

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 70-008/90002(DRSS)

Docket No. 07-008

License No. SNM-7

Licensee: Battelle Columbus Operations
505 King Avenue
Columbus, OH 43201-2693

Inspection At: West Jefferson Site and King Avenue Site

Inspection Conducted: July 17-19, 1990

Inspector: George M. France, III

George M France III

08/15/90
Date

Approved By: D. J. Sreniawski, Chief
Nuclear Materials Safety
Section 1

Donald J Sreniawski

8/20/90
Date

Inspection Summary

Inspection on July 17-19, 1990 (Report No. 70-008/90001(DRSS))

Areas Inspected: Routine, unannounced health and safety inspection, including: management and organization controls (IP 88005); transportation activities (IP 86740); radiation protection (IP 83822); criticality safety (IP 88015); operations review (IP 88025); environmental protection (IP 88045); maintenance surveillance (IP 88025); radioactive waste management (IP 88035); waste generator requirements (IP 84850) and; training (IP 88010).

Results: The licensee was found to be in compliance with NRC requirements within the areas examined. The inspector examined the licensee's program for training new hires in radiological health and safety. The licensee's programs for calibrating instruments and maintaining calibrated radioactive sources appear to be adequate.

DETAILS

1. Persons Contacted

- *C. Jensen, Radiation Safety Officer
- G. Kirsch, Supervisor, Health Physics
- *V. Pasupathi, Manager, Nuclear Technical Section
- *J. Ray, Vice President, Nuclear Operations
- M. Stenhouse, Principal, Research Scientist
- *H. Toy, Manager, Nuclear Services (Health, Safety, and Environment)

*The above personnel attended the July 19, 1990 exit interview.

The inspector also contacted other members of the licensee's staff during the course of the inspection.

2. General

This inspection of onsite licensee activities was conducted to examine activities at the West Jefferson site and King Avenue site under Materials License No. SNM-7. The inspector also reviewed the licensee's progress in preparing the sites for decontamination and decommissioning (D/D).

3. Management Organization and Controls (IP 88005)

The inspector reviewed the licensee's management organization and controls for radiation protection and operations, including changes in the organizational structure.

The inspector determined that since the last inspection (January 1990, 70-008/90001) there were no organizational changes that affected the licensee's performance in radiological safety at Battelle Columbus operations. Radiological safety services are performed by a full time staff aided by a former Radiological Safety Officer (retired-part time worker) with an audit overview performed by the Radiological Safety Committee.

No violations or deviations were identified.

4. Operations Review (IP 88020)

The inspector toured the Hot Cell Building (JN-1) at the West Jefferson site and reviewed the licensee's progress in preparing the hot cells for decontamination and decommissioning (D/D).

Licensee operators were using cell manipulators (mechanical devices) to repackage irradiated fuel components (fuel cladding material) for further radiological characterization and classification. The licensee indicated that during cell clean out there had been no fissile quantities of radioactive material detected. On this basis, the inspector concurred

that in the absence of fissile material, it would be feasible for the licensee to tag out the neutron monitors until D/D operations commence. The inspector also stated that the licensee should inform NMSS that the instruments while remaining in place are only tagged out during the surveillance mode of current operations.

No violations or deviations were identified.

5. Radiation Protection (IP 83822)

The inspector reviewed the licensee's internal and external exposure control programs including the required records, reports, and notifications.

a. Internal Exposure Control

Bioassay records for first and second quarter operations (1990) indicated that no detectable concentrations of carbon-14 were found in any employee. Other isotopes that may have been present in radioactive materials handled by hot cell workers included uranium-234, 235, 238; thorium-228; 230; 232; and plutonium-239. No detectable concentrations of these isotopes were reported in the bioassay results. Whole body count results performed on April 5, 1990, for hot cell workers were less than the maximum permissible body burden for isotopes of cesium, cobalt, plutonium and uranium. In summary, the 40 MPC hour intake limit (derived from bioassay and whole body count results) for the aforementioned isotopes as specified in 10 CFR 20 was not exceeded.

b. External Exposure

As previously reported (See Inspection Report No. 70-008/90001) the limited work for hot cell operators led to a high exposure of only 370 mrem to any one individual. Hence, the total occupational dose to any individual is less than the quarterly standard (1.25 rem) specified in 10 CFR 20.101.

c. Retired Battelle Research Reactor (RBRR)

On July 16, 1990, the licensee filed a report with NMSS that provides a summary of the radiological status of the RBRR for the 1989 operating year. The report indicated that surveys are performed monthly on the research reactor and exposure data continue to be within acceptable limits. There were no reportable occurrences during 1989 associated with operations conducted in the building.

d. Instrument Calibration/Source Checks

Records indicated that the instruments are normally calibrated annually and/or monitored with weekly source checks. The quality assurance (QA) list dated July 6, 1990 for instrument calibration indicated that 19 instruments were scheduled and none were past due.

The records also indicated that the instruments are checked for system efficiency by statistical determination and when applicable calibration of the count rate meter.

The inspector interviewed the cognizant technician responsible for performing leak tests and maintaining an inventory of the licensee's check sources. All radioactive sources tested passed the leak test requirement. Under the source management program independent audits and/or tests are performed by a member of the Battelle Columbus Safety Department. This department is also equipped to provide industrial safety, industrial hygiene, and/or radiological support to Battelle Columbus operations. No problems were reported.

e. Radiological Work Permit (RWP)

RWPs are initiated by a supervisor or task leader and completed jointly with the Health Physics Department. The inspector examined 5 RWPs that were performed during June and/or early July 1990.

During a walkthrough of one RWP the licensee indicated that a smoke test was performed on workers donning respiratory equipment and a Health Physicist (Master Technician) reviews the checklists with persons to assure that all safety requirements are in place. In addition, a Master Technician is available to support provide services as required by the RWP. The inspector determined that in the areas examined the licensee was following the safety requirements of each RWP.

f. Unusual Events File

The inspector examined the licensee's events file and determined that no entries were made for the January through June 1990 operating period.

No violations or deviations were identified.

6. Criticality Safety (IP 88015)

The inspector determined during the previous inspection (70008/90001) that the licensee has positive management controls as well as calibrated instrumentation to ensure that D/D operations are conducted within posted nuclear criticality safety limits. During the current surveillance mode of operation, the licensee has not detected fissile quantities of SNM materials.

Region III will continue to monitor the licensee's program for assuring that operations are conducted within the prescribed criticality safety limits.

No violations or deviations were identified.

7. Environmental Protection (IP 88045)

During the previous inspection (70-0008/90001), the inspector determined that the licensee's characterization of radioactivity in the soil (West Jefferson site) indicated that the annual dose equivalent to the whole body of any member of the public was less than 25 mrem. Records examined during the inspection indicated that recent soil sample (January thru June 1990) analysis continue to show that the equivalent exposure from the soil is less than 2^E mrem to members of the public.

No violations or deviations were identified.

8. Training (IP 88010)

In response to the inspector's inquiry, the licensee indicated that the part-time Radiation Safety Officer has been designated to provide Radiological Safety Training for any new hires. The training program outline includes respiratory protection, and instrumentation used for detecting radioactivity.

Region III will continue to monitor the licensee's program for training new hires for the D/D program.

No violations or deviations were identified.

9. Radioactive Waste Management (IP 88035), Transportation Activities (IP 86740) and Waste Generator Requirements (IP 84850) of 10 CFR 20 and 10 CFR 61

During the January thru June 1990 operating period, (there was no) transport of radioactive materials planned by the licensee. As previously discussed in this report (Section 4 Operations Review) some radioactive residues and irradiated fuel components (fuel cladding) were being repackaged for characterization and classification as required under NRC regulations (10 CFR 20.311 and 10 CFR 61.55 and 61.56).

No violations or deviations were identified.

10. Maintenance Surveillance (IP 88025)

During the first and second quarter 1990 operations there was no apparent non-routine conditions which produced radioactivity concentrations in the storage pool water in excess of the surveillance limits of 5 E-03 μ Ci/ml alpha.

The inspector noted that in view of the licensee's operational status "surveillance mode," the weekly interval for monitoring the radioactivity concentration in the pool water could be altered so that tests could be performed at monthly intervals. The licensee plans to pursue this by applying for a license amendment to change the monitoring frequency from weekly to monthly.

No violations or deviations were identified.

11. Exit Meeting

The scope and findings of the inspection were discussed with the licensee representatives (Section 1) at the close of the onsite inspection on July 19, 1990. The following items were discussed during the exit meeting.

- ° The inspector indicated that the training scheduled for new hires seemed adequate to support their orientation in basic radiation protection (Section 8).
- ° The inspector concurred that in the absence of fissile material the licensee should seek concurrence from NMSS to tag out the neutron monitors until D/D operations commence (Section 4).
- ° The licensee plans to pursue a reduction in sampling frequency of the pool water via license amendment (Section 10).

During the course of the inspection and the exit meeting, the licensee did not identify any documents or inspector statements and references to specific process as proprietary.