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NUCLEAR REGULATORY COMMISSION
REGION II
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ATLANTA, GEORGIA 30303-8931

May 31, 2002

Westinghouse Electric Company
ATTN: Mr. R. Monley, Manager
Columbia Plant
Commercial Nuclear Fuel Division
Drawer R
Columbia, SC 29250

SUBJECT: NRC INSPECTION REPORT NO. 70-1151/2002-004

Dear Mr. Monley:

This letter refers to the inspection conducted on April 29 through May 3, 2002, at the Commercial Fuel Fabrication Facility. The enclosed report presents the results of this inspection.

During the inspection period, your conduct of activities at the Westinghouse facility was generally characterized by safety-conscious operations, sound engineering and maintenance practices, and careful radiological work controls.

Within the scope of the inspection, violations or deviations were not identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room (PDR) or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA BY DAVID A. AYRES
ACTING FOR /

Leonard Wert, Acting Chief
Fuel Facilities Branch
Division of Nuclear Materials Safety

Docket No. 70-1151
License No. SNM-1107

Enclosure: NRC Inspection Report

cc w/encl: (See page 2)

cc w/encl:
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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	70-1151
License No.:	SNM-1107
Report No.:	70-1151/2002-04
Licensee:	Westinghouse Electric Corporation
Facility:	Commercial Fuel Fabrication Facility
Location:	Columbia, South Carolina
Dates:	April 29 - May 3, 2002
Inspector:	A. Gooden, Health Physicist
Accompanying Personnel:	O. Lopez, Nuclear Safety Intern
Approved By:	Leonard D. Wert, Acting Chief Fuel Facilities Branch Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

Commercial Fuel Fabrication Facility
NRC Inspection Report 70-1151/2002-04

This routine, unannounced inspection was conducted in the area of radiation protection. The inspection included an observation of activities, a review of selected records, and interviews with plant personnel. The inspection disclosed the following:

- Equipment used for detecting the presence of radioactive material on smears, air samples, and personnel was properly maintained and performed the intended safety function in a reliable and accurate manner (Paragraph 2.a).

- The external exposure monitoring program was implemented in a manner to maintain doses less than the occupational limits in 10 CFR 20.1201 (Paragraph 2.b).

- The maximum assigned internal exposure in calendar year 2001 was approximately 17 percent greater than the previous year, and was higher than the licensee's administrative limit but less than occupational limits in 10 CFR 20.1201 (Paragraph 2.c).

- The two year exposure trend reflects a significant increase in the maximum assigned committed effective dose equivalent, total effective dose equivalent, and the collective total effective dose equivalent. The reduction of airborne radioactivity levels and internal exposures was considered a program challenge (Paragraph 2.c).

- A system weakness was identified such that no physical or engineered controls were in place to prevent unauthorized users from receiving protection credit for donning respirators (Paragraph 2.d).

- Two minor posting incidents for communicating safety information were identified for further management attention.

Attachment:

REPORT DETAILS

1. Summary of Plant Status

During the inspection, activities associated with the plant physical inventory were completed and there were no unusual plant operational occurrences.

2. Radiation Protection (83822) (R1)

a. Radiation Protection Program Equipment (R1.03)

(1) Inspection Scope

Fixed and portable equipment used for detecting the presence of radioactive material on smears, air samples, and personnel were examined to determine if the selected equipment was adequately maintained and reliable to perform the intended safety function.

(2) Observations and Findings

An interview and observations with personnel assigned the responsibility for counting air samples and smears demonstrated that the interviewee was very familiar with the equipment quality assurance checks, system operability, and the significance of instrumentation accuracy and precision on sample results. Background and efficiency checks were done daily using standards with known activity traceable to the National Institute of Standards and Technology (NIST). A review of select calibration and daily check documentation for calendar year 2001 indicated that the equipment provided reliable and accurate results. Similar observations were noted with the in vivo counting system. With one exception, the inspectors determined that fixed and portable equipment was adequately maintained and performed the intended safety function. The exception was the inability to determine the reliability of the beeper boxes installed on hoods to provide indication (audible alarm and indicator light) in the event of a vacuum failure, or the linear velocity falls below the set point for safe operation of the hood (conversion area). The inspectors noted during the observations of personnel performing velocity checks on hoods, that beeper boxes did not respond (alarm or the red light indicate) to operability test for demonstrating a loss of vacuum, or reduction in velocity. When questioned regarding documentation to show that repairs were being made to a specific unit, the licensee was unable to show that the specific unit was fixed, but rather the area in which repairs were made (e.g., conversion area, rod area, pellet area). The referenced method of documenting did not provide info as to which box was repaired and/or the timeliness. In response, procedural changes were made by integrated safety and maintenance to ensure that the appropriate documentation regarding the affected beeper box was identified including the retest information.

(3) Conclusions

Based on documentation and interviews, the equipment used for detecting the presence of radioactive material on smears, air samples, and personnel was properly maintained and performed the intended safety function in a reliable and accurate manner.

b. External Exposure Control (R1.04)

(1) Inspection Scope

The inspector reviewed radiation protection procedures, and discussed personnel exposure data with licensee representatives to determine if exposures were in compliance with 10 CFR Part 20.1201 limits, and if controls were in place to maintain occupational doses As Low As Reasonably Achievable (ALARA).

(2) Observations and Findings

Based on interviews, procedural reviews, and observation of plant personnel inside radiation control areas, the licensee's monitoring program was consistent with requirements in 10 CFR Part 20. Table 1 below displays the maximum and collective assigned exposure data for calendar years (CY) 2000 and 2001. With the exception of the maximum extremity exposure (MDE), the maximum assigned external dose was less in CY 2001 when compared to CY 2000. The MDE increased approximately 47.3 percent and the deep dose equivalent (DDE) decreased approximately 18 percent. The licensee attributed the increase in MDE to contaminated badges and the increase in material handling due to product demands. During CY 2001, a total of seven workers met or exceeded the licensee's administrative limit of four rem total effective dose equivalent (TEDE). During CY 2000, three workers exceeded the administrative limit. The licensee attributed the increase in TEDE to the elevation in production levels, the significant overtime work by employees, and the employee's material handling methods and contamination control practices.

Table 1. Annual Exposures

Year	Maximum Deep Dose Equivalent (DDE)	Maximum Dose Extremity (MDE)	Maximum Total Effective Dose Equivalent (TEDE)	Collective TEDE (person-rem)	Committed Effective Dose Equivalent (CEDE)
2000	1.73 rem	7.03 rem	4.18 rem	616 person-rem	3.43 rem
2001	1.41 rem	10.31 rem	4.52 rem	725.18 person-rem	4.01 rem

(3) Conclusions

The external exposure monitoring program was implemented in a manner to maintain doses less than the occupational limits in 10 CFR 20.1201.

c. Internal Exposure Control (R1.05)

(1) Inspection Scope

The inspector reviewed licensee procedures for assessing internal exposure to determine if adequate controls were in place to monitor occupational doses, and verify that the administrative limits were established to control occupational dose ALARA. Exposure data was examined to determine if exposures resulting from various plant operations exceeded limits in 10 CFR 20.

(2) Observations and Findings

Procedures contained action limits which were set below federal limits to ensure personnel exposures did not exceed occupational limits in 10 CFR 20.1201. Table 1 above presents the maximum assigned committed effective dose equivalent (CEDE). The maximum assigned exposure (4.01 rem) in CY 2001 was approximately 17 percent more than the CY 2000 exposure (3.43 rem). However, the two year (CY 99 - 2001) exposure trend reflects a significant increase in the maximum assigned CEDE and TEDE (49 percent), and the collective TEDE (138 percent). In response to this negative trend, licensee management had identified several ALARA initiatives for implementation in reducing the airborne radioactivity levels and internal exposures. Based on airborne activity levels inside bulk blending for the first quarter CY 2002, the engineered controls thus far implemented appeared to have been effective in reducing the airborne activity. The inspector discussed the control and reduction of exposures as a program challenge.

Based on an interview and review of documentation, the inspector determined that personnel assigned the responsibility for performing the invivo counts conducted daily operability and quality assurance checks to ensure the accuracy of results.

(3) Conclusions

The maximum assigned internal exposure in CY 2001 was approximately 17 percent greater than the previous year, and met the licensee's administrative limit but was less than occupational limits in 10 CFR 20.1201. The two year (CY 99-2001) exposure trend reflects a significant increase in the maximum assigned CEDE, TEDE, and collective TEDE. The reduction of airborne radioactivity levels and internal exposure was considered a program challenge.

d. Respiratory Protection (R1.06)

(1) Inspection Scope

Respiratory protection equipment issuance, storage, maintenance, and training verification was examined for adequacy in assuring that equipment was being adequately maintained and obtained by certified users only.

(2) Observations and Findings

Based on interviews, documentation, and observations of respirator users, the inspectors determined that respirators were being properly maintained and were available for normal and emergency use. Regarding respiratory issuance, no physical or engineered controls were in place to prevent unauthorized users from donning respirators and receiving credit for respiratory protection. The licensee's program for respiratory use was dependent on administrative controls and an honor system. The administrative controls were via the Electronic Training and Procedures System (ETAPS) and Personnel Exposure Log System (PES). Respirator training qualifications were documented in the ETAPS; and the respirator use time on and off including site location was documented in the PES. The names of seven conversion area workers required to be respiratory certified were randomly selected for verification that training and other respirator qualifications were current. With one exception, personnel were qualified in accordance with Procedure RA-205 "Respiratory Protection Program." The exception was one pellet operator with an expired fit test. Bioassay results were reviewed to verify that no intake may have occurred as a result of a potentially improper mask fit. No problems were noted. The inspector concluded that this was not indicative of a programmatic breakdown in the fit test program, but illustrated a weakness in the respirator use system. The licensee took prompt actions to fit test the worker and software changes to ETAPS and PES were made to prevent an employee with expired certification from entering respiratory wear time to receive credit for its protection factor.

(3) Conclusions

The equipment was being properly maintained in accordance with standards and regulations. Regarding respiratory issuance, a system weakness was identified such that no physical or engineered controls were in place to prevent unauthorized users from receiving protection credit for donning respirators. The licensee's program for respiratory use was upgraded to be less dependent on administrative controls by changing the Personnel Exposure Log System software.

e. Postings, Labeling, Control (R1.07)

(1) Inspection Scope

The inspector reviewed the licensee's program for posting safety information as required by 10 CFR 19.11 to determine if documents were posted in sufficient places to permit individuals engaged in licensed activity to observe them. Several work locations were examined to determine if radioactive containers were properly labeled and to assess the adequacy of contamination control barriers and posting of radiation areas as required by

10 CFR 20.1902. Radiation work permits were reviewed to determine the adequacy of the requirements posted for worker protection and the degree to which those requirements were being implemented.

(2) Observations and Findings

Bulletin boards were adequately posted such that workers could observe documents or obtain details as to where documents may be examined.

All observed work areas involving radioactive material or potentially contaminated material were properly posted. Containers were either labeled or had information stenciled on the container in accordance with requirements. One area discussed with the licensee regarding posting was the vicinity surrounding the californium source rod exit location. Gamma radiation levels measured during source operations have been near the levels for posting as a radiation area. In response, the licensee indicated that a Corrective Action Program (CAP) item was identified to develop an action plan to address this area for posting as a radiation area or providing additional shielding during periods of source operation. Randomly selected active and closed radiation work permits were reviewed for adequacy in providing the appropriate level of protection to workers. No problems were noted.

During a facility tour, the inspectors observed two workers performing activity on an elevated platform above an area roped off as a respirator area. However, both workers were observed without respiratory protection equipment. When questioned regarding their work location and the barrier, both workers indicated that they were unaware that the platform was considered as respiratory area. According to health physics operations personnel, the respirator area was established for work activity associated with the incinerator screen removal. Although no incinerator work was being done at the time, the area was still posted as a respirator area pending completion of maintenance activity. Both workers were clearly above the roped off area but did not have to cross a physical barrier to access the elevated platform. In response, the following actions were taken: nasal smears were collected from the workers and analyzed; management was notified regarding the incident; workers and their manager were re-instructed regarding postings and adherence to postings; and a workplace meeting was held for all predictive maintenance group personnel.

(3) Conclusions

The licensee's posting of safety information generally provided controls to communicate to workers the potential hazard and/or protective equipment requirements for working in respirator areas. The licensee indicated that the minor posting incidents would be addressed by management.

f. Surveys (R1.08)

(1) Inspection Scope

The contamination control survey program was reviewed to determine if surveys were effective in the identification of contamination and performed in accordance with procedures.

(2) Observations and Findings

The results disclosed that the routine surveys were adequate in the identification of potentially contaminated areas. During plant tours, the inspector noted several examples of poor housekeeping as evidenced by visual gross contamination, and leaking pumps requiring cleanup.

(3) Conclusions

The contamination survey program was appropriately implemented to protect workers, and identify potential work areas posing an internal or external radiation hazard to workers.

g. Management Oversight of Program (R1.11)

(1) Inspection Scope

The inspector reviewed the adequacy of management controls for tracking and trending issues.

(2) Observations and Findings

The inspector determined that NRC and licensee identified issues were tracked via the plant-wide CAP system. CAP printouts were provided to plant management for review to ensure the appropriate priority was being assigned to items.

(3) Conclusions

Management controls for tracking and trending were in place to provide management with details for review and taking actions as appropriate to ensure compliance with license commitment and regulations.

3. Exit Interview

The inspection scope and results were summarized on May 3, 2002 with those persons indicated in the Attachment. Although proprietary documents and processes were occasionally reviewed during this inspection, the proprietary nature of these documents or processes has been deleted from this report. No dissenting comments were received from the licensee.

ATTACHMENT

1. LIST OF PERSONS CONTACTED

Licensee

*G. Blackstone, Technician, Health Physics Operations
H. Brownlee, Team Manager, Pellet
*R. Close, Team Manager, Maintenance
W. Dougherty, Team Manager, TMP Worldwide
*D. Graham, Environmental Health and Safety Technician
*H. Green, Technician, Health Physics Operations
*J. Heath, Manager, Integrated Safety Engineering
*R. Likes, Environmental Health and Safety Engineer
*S. McDonald, Manager, Environmental Health and Safety
*R. Monley, Plant Manager
*B. Newmyer, Nuclear Criticality Safety Engineer
*C. Perkins, Manager, Maintenance
*J. Rankar, Environmental Health and Safety Engineer
*T. Shannon, Team Manager, Health Physics Operations
L. Wiedel, Technician, Health Physics Operations
R. Wilson, Bioassay Technician

Other licensee employees contacted included engineers, technicians, production staff, security, and office personnel.

*Attended exit meeting on May 3, 2002

2. INSPECTION PROCEDURE USED

IP 83822 Radiation Protection

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

4. LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CAP	Corrective Action Program
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulation
CY	Calendar Year
DDE	Deep Dose Equivalent
ETAPS	Electronic Training and Procedure System
MDE	Maximum Dose Extremity
NIST	National Institute of Standards and Technology
PES	Personnel Exposure System
TEDE	Total Effective Dose Equivalent