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

REGION III

Report No. 70-008/79-03; 30-5728/79-02

Docket No. 70-8; 30-5728 License No. SNM-7; 34-06854-05

Licensee: Battelle Columbus Laboratories
505 King Avenue
Columbus, OH 43201

Facility Name: West Jefferson Nuclear Facility

Inspection At: West Jefferson Nuclear Facility, West Jefferson, OH

Inspection Conducted: May 7-11, 1979

Inspector: C. C. Peck C C Peck 6/6/79

Approved By: W. L. Fisher, Chief W. L. Fisher 6/7/79
Fuel Facility Projects and Radiation
Support Section

Inspection Summary

Inspection on May 7-11, 1979 (Report No. 70-8/79-03; 30-5728/79-02)

Areas Inspected: Routine, unannounced health and safety inspection including organization, criticality safety, facility changes and modifications, safety committees, internal exposure control, external exposure control, surveys, and instruments and equipment. The inspection involved 37 inspector-hours on site by one NRC inspector. Results: No items of noncompliance or deviations were identified in the areas inspected.

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DETAILS

1. Persons Contacted

*K. C. Brog, Manager, Physics, Electronics, and Nuclear Technology Department
*R. W. Klingensmith, Associate Manager, Hot Cell Laboratory
*H. L. Toy, Licensing Coordinator
*D. A. McKown, Radiological Safety Officer
*J. F. Dettorre, Site Manager, West Jefferson Operations
*G. E. Kirsch, Supervisor, Health Physics Services
*W. J. Gallagher, Hot Cell Operations Manager
J. Wissinger, Plutonium Laboratory Health Physics Technician
E. R. Swindall, Hot Cell Laboratory Health Physics Technician
R. D. Flint, Supervisor, Instrument Laboratory

*Denotes those present at exit interview.

2. General

The inspection was conducted to examine the safety of activities at the West Jefferson Nuclear facility of Battelle Columbus Laboratories. The inspection began at 8:15 a.m., on May 7, 19[illegible]. The inspector toured the Plutonium Laboratory and the Hot Cell Laboratory on the first two days of the inspection. On subsequent days, the licensee's health physics program was inspected and the King Avenue office was visited to review records of safety related activities.

There has been no change in the status of the license for the facility. The licensee's combined application for renewal of his Special Nuclear Material License and Byproduct License, submitted in October 1977, has not yet been approved.

3. Organization

There have been no management or supervisory changes since the last inspection in January 1979 (Report No. 79-01).

4. Operations Review

a. Plutonium Laboratory

Decontamination of the laboratory is continuing under a contract with DOE. Several gloveboxes have been removed since the last inspection in January 1979. The inspector verified that required safety systems are being maintained such as ventilation, air monitoring, stack monitoring, and fire protection.

b. Hot Cell Laboratory

Most of the research work presently in progress in the laboratory is DOE-sponsored rather than licensed.

In touring the facility, the inspector noted that new shelves had been installed in the JN-1-A hot cells for storage of radioactive material boxes. These should permit more orderly control of materials. Constant air monitor, stack monitoring, and criticality instruments all appeared operable. A record check indicated that daily operability checks of these instruments is continuing. However, installation of new stack monitoring equipment on the JN-1-A stack has yet to be completed. Problems in obtaining the equipment were the stated reasons for the delay.

The licensee stated that administrative controls had been established to prevent the wearing of protective clothing in offices and other areas outside the controlled area. New portal monitors have been installed at exits from the controlled area. The new controls appeared effective.

No items of noncompliance were identified.

5. Modifications and Changes to Facility

The inspector learned of a number of changes, planned and in progress, from a review of cases considered by the Radiological Safety Committee and from discussions with the licensee.

- RSC 1-103. Installation of a laser-welder system in the High Energy Cell for drilling zircalloy was approved.

- RSC 1-104. The drilling of a small access hole through the concrete wall of the High Energy Cell was approved.

- RSC 1-105. The transfer of waste water generated during decontamination of the Plutonium Laboratory to the Hot Cell storage pool is planned. The licensee's present policy is to discharge no liquid waste, other than sanitary waste, to the site creek. The waste water from the Plutonium Laboratory will be treated to assure that radioactivity and chemical concentrations are acceptable for the storage pool.

- RSC 1-105A. The committee approved installation of a laboratory for radiochemical analyses in the JN-2 building. The laboratory will be used for environmental and biological assays.

- RSC 1-106. Consideration is being given to performing elevated temperature tests on some spent fuel rods outside the Hot Cell. The rods would be in a shielded cask located on top of the High Energy Cell during the test.

- Installation of a new storage rack in the spent fuel pool to accommodate both BWR and PWR assemblies is planned. The installation will require a criticality safety analysis.

- Three additional changes contemplated are the installation of a waste storage facility adjacent to the Hot Cell Laboratory, the transfer of two gloveboxes from the Plutonium Laboratory to the Hot Cell to permit limited Pu work, and the installation of a small incinerator in the evaporation cell for volume reduction of low level combustible wastes. The licensee acknowledged that these three changes would require Licensing approval.

No items of noncompliance were identified.

6. Safety Committees

The minutes of monthly Radiation Safety meetings held at West Jefferson since the inspection in a January 1979 (Report No. 79-01) were reviewed. Items of safety interest that were considered were:

- A quality assurance procedure was completed for pressure testing fuel casks upon receipt. The need for such a procedure was realized after an empty cask was discovered upon arriva' to be pressurized to 80 psi. The pressure apparently had not been relieved after the shipper's pressure test.

- Approval of the electrical equipment installation for tying in a portable backup emergency generator at the Hot Cell or Plutonium Laboratory. The portable generator will be stored in the decommissioned research reactor building, available for use.

The problem of spurious film badge reports was discussed. One presumably unused badge received a dose of 133 R according to the vendor report. The individual to whom the badge was assigned was not on site during the badge period and did not have access to the badge. The vendor stated that the exposure appeared to be caused by low and medium x-rays. The licensee was unable to find any explanation for such an exposure.

7. Radiation Protection

a. External Exposure Control

Film badge and TLD records for the first quarter of 1979 were examined. No exposures exceeded 10 CFR Part 20 limits. A summary of exposures for 1978 indicated that no individual received a dose exceeding 5 rems. In the Hot Cell, where radiation levels are highest, the average dose per person was 2 rems, comparable to the average dose in the preceding year.

b. Internal Exposure Control

In the Plutonium Laboratory, dismantling of gloveboxes is the principle activity. The work is done in plastic tents to control the spread of contamination. The air inside the tents is sampled continously while work is in progress. A review of air sampling records disclosed that radioactivity concentrations have generally not exceeded 1E-10 μCi/ml alpha in the innermost tent, where workers are equipped with supplied-air respirators.

The lapel sample of one Plutonium Laboratory worker indicated possible exposure to about 200 MPC-hours. A sample analysis showed that the material was insoluble, reducing the possible exposure to about 5 MPC-hours. Fecal samples, taken on three successive days, and a urinalysis showed no indication of radioactivity.

Urinalyses of Plutonium Laboratory employees are conducted every three months. Examination of the most recent results disclosed no significant plutonium activity in any of the samples.

Air sample, lapel sample, and Whole Body count records for Hot Cell Laboratory workers were inspected. The lapel sample of one individual indicated possible exposure to more than 40 MPC-hours. As was the case in the Plutonium Laboratory, analysis indicated insoluble material. Fecal samples and urinalyses showed no detectable activity. Results of the most recent whole body counts of Hot Cell employees in October 1978 were examined. Workers are counted for mixed fission and activation products. No count exceeded a small fraction of MPBB. Whole body counting normally takes place semiannually, but unavailability of the counting service has delayed 1979 examinations.

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c. Surveys

Routine smear survey records for both the Plutonium and Hot Cell Laboratories were examined. Survey frequencies, adequate in both facilities, indicated that cleanup was accomplished promptly when areas were found to be contaminated above limits.

No items of noncompliance were identified.

8. Instruments and Equipment

Constant air monitors, effluent air monitors, criticality monitors, and portable survey instruments are calibrated every six months. In addition, criticality monitors, CAM's, and effluent air monitors receive a daily operability check. The licensee has recently placed these instruments under the quality assurance program along with many other instruments not directly safety related. Quality Assurance provides a monthly list of instruments to be calibrated to the instrument laboratory. During the inspection, it was observed that most instruments had been calibrated under the new system.

Instrument calibrations will be inspected in detail during a future inspection.

9. Exit Interview

The inspector met with licensee representatives denoted in Paragraph 1 at the conclusion of the inspection on May 11, 1979.

During the meeting, the licensee agreed:

1. To establish a firm date for completing installation of the new stack monitoring system in the Hot Cell Laboratory. (The inspector was advised a few days after the inspection that the completion date would be August 1, 1979.)

2. To complete the Hot Cell Laboratory operating procedures by August 1, 1979. These are presently in draft form, designated as Quality Assurance Procedure HL-A-1.