

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

Region I

Report No. 50-184/79-01

Docket No. 50-184

License No. TR-5 Priority -- Category F

Licensee: U.S. Department of Commerce

National Bureau of Standards

Washington, D.C. 20234

Facility Name: NBS Reactor

Inspection at: Gaithersburg, Maryland

Inspection conducted: January 17-19, 1979

Inspectors: Dale E. Donaldson
D. Donaldson, Radiation Specialist

2-6-79
date signed

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Approved by: Dale E. Donaldson
for J. P. Stohr, Chief, E&SP Section

2-6-79
date signed

Inspection Summary:

Inspection on January 17-19, 1979 (Report No. 50-184/79-01)

Areas Inspected: Routine, unannounced inspection of the environmental protection and emergency planning programs including: airborne effluents, liquid effluents, solid waste, and environmental monitoring (all under environmental protection); and verification of response capability, outside agency coordination, training and drills, and emergency equipment under emergency planning. The inspection involved 16 hours on site by one regionally based inspector.

Results: Of the 8 areas inspected, no items of noncompliance were identified.

DETAILS

1. Persons Contacted

Principal Licensee Employees

*R. Carter, Chief, Reactor Radiation Division
*T. Raby, Chief, Reactor Operations
*J. Torrence, Deputy Chief, Reactor Operations
*T. Hobbs, Supervisory Health Physicist
P. Cassidy, Health Physicist
J. Shubiak, Health Physicist
Lt. Ellis, NBS Security
Chief Baker, NBS Fire Department

Other Personnel

Lt. R. George, Maryland State Police
L. Beuchler, Chief, Radiological Safety Service, National Naval
Medical Center
Mr. R. Corcoran, Maryland Division of Radiation Control

*denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Open) Unresolved Item (50-184/76-02): Adequacy of "emergency plan" per the requirements of Technical Specification 7.4.e. The licensee management stated that a revision to the existing emergency plan will be developed to incorporate guidelines contained in ANS 15.16. The revised plan is expected to be completed by the end of 1979. The inspector stated that this item would remain open pending completion of the revision and subsequent review by the NRC.

3. Environmental Protection

The inspector reviewed the licensee's effluent monitoring and environmental protection in the following areas:

a. Airborne Effluents

The inspector noted that the reactor facility stack was the only airborne effluent release path to the environment. The licensee continuously monitors the stack effluent with a G-M tube mounted in the stack. Continuous sampling for halogens and particulates with half-lives greater than 8 days is performed using glass fiber and charcoal filters. Stack samples for H-3 and Ar-41 are taken quarterly.

The inspector reviewed the gaseous effluent release records for 1978. In 1978, the licensee released 308.2 Ci of H-3 and 641.2 Ci Ar-41 from the stack. These releases resulted in an annual average H-3 concentration of approximately 7.34×10^{-7} uCi/ml and 1.53×10^{-6} uCi/ml of Ar-41 at the release point (stack). The licensee's airborne particulate and halogen activity at the stack averaged approximately 1×10^{-14} uCi/ml.

The inspector noted that the licensee had performed all required sampling and did not exceed any gaseous effluent release limits during 1978. No items of noncompliance were identified.

b. Liquid Effluents

Liquid waste is collected in a 1,000 gallon retention tank and subsequently transferred to a 5,000 gallon tank for discharge. The 5,000 gallon tank is sampled for H-3, gross alpha and gross beta-gamma prior to discharge to the sanitary sewer system.

The licensee discharged 31 batches of liquid effluent in 1978 having a total volume of 4.6×10^6 ml. The liquid releases consisted of 1.33×10^6 uCi of H-3 and 344.2 uCi of gross Beta-gamma, with an average annual concentration of 2.82×10^{-6} uCi/ml of H-3 and gross beta-gamma taking dilution into account.

The inspector noted that the licensee is permitted to discharge more than one curie of H-3 to the sanitary sewer. The inspector noted that the licensee had performed all required sampling and did not exceed any liquid effluent release limits during 1978. No items of noncompliance were identified.

c. Solid Waste

Solid waste is compacted by the licensee and shipped offsite by a commercial contractor for disposal. During 1978, the licensee generated approximately 150 ft^3 of compacted solid waste.

d. Environmental Monitoring

The inspector reviewed the licensee's environmental monitoring records for 1978 to verify that the environmental monitoring program required by Technical Specification 5.10 was being implemented. The inspector noted that quarterly stream, well, vegetation or soil, and air sampling were performed and analyzed as required. The data indicated no activity above background.

e. Split Sample

A liquid sample from the 5,000 gallon waste tank was taken by the licensee and split with the inspector for the comparison of analysis results. The sample will be analyzed for gross alpha, gross beta-gamma, and tritium by the licensee using normal routine methods and by the NRC:I contracting laboratory (Department of Energy Radiological and Environmental Services Laboratory). Joint analysis of actual effluent samples and subsequent comparison of the results determines the licensee's capability to measure radioactivity in liquid effluents. The results of these analyses will be reported in a subsequent inspection report.

No items of noncompliance were identified.

4. Emergency Planning

The inspector reviewed the licensee's emergency planning in the following areas:

a. Verification of Response Capability

The inspector held discussions with key licensee personnel concerning the methods to be used in responding to a postulated incident. These discussions indicated that persons could recognize an emergency situation and respond as described in the procedures.

b. Supporting Agencies

The licensee's emergency procedures incorporate coordination with and support from the following organizations and agencies: NBS Security; NBS Medical; NBS Fire Department; Montgomery County Police; and Naval Medical Center (Bethesda).

The inspector noted, however, that there were no provisions for coordination with the Maryland Department of Health, Division of Radiation Control. Licensee management informed the inspector that coordination at the State Health Department level was not deemed to be necessary since the NBS facility is a Federal installation. Consequently, licensee management had coordinated with the Montgomery County and State Police for support in implementing protective actions on behalf of the general public.

Discussion between the inspector and a representative of the Maryland Division of Radiation Control indicated that any protective actions taken on behalf of the general public in response to radiation incidents is to be coordinated with and by the Department of Health pursuant to sections 675-689B (Radiation Control Act) of Article 43 (Health Laws of Maryland) of the Code of Maryland. The Chief of the Maryland Division of Radiation Control stated that this coordination was necessary to ensure that any recommendations made by the licensee are consistent with State policy and adopted protective action guides.

The inspector informed the licensee that the next revision to the emergency plan and implementing procedures should address coordination with and support from the Maryland Health Department. The inspector stated that this issue would be reviewed during a subsequent evaluation of the licensee's emergency plan and implementing procedures. (79-01-01)

c. Monitoring Systems/Alarms/Emergency Equipment

The inspector examined the area radiation monitoring system and noted that the monitors were calibrated and checked during 1978 at the frequency required by the licensee's technical specifications. The inspector also examined emergency equipment located in the reactor facility closet, emergency control pit, and waste storage building. Through a review of records, the inspector verified that the emergency controls and air samplers had been maintained as required by the Technical Specifications.

d. Training

The inspector reviewed emergency planning training records and noted that emergency planning was included in new employee and facility user training. In addition, an emergency drill had been conducted on November 8, 1978. The drill was witnessed by observers and critiqued.

5. Exit Interview

The inspector met with the licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on January 19, 1979. The inspector summarized the purpose and the scope of the inspection and the inspection findings.