

U. S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-77/91-01

Docket No. 50-77

License No. R-31

Licensee: The Catholic University of America  
620 Michigan Avenue, N.E.  
Washington, D. C. 20064

Facility Name: AGN 201 Nuclear Research Reactor

Inspection at: Washington, D. C.

Inspection Conducted: January 14-15, 1991

Inspector:

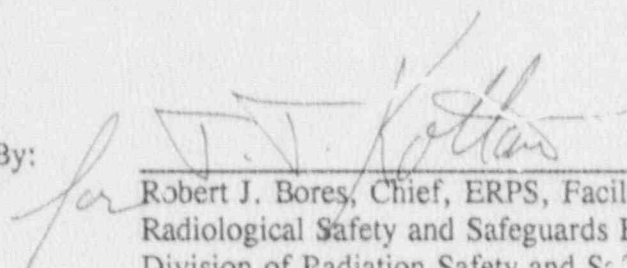


Thomas F. Dragoun, Project Scientist  
Effluents Radiation Protection Section  
(ERPS)

Date

2/8/91

Approved By:



Robert J. Bores, Chief, ERPS, Facilities  
Radiological Safety and Safeguards Branch,  
Division of Radiation Safety and Safeguards

Date

2-8-91

Inspection Summary: Inspection on January 14-15, 1991 (Inspection Report No. 50-77/91-01)

Areas Inspected: Routine, announced safety inspection of a possession-only reactor program including status of previously identified items, surveillances, and decommissioning efforts.

Results: Five violations were identified; 1) the Radiation Safety Committee failed to meet quarterly; 2) failure to perform audits; 3) failure to record surveillance on reactor fuel; 4) failure to test the fire alarm system; and, 5) failure to record inspections of physical barriers. Also, the need to establish a firm decommissioning schedule was discussed with the licensee.

## DETAILS

### 1.0 Individuals Contacted

Sister R. Donley, Executive Vice President

\*W. Keene, Radiation Safety Officer and Reactor Administrator

S. Keimig, Director of Environmental Safety

R. Fawbush, Master Electrician

### 1.1 NRC Personnel

\*A. Adams, Project Manager, NRR

\*Attended the Exit Interview on January 15, 1991.

### 2.0 Status of Previously Identified Items

- 2.1 (Closed) Unresolved Item (50-77/88-01-01): The Radiation Safety Committee did not meet during the last quarter of 1987 as required by Technical Specification 6.3.1. A review of meetings held since then shows that four additional quarterly meetings were missed in the three-year period from 1988 to 1990. The consistent failure to hold the required meetings constitutes an apparent violation of Technical Specification 6.3.1. (50-77/91-01-01)
- 2.2 (Closed) Unresolved Item (50-77/88-01-02): The Radiation Safety Committee did not conduct an audit during 1987 as required by Technical Specification 6.3.4. The Committee Chairman assigned an individual to conduct an audit in 1988. This was not completed. The annual audits were also missed in 1989 and 1990. The failure to conduct annual audits of facility activities constitutes an apparent violation of Technical Specification 6.3.4. (50-77/91-01-02)
- 2.3 (Closed) Unresolved Item (50-77/88-01-03): The quarterly inventory and visual check of the appearance of the reactor fuel was not completed as required by Technical Specification 4.3(c). The Reactor Director stated that he ensures that the fuel is locked in the vault each month. However, no visual check is done and no records are maintained of this activity. Failure to record the required surveillance on the fuel constitutes an apparent violation of Technical Specification 4.3(c). (50-77/91-01-03)
- 2.4 (Closed) Unresolved Item (50-77/88-01-04): Radiation survey records did not include the measurement of dose rates around the reactor facility. A review of recent surveys shows that dose rates are now measured and recorded on survey maps. This matter has been satisfactorily resolved.

### 3.0 Facility Tour

The reactor is an Aerojet-General Nucleonics Model AGN-201 solid homogeneous core research reactor rated at 100 milliwatts. The reactor core has been completely disassembled including the removal of fuel from the control rods. The main polyethylene fuel discs are stored in one safe and the control rod fuel pellets are stored in a separate safe. The control console is disconnected and the cables were destroyed after the operating license was changed to "possession only" in 1985. The inspector inventoried the fuel and found no discrepancies.

Some initial efforts toward decommissioning began last year. The core tank was removed and placed in storage but the graphite reflector and lead shield were left in place. Grid marks were placed on the walls to facilitate radiation surveys. The inspector toured the Vitreous State Laboratory (radwaste glass encapsulation project) and noted that sophisticated radiological measurement equipment is available to support decontamination and decommissioning of the reactor facility.

The Reactor Administrator is also the Radiation Safety Officer for the entire University and is responsible for the various by-product licenses. His assistant recently left after completing a program to obtain an advanced degree. A replacement is expected to be hired within the next few weeks. The inspector had no further questions.

### 4.0 Surveillances

In March 1986 the NRC approved the licensee's request to convert the reactor license to a "possession only" status. The Technical Specifications were changed (Amendment #9) to reflect the reactor status until decommissioning was completed. The inspector reviewed the performance of the TS surveillance requirements by interviews with personnel, review of records, and a tour of the reactor facility.

- 4.1 TS 4.2 requires that the shield tank be visually inspected every two years and checked for water leaks annually. A tank inspection was completed by the Reactor Administrator and his assistant in September 1989. In March 1990, the fuel core tank was removed, vented, disassembled, and the fuel placed in a storage safe. Large sections of the graphite reflector were also removed and the water was drained from the shield tank. Although the annual check for water leakage was due in September 1990, the requirement is now inappropriate.
- 4.2 TS 4.3.a requires that the operational condition of the reactor area fire alarm be tested yearly. The Director of Environmental Safety has the responsibility to test all campus building alarms. He stated that dormitory buildings are tested at least twice during the school year but academic buildings are tested on a rotating basis. There were no records of when the Pangborn Building, which contains the reactor, was last tested. He stated that he was appointed to the position about one year ago and is attempting to set a firm

schedule for the fire alarm checks. The inspector noted that the Director appeared unaware of the NRC requirements and requested that the Reactor Administrator brief the Environmental Safety Office relative to the TS. Failure to conduct the operational test of the reactor area fire alarm in 1990 constitutes an apparent violation. (50-77/91-01-04)

- 4.3 TS 4.3.b requires that physical barriers (door locks and safe locks) be inspected quarterly. TS 6.7.1.d requires that records be retained for five years for surveillance activities required by the technical specifications. The Reactor Administrator stated that he enters the locked area at least monthly and opens the fuel storage safe. However, no formal inspection of the locks is performed and no records of the condition of the locks were kept. This constitutes an apparent violation. (50-77/91-01-05)
- 4.4 TS 4.3.d requires that the shield tank water level be visually inspected annually. This requirement is now inappropriate since the tank is drained as discussed in Section 4.1 of this report.
- 4.5 TS 4.3.e requires the Radiation Safety Officer (RSO) to make a quarterly radiation survey of the reactor area. The records show that the RSO conducts monthly surveys that include smear checks at several locations and gamma/neutron dose rates. The measurements and locations are recorded on floor plan maps that are kept on file in the RSO's office. The inspector had no further questions in this area.

#### 5.0 Decommissioning Status

In a January 14, 1986 letter to the Director of NRR, the licensee indicated that plans to decommission the reactor facility were being completed. Status of this effort was discussed in a meeting on January 15, 1991 attended by the inspector, NRR Project Manager, Reactor Administrator, and University Executive Vice President. The licensee stated that a formal request to transfer all fuel back to DOE is being prepared. The licensee was advised that the NRC requires a formal decommissioning plan be submitted. Guidance regarding content and format has been provided with copies of plans from other AGN reactors. The NRC also encouraged the licensee to ship the fuel as soon as practical. The licensee stated a desire to decommission in the near future but no timetable has been set.

#### 6.0 Exit Interview

The inspector met with the individuals noted in Section 1.0 at the conclusion of this inspection on January 15, 1991. The scope and findings of the inspection were presented at that time.