



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

AUG 12 1987

Report No.: 70-1151/87-12

Licensee: Westinghouse Electric Corporation
Nuclear Fuel Division
Columbia, SC 29250

Docket No.: 70-1151

License No.: SNM-1107

Facility Name: Westinghouse (Fuel Division)

Inspection Conducted: July 20-24, 1987

Inspector: Ray C. Collins
T. R. Collins

8/11/87
Date Signed

Accompanying Personnel: M. T. Lauer

Approved by: C. M. Hosey
C. M. Hosey, Section Chief
Division of Radiation Safety and Safeguards

8/11/87
Date Signed

SUMMARY

Scope: This routine, unannounced inspection included the areas of transportation of radioactive material, radioactive waste disposal, radiation protection, and followup on previously inspector identified items and enforcement issues.

Results: Two violations were identified - failure to properly solidify waste and implement an adequate Quality Control Program (QC) for waste characterization and failure to include the Transport Index (TI) on appropriate shipping papers for a radioactive material shipment.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *R. Wiggins, Acting Plant Manager
- *W. L. Goodwin, Manager, Regulatory Affairs
- *J. Hubich, Manager, Chemical, Manufacturing
- *J. W. Heath, Manager, Health Physics Operations
- *E. E. Keelen, Manager, Manufacturing
- *J. Purcell, Manager, Traffic and Storeroom Services
- *R. E. Fisher, Senior Engineer, Radiological and Environmental (R&E) Engineering
 - E. K. Reitler, Manager, R&E Engineering
 - L. W. Davis, Supervisor, Health Physics Operations
 - R. K. Burklin, Senior Engineer, R&E Engineering
 - H. Foster, Senior Engineer, R&E Engineering
 - T. Shannon, R&E Technician

Other licensee employees contacted included three construction craftsmen, five technicians, two operators, three security force members, and two office personnel.

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 24, 1987, with those persons indicated in Paragraph 1 above. Violations involving failure to properly solidify waste and to implement an adequate Quality Control (QC) Program for waste characterization (Paragraph 5) and failure to include the transportation index on appropriate shipping papers for a radioactive material shipment (Paragraph 6) were discussed in detail. The licensee acknowledged the inspection findings and took no exceptions. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

(Closed) Violation (70-1151/87-02-01): Failure to follow procedures for personnel monitoring. The inspector reviewed the licensee's response dated March 27, 1987, and verified that the corrective actions specified in the response had been completed.

4. Radiation Protection (83822)

a. External Exposure Control

10 CFR 20.201 specifies applicable radiation dose limits. The inspector reviewed radiation exposure records of selected individuals and verified that the radiation doses recorded were well within the quarterly limits of 10 CFR 20.101(a).

10 CFR 20.202 requires each licensee to supply appropriate personnel monitoring equipment to specific individuals and requires the use of such equipment. During tours of the plant, the inspector observed workers wearing appropriate personnel monitoring devices.

No violations or deviations were identified.

b. Internal Exposure Control

(1) Air Sampling

Section 2.2.6 of the application for License No. SNM-1107 requires that the air in airborne radioactivity areas be continuously sampled by permanently mounted samplers. During plant tours the inspector observed operability and appropriate placement of fixed air samplers. The inspector reviewed weekly Percent Maximum Permissible Concentration (MPC) reports from March 1987 to date.

Section 2.2.6.4 of the application for License SNM-1107 requires counting equipment and techniques which will detect concentrations of airborne radioactive particulates at levels which are 10 percent of the limits specified in 10 CFR 20. The inspector reviewed Health Physics Operating Procedure-05-001, Preparation and Analysis of Inplant Air Samples, and discussed the operation of the air sample counting equipment (i.e., background calculation, calibration, sample loading, etc.) with HP technicians and a HP supervisor.

(2) Bioassay

Section 3.2.4.1 of the application for License SNM-1107 requires establishment of weekly and daily urine sampling frequencies where soluble uranium compounds are processed.

Section 3.2.4.2 of the application for License SNM-1107 requires establishment of routine in-vivo lung counting frequencies for individuals who work in areas where nontransportable uranium compounds are processed.

The inspector reviewed selected results of urinalysis and in vivo lung counts of selected personnel performed during 1987,

and determined that among those reviewed, two workers had exceeded the licensee's action limits specified in the license application.

The inspector reviewed the "Excessive Exposure Reports" for these two individuals dated April 2, 1987 and April 3, 1987, which showed 43 MPC hours and 50 MPC hours, respectively, and concluded that the licensee's investigation and corrective actions were adequate to prevent recurrence.

No violations or deviations were identified.

c. Respiratory Protection

10 CFR 20.103(c) specifies the program requirements for using respiratory protection equipment to limit the inhalation of airborne radioactive materials. The licensee has implemented the program through Regulatory Affairs Procedure RA-205, Respiratory Protection.

The inspector reviewed selected Radiation Work Permits (RWPs) requiring respirators and verified that the individuals listed on the RWPs had been trained in the use of respirators, had current medical clearances, and that NIOSH/MSHA approved respirators with accepted protection factors had been used. Weekly respiratory inspections are required by HPOP 05-018, Respirator Overchecks. The inspector reviewed the inspection sheets from January 9, 1987 to July 8, 1987.

No violations or deviations were identified.

d. Surveys

Section 3.2.5 of the application for License No. SNM-1107, and HPOP 05-014, Performing Contamination Surveys of the Westinghouse Facility, specifies contamination survey requirements. The inspector reviewed contamination survey sheets for the men's and women's change rooms from January 1, 1987, to date, and for the Daniels Construction Contractor entrance from January 5, 1987, to date, and verified that the contamination survey requirements had been met.

No violations or deviations were identified.

e. Personnel Monitoring

Regulatory Affairs Procedure RA-217, Personnel Monitoring, requires that when personnel exit the Controlled Area, they are to follow posted instructions for monitoring (frisking).

During plant tours the inspector verified that personnel exiting the Controlled Area were following all posted instructions.

HPOP 05-065, Contamination Personnel Overchecks, specifies requirements for weekly audits of personnel exiting the Controlled Area to insure that all frisking procedures are being followed. These audits included the witnessing of frisking as well as random surveys of individuals outside of the Controlled Area. The inspector reviewed Personnel Overcheck Reports from January 14, 1987 to June 24, 1987, for the men's and women's change rooms, and verified that the overchecks were being performed as required and that corrective actions were performed as appropriate.

No violations or deviations were identified.

f. ALARA

Section 3.1.2.5 of the application for License SNM-1107 specifies requirements for the formation of the Regulatory Compliance Committee (RCC) and its ALARA responsibilities, which includes quarterly meetings. The inspector reviewed the qualifications and operational responsibilities of the membership and minutes from the February 20, 1987, and March 27, 1987, meetings. The minutes of biweekly meetings from January 26, 1987, to June 10, 1987, of the Airborne Reduction Team (ART), a subgroup of the RCC, were also reviewed. Items found in these reports included the determination of permanent solutions for problems currently using temporary fixes, identification of areas for non-routine air sampling representativeness investigation, and plan development and implementation to decrease air sample spikes which are greater than 100 percent MPC.

Licensee representatives stated that a new HEPA filter had recently been installed on the Line #3 Oxidation Hood for testing and evaluation for possible additional installations on the other lines. The inspector reviewed percent MPC air sample data before and after installation and determined that an approximate 80 percent reduction in percent MPC had been achieved at the oxidation hood.

No violations or deviations were identified.

g. Procedure Review

The following Health Physics Operating Procedures were reviewed for technical adequacy and adherence to NRC regulatory requirements:

- 01-004, PAC-4G Operation
- 01-006, RM-15 Monitor
- 01-008, Portable Ion Chamber Model PIC-6A
- 01-024, Operation of Tenelec Counter Model L.B. 5100
- 01-025, Tenelec L.B. 5100 Calibration Procedure
- 01-026, Tenelec Background and Efficiency Operations
- 03-001, Personnel Dosimetry System
- 04-001, Bioassay Urine Sample Program

05-001, Preparation and Analysis of Inplant Air Samples
 05-012, Evaluation of Lapel vs. Fixed Air samples and Action Levels
 for Lapel, Sample Results
 05-064, Respiratory Issuance
 05-018, Respirator Overchecks
 05-019, Checking Respirators for Reuse
 05-017, Daily and Weekly Percent Maximum Permissible Concentration
 Report
 05-025, Bioassay Program - Unusual Incidents
 05-047, Radioactivity Airborne Investigation
 05-065, Contamination Personnel Overchecks
 06-008, Air Sampling Representativeness

The inspectors suggested changes, corrections, and additions to several procedures which were acknowledged by the cognizant supervisor.

No violations or deviations were identified.

h. Facility Review

The licensee has submitted to the NRC Office of Nuclear Material Safety and Safeguards a request for approval to begin construction on the Improved Fuel Processing (IFP) facility. The approval for construction of this new IFP facility was issued by NMSS in a letter dated November 18, 1985. The letter of approval also requested the licensee to notify their NRC Regional Office of their intent to initiate operation of this IFP facility at least 30 days prior to such operations.

The inspector reviewed a letter submitted by the licensee dated April 3, 1987, which notified the Region II NRC Office that source materials may be committed to the IFP facility as early as June 30, 1987. At the time of the inspection, the licensee planned to introduce special nuclear materials into the facility by October 1, 1987, with full operations by January 1988. The inspector toured the new IFP facility to review the ventilation systems, drains, and access controls. During tours of the facility the inspector did not note any problems into the radiation safety aspects of the new IFP facility.

No violations or deviations were identified.

i. Instrumentation

Section 3.2.1.2(1) of the Application for License SNM-1107 states that instruments shall be routinely calibrated on a schedule established by the Radiation Protection Component. The schedule shall require calibration following acquisition, and thereafter at least following major repairs or semiannually, whichever occurs first. Alpha counting equipment used in the laboratory also shall be

checked each working day, when in use, to determine background activity and a calibrated source shall be counted to assure proper counting voltage of each laboratory alpha counting instrument quarterly. Instrument calibration records shall be maintained for a period of one year.

The inspector reviewed the calibration schedule and records for portable health physics survey instruments for the period of January to July 1987, and the results of quality control checks for selected laboratory alpha counting equipment.

No violations or deviations were identified.

j. Sealed Source Leak Test

Administrative Procedure HP-05-046, Leak Testing Sealed Sources, specifies the requirements for sealed source leak test. The inspector reviewed the licensee's program for controlling sealed sources and leak test in accordance with Procedure HP-05-046. The inspector selectively reviewed the sealed source log for the period of March 1986 to March 1987 and verified that sealed sources were properly checked on a six month frequency as required and that the leakage of the sources did not exceed 0.005 microcuries.

No violations or deviations were identified.

k. Caution, Signs, Labels and Controls

10 CFR 20.203 specifies the posting, labeling and control requirements for radiation areas, high radiation areas, airborne radioactivity areas and radioactive material.

License No. SNM-1107, Condition 9, requires that licensed material be used in accordance with statements, representations, and conditions contained in Sections 2, 3, and 4 of the Application dated January 4, 1985, and supplements thereto.

The license provides an exception from the requirements of 10 CFR 20.303(f). Section 3.2.2.4 of the Application for License SNM-1107 states that each entrance or access point to the Controlled Access Area shall be posted in accordance with 10 CFR 20.203 except for 10 CFR 20.303(f). In lieu thereof, a sign bearing the legend, "Every container or vessel in this area may contain radioactive material," shall be posted at entrances to each area in which radioactive materials are processed, used, or stored.

During tours of the facility, the inspector reviewed the licensee's posting and control of radiation areas, airborne radioactivity areas, contaminated areas, and radioactive material areas.

No violations or deviations were identified.

1. Posting of Notices

10 CFR 19.11 requires the licensee to post Form NRC-3, the license and other pertinent information. If posting of a document was not practicable, the licensee may post a notice which describes the document and states where it may be examined. During tours of the facility, the inspector verified that entrances to and from areas where licensed activities were conducted were posted with the required documents or a notice describing the document and where it may be examined.

No violations or deviations were identified.

m. Notification and Reports

10 CFR 20 requires certain reports and notifications as follows:

- 10 CFR 20.402, Loss or Theft of Material
- 10 CFR 20.403, Incidents
- 10 CFR 20.405, Overexposure
- 10 CFR 20.408, Termination Reports to the NRC
- 10 CFR 20.409, Termination Reports to the Individual

The inspector discussed the conditions or situations which would have required a report under 10 CFR 20.402, 20.403, or 20.405 with the cognizant licensee supervisors. No instances were known to the licensee which would have required such reports. However, for the fourth quarter of 1986, the licensee was notified by their vendor who processes their TLD's that one plant individual for the month of December 1986, had apparently received 17.140 Rem Whole Body (WB) exposure. The licensee performed an immediate investigation to determine the cause of such an abnormal personnel exposure. The individual had worked outside the controlled area for the period of December 1986, where radiation levels were revealed to be essentially background. The inspector reviewed the results of the investigation performed by the licensee and concluded that the investigation was adequate and the results achieved from the investigation were appropriate. After discussion with the vendor who processes their TLDs, the licensee concluded that the TLD Badge worn by the individual had to have been cracked or damaged in the process of reading the TLD.

No violations or deviations were identified.

5. Solid Waste (84850)

- a. 10 CFR 20.311(d)(1) requires any generating licensee who transfers radioactive waste to a land disposal facility to prepare all wastes so that the waste is classified according to 10 CFR 61.55 and meets the waste characteristic requirements in 10 CFR 61.56.

10 CFR 61.56(b)(1) requires waste to have structural stability which will generally maintain its physical dimensions and form under expected disposal conditions.

On April 30, 1987, the licensee shipped seventy-two, 55 gallon drums containing sludge to a land disposal facility (Barnwell, SC). Radioactive Waste Shipment No. 0482-267-A was specified on the shipping manifest as Radioactive Material, low specific activity (LSA), n.o.s., UN 2912, described as sludge solidified with cement, Class A stable and was transported as Exclusive Use in a closed van. Total radioactivity in the shipment was approximately 3350 millicuries. Upon inspection of three 55-gallon drums by an inspector from the State of South Carolina at the burial facility, it was found that the contents had failed to solidify per the Process Control Program (PCP). A paste-like material was evident when the drums were punctured.

The burial site is prohibited by the State of SC from receiving unsolidified sludge and consequently two of the three 55-gallon drums were returned to the licensee's facility. The third drum in question had apparently been buried by the burial facility and was, therefore, unable to be located. On May 11, 1987, the State of SC issued an infraction to the licensee and requested the licensee to provide acceptable corrective actions to preclude future problems of this type.

When notified of the failure to solidify, the licensee dispatched a representative to the burial ground to confirm the finding. Upon return of two 55-gallon drums to the plant site, the liners were cut open for inspection of the contents. Inspection showed that both drums failed to totally solidify.

Failure to insure structural stability of the waste was identified as an apparent violation of 10 CFR 20.311(d) (70-1151/87-12-01).

- b. 10 CFR 20.311(d)(3) requires any generating licensee who transfers radioactive waste to a land disposal facility to conduct a quality control (QC) program to ensure compliance with 10 CFR 61.55 and 61.56.

10 CFR 61.56 specifies the minimum requirements for waste characteristics for all classes of waste.

Upon return of two 55-gallon drums of Shipment No. 0487-267-A to the plant, the licensee conducted an inspection to determine the reasons why satisfactory solidification had not been achieved. After review the licensee determined that the following factors had caused unsatisfactory solidification and have instituted appropriate corrective actions to preclude future problems of this nature.

- ° Operators are being retrained on the solidification process specifically on key variables and operating parameters. Solidification will only be done on the day shift by a few well-trained operators.
- ° The cement addition rate on the solidification mixer has been slowed to allow a longer mixing time and thus more complete mixing of the cement with the waste in a drum.
- ° Increased supervision will be used to oversee the checking of drums.
- ° Physical testing will be used to verify that proper solidification has been attained (e.g., drill testing).
- ° A high percentage of the drums in the next few shipments will be drilled for examination.

The inspector reviewed Administrative Procedure No. COP-831009, Solidification of Sludges in 55-gallon Drums Using Mixer, Revision 7, which was revised to incorporate the above stated corrective actions. This procedure had not been issued for final approval during the time of the inspection, however, licensee management had issued a temporary procedure during the interim which included the corrective actions taken.

The inspector stated that although the licensee's PCP had been approved by the NRC, site specific procedures for implementation of the PCP were necessary and should consider actions necessary to insure by performance and/or verification that appropriate waste stabilization had been accomplished. The inspector informed licensee representatives that they were required by 10 CFR 20.311(d) to conduct a quality control program to insure waste characterization was in accordance with 10 CFR 61.56. The PCP did address taking a sample of each drum to verify appropriate solidification, however the results of the three drums in question revealed that appropriate solidification was not achieved. Licensee representatives acknowledged the inspection concerns. The inspector informed licensee management that failure to conduct an adequate quality control program to insure waste characterization in accordance with 10 CFR 61.56 was identified as an additional example of an apparent violation of 10 CFR 20.311(d) (70-1151/87-12-01).

6. Transportation (86740)

10 CFR 71.5(a) requires each licensee who transports licensed material outside of the confines of its plant or other place of use, or who delivers licensed material to a carrier for transport, to comply with the applicable requirements of the regulations appropriate to the mode of transport of the Department of Transportation (DOT) in 49 CFR Parts 170 through 189.

49 CFR 172.203(d)(1)(v) states that the description for a shipment of radioactive material must include the transport index (TI) assigned to each package in the shipment bearing Radioactive Yellow-II or Radioactive Yellow-III labels.

The inspector reviewed a Radioactive Material Shipment No. CAO-7385, dated March 31, 1987, identified as Radioactive Material Fissile, n.o.s., UN-2918 (unirradiated uranium dioxide nuclear reactor fuel rods - physical form solid) bearing Radioactive Yellow-II labels. The shipping papers that accompanied the shipment failed to include the TI for the radioactive material being shipped. Failure to insure that the TI for radioactive material bearing a Yellow-II label was included on the shipping papers was identified as an apparent violation of 10 CFR 71.5(a) (70-1151/87-12-02).

7. Inspector Followup Items (IFIs) (92701)

(Closed) IFI (70-1151/87-02-02) Methodologies and definitive acceptance criteria for determining background count rate and calibration of the in-vivo detector should be specified in the procedures for operating the in-vivo system. The inspector reviewed the licensee's revised Procedure WP 0961E:3 dated April 1, 1987, which incorporated acceptance criteria for determining background count rates and calibration of the in-vivo detector. The inspector concluded from the review that the procedure was adequate and had no further questions.

(Closed) IFI (70-1151/86-12-06) Establish procedures and criteria for verifying representativeness of fixed air samplers. The inspector reviewed the licensee's revised procedure HPOP 06-008, Air Sampling Representativeness, which included detailed instructions on mobile air sampler placement relative to the fixed air sampler in question as well as definitive criteria for evaluation of comparison data. Specifically, a comparison difference between mobile and fixed air sampler within a three sigma range is required for representativeness verification. The inspector concluded that the revised procedures and criteria are adequate to assure air sampler representativeness.