating the leaking fuel element. The NRC Region V Office reviewed these submittals and on April 10, 1992 the NRC concurred in the Reed test plan and thus satisfied the conditions stated in the CAL. (50-288/91-03) closed.

### 4. Reactor Operations (40750)

The test plan, which the licensee implemented, specified starting at an extremely low power level and slowly increasing power in discrete increments until a leak was detected. After detection of fission gases, the plan called for locating and removing the leaking fuel element and its subsequent removal from the core.

4. Reactor Operations (40750) (cont'd.)

Prior to the licensee restarting the reactor, the inspector verified that the test equipment was arranged, tested and calibrated in conformance with industry standards. The inspector also verified that the test arrangement properly implemented the plan that had been submitted to the NRC for concurrence. The Reed Reactor achieved criticality to conduct the tests necessary to find the leaking fuel element on April 10, 1992. Reactor criticality was necessary to produce fission gases and enable the leaking element to be located and removed.

The inspector observed the initial reactor startup and initial test performance. The inspector noted that the operators followed the procedures and controlled the evolution in a professional manner.

The radiological controls implemented by the licensee were also observed by the inspector. The inspector noted that the area was kept clean, that proper radiological monitoring was maintained, and that efforts were made to ensure that doses were kept at a minimum.

Testing continued until power was 250 kw (100% full power). Even at 100% power the fission gases were not detected by the licensee. The pinhole leak appeared to have become sealed, possibly due to corrosion. Testing was suspended around April 18.

For the remainder of the inspection period, the licensee discussed testing options and emergency planning options with the NRC staff.

5. Follow-up of Previously Identified Open Items (92701)

a. 91-01-01 (CLOSED) Safety Rod Motor Control

When the reactor was tripped on November 23, 1991, the safety rod motor did not reset as required by the logic circuit. The inspector verified that the proper repairs had been made to the controls and that the motor tested properly during the initial restart. This item is CLOSED.

b. 91-01-02 (CLOSED) APM failsafe point

The inspector verified that the APM calibration was current and that the device had been tested prior to reactor restart. This item is CLOSED.


6. Exit Meeting


Exit discussions were held with both the Associate Director and the Director of the Reed Reactor Facility on April 11, 1992. In addition, numerous telephone discussions with both persons were conducted subsequent to the onsite inspection. These items identified by this report were discussed at that time.

JUN 09 1992

bcc w/enclosure:  
Docket File  
Project Inspector  
Resident Inspector  
G. Cook  
B. Faulkenberry  
J. Martin

bcc w/o enclosure:  
M. Smith  
J. Zollicoffer

  
Qualls  
6/9/92

  
Reese  
6/9/92

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