U.S. NUCLEAR REGULATORY COMMISSION

REGION II

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License No.:	SNM-1097
Report No.:	70-1113/2000-02
Licensee:	Global Nuclear Fuel - Americas, LLC
Facility:	Fuels Complex
Location:	Wilmington, NC 28401
Date:	January 31 - February 4, 2000
Inspector:	A. Gooden, Health Physicist
Approved by:	E. J. McAlpine, Chief Fuel Facilities Branch Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

Global Nuclear Fuel - Americas
NRC Inspection Report 70-1113/2000-02

This routine unannounced inspection involved observation of work activities, a review of selected records, and interviews with plant personnel pertaining to the radiation protection program. The report entails one week of inspection effort by a regional-based fuel facility inspector.

- Based on interviews with radiation protection personnel, details contained within the As Low As Is Reasonably Achievable (ALARA) Report and the independent audit, the inspector concluded that the licensee's radiation protection program was implemented in a manner to ensure safety and compliance with regulatory requirements (Paragraph 2.a.).

- External exposures were significantly less than occupational limits in 10 CFR 20.1201. The estimated collective exposure for calendar year (CY) 99 (pending final Thermoluminescent Dosimeter (TLD) data) resulted in approximately a five percent decrease in exposure when compared to CY 98 (Paragraph 2.b.).

- Based on interviews and exposure records, the licensee's internal exposure control program was adequate for evaluating and monitoring personnel exposures. Administrative dose limits were established, and assigned exposures were well below the regulatory limits. A 60 percent reduction in the number of missed bioassays were attributed to management involvement in the implementation of effective corrective actions (Paragraph 2.c.).

- Based on the inspectors review of Radiological Data Management System (RDMS) training records, the independent audit, and the licensee's corrective actions to previous issues, the inspector concluded that the respiratory protection program was adequately implemented to ensure that personnel respiratory certification was current and up to date (Paragraph 2.d.).

- The contamination control survey program was effective in the identification of contamination and the presence of radioactive material. The total number of facility cleanup requests decreased in CY 99 in comparison to CY 98. However, the number of cleanup requests specific to the Chemet Lab increased from 20 in CY 98 to 29 in CY 99 (Paragraph 2.e.).

Attachment:
Persons Contacted
Inspection Procedures Used
List of Items Opened, Closed, and Discussed
List of Acronyms

Enclosure

REPORT DETAILS

1. Summary of Plant Status

There were no unusual plant operational occurrences during the inspection. Plant operations were normal with routine maintenance activities.

2. Radiation Protection (83822) (R1)

a. Radiation Protection Program Implementation (R1.01)

(1) Inspection Scope

The inspector conducted interviews and reviewed licensee documentation to ascertain the status of program implementation.

(2) Observations and Findings

Procedures were in place to ensure that license commitments and requirements in 10 CFR Part 20 were satisfied. An independent audit provided management with details associated with program adequacy and implementation. The inspector reviewed selected portions of the 1999 As Low As Is Reasonably Achievable (ALARA) Report presented to management, and determined that exposures and compliance issues were tracked for resolution and trending to identify undesirable trends. The Safety Review Committee utilized the before mentioned data to assist in decision-making associated with plant operations and maintaining exposures ALARA.

(3) Conclusions

Based on interviews with radiation protection personnel, details contained within the ALARA Report and the independent audit, the inspector concluded that the licensee's radiation protection program was implemented in a manner to ensure safety and compliance with regulatory requirements.

b. External Exposure Control (R1.04)

(1) Inspection Scope

The inspector reviewed radiation protection procedures, personnel exposure data, and discussed with licensee representatives the personnel monitoring requirements to determine if the licensee's monitoring program was consistent with requirements in 10 CFR 20, and if controls were in place to maintain occupational dose ALARA.

(2) Observations and Findings

Based on procedural reviews, and interviews, the licensee's monitoring program was consistent with requirements in 10 CFR Part 20. Procedures contained action limits, and dose goals were established to ensure that exposures were less than the limits in

10 CFR 20. The inspector reviewed assigned exposures for CYs 98 and 99. Table 1 displays the maximum assigned exposure data for CY 98 and projected data for CY 99 based on six months of Thermoluminescent Dosimeter (TLD) results and air sampling data as of December. The results were as follows: 1) Committed Effective Dose Equivalent (CEDE) was 1.15 rem in CY 98 and 1.08 rem estimated in CY 99 (approximately 21.6 percent of 10 CFR 20 limit); 2) Total Effective Dose Equivalent (TEDE) was 1.25 rem in CY 98 and 1.24 rem estimated in CY 99 (approximately 25 percent of 10 CFR 20 limit); and 3) The collective exposure estimated for CY 99 (164 person-rem) was a five percent decrease from CY 98 (173 person-rem).

TLD results for employees assigned to manufacturing activities with the highest potential for extremity exposure showed that monitoring and reporting of the extremity dose was not required. The annual extremity exposure was projected based on TLD results covering a four week monitoring period.

Table 1. Annual Exposures

Year	Deep Dose Equivalent (DDE)	Shallow Dose Extremity (SDE)	Total Effective Dose Equivalent (TEDE)	Collective TEDE	Committed Effective Dose Equivalent (CEDE)
1998	0.67 rem	1.49 rem	1.25 rem	173 person-rem	1.15 rem
*1999	*0.78 rem	*1.16 rem	*1.24 rem	*164 person-rem	*1.08 rem

*NOTE: The maximum exposures were based on air sampling data as of December 1999 and six months of TLD results.

(3) Conclusions

Based on the exposure records and interviews, the inspector concluded that the licensee's external exposure control program was adequate for evaluating and monitoring personnel exposures. External exposures were significantly less than occupational limits in 10 CFR 20.1201. The estimated collective exposure for CY 99 (pending final TLD data) resulted in approximately a five percent decrease when compared to CY 98.

c. Internal Exposure Control (R1.05)

(1) Inspection Scope

The inspector reviewed controls for assessing internal exposure to verify that administrative and physical controls were in place to control occupational dose ALARA.

Exposure data based on air sampling results were reviewed 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 limits in 10 CFR 20. Exposures were frequently reviewed to determine if administrative limits were met so that the appropriate actions were taken to preclude exceeding limits in 10 CFR 20. Table 1 above presents the maximum assigned exposure data for CY 98, and estimates for CY 99. The maximum assigned CEDE for CY 98 was 1.15 rem and the estimated CEDE for CY 99 was 1.08 rem.

The inspector noted during the records review a reduction in the number of missed bioassays of approximately 60 percent during CY 99 (25) when compared to CY 98 (64). A licensee contact indicated that the major contributor to the reduction was management involvement in the implementation of stronger disciplinary actions taken in the event an employee incurred three unexcused absences from providing samples.

The inspector discussed with the licensee the invivo counting system and participation in a cross-check program for accuracy and verification of the equipment operability. The inspector was informed that during the fourth quarter CY 99, the licensee participated in an invivo comparison study with other laboratories using a lung phantom with traceability to the National Institute of Standards and Technology. The results from the study had not been received at the time of the inspection.

(3) Conclusions

Based on interviews and exposure records, the licensee's internal exposure control program was adequate for evaluating and monitoring personnel exposures. Administrative dose limits were established and assigned exposures were well below the regulatory limits. A 60 percent reduction in the number of missed bioassays were attributed to management involvement in the implementation of effective corrective actions.

d. Respiratory Protection (R1.06)

(1) Inspection Scope

Respiratory protection certification was reviewed to determine the adequacy of the licensee's corrective actions to previous examples where randomly selected individuals had expired respiratory certification.

(2) Observations and Findings

Several names were randomly selected from the weekly airborne report for verification that respiratory certification was current. Based on details from the Radiological Data Management System (RDMS), certification was completed in accordance with

procedural requirements and no problems were noted. In accordance with procedures, an independent audit of the respiratory protection program was conducted during July 1999 to assess program implementation. Problems previously discussed in NRC Inspection Report Nos. 99-01 and 99-05 were not noted during the inspection or independent audit. The licensee's controls to prevent unauthorized users from donning respiratory devices are based on administrative procedures and an honor system.

(3) Conclusions

Based on the inspectors review of RDMS training records, the independent audit, and the licensee's corrective actions to previous issues, the inspector concluded that the respiratory protection program was adequately implemented to ensure that personnel respiratory certification was current and up to date.

e. 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 inspector accompanied a Radiation Protection Monitor during the performance of Chemet Lab contamination surveys, and observed both the collection and analysis of smear samples. The inspector collected independent smear samples from three locations for verification that action limits were not exceeded. One of the three locations exceeded the allowable limits and required immediate cleanup. In addition, the licensee contact collected a smear from the interior of a hood that exceeded the allowable limits and required cleanup. Based on observations and comments by Chemet Lab personnel, the inspector expressed concern regarding personnel work practices and the apparent lack of sensitivity to control of contamination. The inspector's review of contamination survey forms for the Chemet Lab during the period January 1999 to January 2000, disclosed a number of areas requiring periodic cleanup. Particularly, the interior of the hoods. Other contamination surveys reviewed included the following areas: dry powder recycle, dry conversion process (DCP) blend, slug, and granulate, and the dry cycle mezzanine. The survey results disclosed in the event action limits were exceeded, a cleanup request was initiated. The inspector's observation of radiation protection personnel performing contamination surveys of the Chemet Lab disclosed personnel were attentive to details and areas of contamination control and ALARA concerns associated with the laboratory. Documentation disclosed the total number of facility cleanup requests were reduced in CY 99 (591) when compared to CY 98 (649). However, cleanup requests specific to the Chemet Lab increased during CY 99 (29) when compared to CY 98 (20). The licensee discussed and provided documentation to indicate that the Radiation Safety Committee (RSC) considered the Chemet Lab as an area of concern and included the Chemet Lab on the RSC list as a committee project for CY 2000. The inspector informed the licensee telephonically on

February 15, 2000, that the corrective actions to resolve the issues associated with the Chemet Lab contamination control was considered an inspector followup item (IFI) (IFI 70-1113/2000-02-01).

(3) Conclusions

The contamination control survey program was effective in the identification of contamination and the presence of radioactive material. The total number of facility cleanup requests decreased in CY 99 in comparison to CY 98. However, the number of cleanup requests specific to the Chemet Lab increased from 20 in CY 98 to 29 in CY 99. The Chemet Lab increase in cleanup requests is considered an area for followup in controlling contamination.

f. Followup On Previously Identified Issues (R1.12)

(1) Inspection Scope

The inspector reviewed actions taken by the licensee to correct a previous issue to verify that the corrective actions were adequate and had been completed.

(2) Observations and Findings

(Closed) IFI 99-05-01: Verify corrective actions to ensure the proper implementation of the respiratory protection program.

The RDMS data base was updated by each work component to reflect current respiratory certification requirements and personnel requiring certification. In addition, management oversight was improved by providing the names of employees with expired or soon to expire certification to management during morning production meetings for followup. The inspector randomly selected several names from the weekly airborne report for verification that respiratory certification was current. Based on details from the RDMS, certification was completed in accordance with procedural requirements and no problems were noted.

(3) Conclusions

Based on the licensee's actions, and verification that selected employees training was current, this item was considered closed.

3. Exit Interview

The inspection scope and results were summarized on February 4, 2000, with those persons indicated in the Attachment. On February 15, 2000, the Radiation Safety Manager was contacted telephonically regarding the IFI discussed in Paragraph 2.e. of the report details. 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. Dissenting comments were not received from the licensee.

ATTACHMENT

PERSONS CONTACTED

Licensee Personnel

*J. Ball, Team Leader, Chemet Lab
*D. Barbour, Team Leader, Radiation Protection
J. Cox, Systems Manager
*R. Crate, Manager, Fuel Fabrication
*D. Dowker, Manager, Quality
*S. Fuller, Manager, Fuel-Chemet Lab Quality Assurance
*G. Luciano, Acting Manager, Chemical Product Line
+*A. Mabry, Program Manager, Radiation Safety
*R. Martyn, Manager, Material Control and Accounting
*C. Monetta, Manager, GNF-A, Environmental Health and Safety
*S. Murray, Manager, Outage Services
*L. Paulson, Manager, Nuclear Safety
*C. Reda, Manager, GNF-A Production
*E. Rouse, Monitor, Radiation Protection
H. Shaver, Senior Engineer, Radiological Safety
*H. Strickler, Manager, Site Environmental Health and Safety
*D. Turner, Manager, Industrial Hygiene and Safety

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

*Denotes those present at the exit meeting on February 4, 2000
+Contacted telephonically on February 15, 2000

INSPECTION PROCEDURES USED

IP 83822 Radiation Protection

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

70-1113/2000-02-01	IFI - Verify adequacy of corrective actions to resolve the Chemet Lab contamination control issues (Paragraph 2.e.).

Closed

70-1113/99-05-01	IFI - Verify corrective actions to ensure the proper implementation of the respiratory protection program (Paragraph 2.f.).

LIST OF ACRONYMS

ALARA	As Low As Is Reasonably Achievable
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
CY	Calendar Year
DCP	Dry Conversion Process
DDE	Deep Dose Equivalent
IFI	Inspector Followup Item
NRC	Nuclear Regulatory Commission
RDMS	Radiological Data Management System
RSC	Radiation Safety Committee
SDE	Shallow Dose Equivalent
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter