

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

REGION III

Report No. 70-36/79-02

Docket No. 70-36

License No. SNM-33

Licensee: Combustion Engineering, Inc.
Nuclear Power Systems
Windsor, CT 06095

Facility Name: Hematite Facility

Inspection At: Hematite, MO

Inspection Conducted: February 12-16, 1979

Inspector: C. C. Peck

CC Peck

2/23/79

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

W. L. Fisher

2/2/79

Inspection Summary:

Inspection on February 12-16, 1979 (Report No. 70-36/79-02)

Areas Inspected: Routine, unannounced health and safety inspection, including: organization, facility changes and modifications, internal reviews and audits, procedure control, nuclear criticality safety, operations review, and training; radiation protection program, including exposure control, and posting and labeling; radioactive waste management, including liquid effluents, airborne effluents, and solid wastes. The inspection involved 39 inspector-hours on site by one NRC inspector.

Results:

No items of noncompliance or deviations were found in the twelve areas inspected.

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DETAILS

1. Persons Contacted

- *J. A. Rode, Plant Manager
- *H. E. Eskridge, Nuclear Licensing, Safety and Accountability
Supervisor
- *L. J. Swallow, Quality Assurance Manager
- *L. F. Deul, Engineer
- *C. E. Lovell, Health Physics Technician

The inspector also interviewed other licensee employees, including supervisors, operators, and health and safety technicians.

*Denotes those present at the exit interview.

2. General

The inspection began at 8:30 a.m. on February 11, 1979. The inspector toured the facility early on the first day of the inspection to observe plant activities, and subsequently revisited areas of particular interest.

3. Previous Inspection Findings

(Closed) Commitment (70-036/78-09): Concerning the possibility of beta activity in stack effluents. Technetium-99 has been present in liquid effluents, and there was some thought that it might be present in gaseous effluents. Ten stack samples were analyzed, the majority from the press stack in the recycle-recovery area, a stack with relatively high effluent releases. No significant beta activity was detected.

(Open) Commitment (70-036/78-09): Concerning the possibility of uranium being deposited in air sample lines. The lengths of some sample lines raised the question of possible deposition of uranium on the inside surfaces of the tubes before reading the sampler. The licensee intends to investigate this matter when some sample lines are replaced during the next few months.

(Open) Unresolved item (70-036/78-09): Concerning the whole body counting data on one individual. The employee is required to use a lapel sampler for all work in which there is any possibility of

exposure to airborne activity. In-vivo counting will be conducted within the next few months.

4. Facility Changes and Modifications

Changes completed after being subjected to the formal criticality review and approval procedure were:

- . Installation of an internal cyclone in one of the oxide plant vessels.
- . Provision for storage of a vacuum cleaner beneath one of the hoods in the wet scrap recovery area.

The installation of a system for reducing the volume of solid wastes consigned to burial is in progress in the recycle-recovery area. Present plans are to reduce combustible wastes to ashes after the wastes have been assayed by gamma counting. The ashes will be sampled for uranium analysis. Off-gases will be air cooled in a heat exchanger and collected in a packed tower water scrubber which will vent to an existing, sampled exhaust stack. Operating procedures and a formal criticality review have not yet been prepared.

No items of noncompliance were identified.

5. Internal Reviews and Audits

The annual audit by company representatives from Windsor was conducted in December 1978. Plant safety, criticality safety, and radiation protection were audited and documented.

The Nuclear Safety, Licensing, and Accountability Supervisor continues to make weekly inspections. The Quality Assurance Manager, who also functions as criticality specialist, performs monthly inspections. These audits have served in recent months to correct safety-related problems of empty container identification, equipment storage, and criticality sign posting.

The inspector examined all recent audits and found no items of noncompliance.

6. Criticality Safety

Weekly tests of the criticality alarms continue. It was observed that some of the lights on the instruments, which indicate that

the instrument is functioning, were burned out. The licensee is aware of the condition and plans to replace the defective bulbs.

New engraved plastic criticality limit signs have been mounted on equipment in the recycle-recovery area, replacing less legible and less durable paper signs. Replacement of the paper signs throughout the plant is planned. Present posted limits are all based on an enrichment of 3.1%. The expectation of different enrichments in the future will increase the amount of information necessary on the limit signs. The licensee intends to proceed with the posting of new signs, keeping the information as straightforward as possible.

No items of noncompliance were identified.

7. Organization and Training

There have been no changes in the plant organization since the inspection of October 1978 (Report 70-36/78-07).

Annual retraining of employees was completed in December for the 1978 year. Subjects covered were emergency procedures, radiation safety and criticality safety, and respiratory protection.

No items of noncompliance were identified.

8. Procedure Control

The licensee is committed to a review and updating of procedures every two years. It was agreed in a previous inspection that the two year period for review of all procedures would end March 31, 1979 (Report 70-36/78-03).

At the time of this inspection nuclear and industrial safety procedures (which include health physics procedures), material control procedures, and oxide building operating appeared to be completed. Procedures involving the pellet plant, recycle-recovery, and shipping and receiving remained to be reviewed. All these procedures will be examined in detail in a future inspection.

No items of noncompliance were identified.

9. Radiation Protection

a. External Exposure Control

Film badge records for the last quarter of 1978 were examined. There were no exposures greater than regulatory requirements. For the entire year the highest total dose to any individual was 1240 mrem. There continue to be some anomalies in data reported by the vendor to the licensee. For example, a visitor's badge which was not used, according to records, showed the greatest exposure during December, 160 mrem.

b. Internal Exposure Control

Lapel samplers and fixed air samplers are used to determine exposure to airborne contaminants. MPC-hours are calculated daily for each employee. Records showed no exposures exceeding 40 MPC-hours since the inspection of November 1978 (Report 70-36/78-09). A summary, compiled by the licensee, was examined by the inspector. This showed average MPC-hours per week for each individual in the work group. These ranged from 1.92 MPC-hours per week to 8.89 MPC-hours per week. The average for all employees was about 4.30 MPC hours/week.

Bioassay data accumulated since the November inspection were examined. No analyses exceeded the action limit of 50 $\mu\text{g}/\text{l}$. A summary of data for the year showed an average for all bioassays of 5.93 $\mu\text{g}/\text{l}$. The highest single analysis for an individual during the year was 13.9 $\mu\text{g}/\text{l}$.

No items of noncompliance were identified.

c. Posting, Labeling, and Control

Posting and labeling requirements were observed to be in accordance with the requirements of 10 CFR 19.11 and 10 CFR 20.203.

10. Radioactive Waste Management

a. Liquid Effluents

Liquid wastes presently consist of laundry water, filtrates from wet scrap recovery, and industrial waste. These are discharged to the site pond. Examination of sample data showed that uranium concentrations of water released from the

site pond to be well within 10 CFR Part 20 limits. Efforts to reduce the uranium content of laundry water are continuing.

Potassium hydroxide scrubber solution and filtrates from the recovery of uranium from uranium hexafluoride cylinder heels were routinely discharged to the onsite evaporation ponds. However, potassium hydroxide solution is presently being treated chemically for removal of fluorides, then stored for reuse. The recovery of uranium from cylinder heels has not been necessary since introduction of a system for cold trapping the heels. As a result of these changes there have been no releases to the evaporation ponds since September 1978. The licensee is considering the future actions that might be taken concerning the evaporation ponds and has engaged outside consultants to assist in the planning.

b. Airborne Effluents

Stack effluent sample data since November 1978 were examined. The several stacks are sampled continuously and samples collected and analyzed daily. No concentrations in excess of MPC for uranium-235 were noted.

A summary of stack effluent concentrations for all of 1978 was reviewed. The summary provided average monthly concentrations for each stack. It was noted that the average concentrations of all stacks for the year was slightly less than $1.0E-12$ microcuries per milliliter, about 25% of the MPC for uranium-235. No dilution factors for determining concentrations at the site boundary are used.

c. Radioactive Solid Wastes

There have been no solid waste shipments since May 1978. The licensee is installing a system for volume reduction of solid wastes, as described in Paragraph 4.

11. Exit Interview

The inspector met with licensee representative denoted in Paragraph 1 at the conclusion of the inspection. The inspector described the scope of the inspection and stated that no items of noncompliance or deviations had been found.

The open items noted in Paragraph 3 were discussed. Licensee representatives indicated they would resolve these matters.