



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
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61 FORSYTH STREET SW SUITE 23T85  
ATLANTA, GEORGIA 30303-8931

March 27, 2000

Framatome Cogema Fuels  
ATTN: Mr. J. E. Matheson  
Plant Manager  
Lynchburg Manufacturing Facility  
P. O. Box 11646  
Lynchburg, VA 24506-1646

SUBJECT: NRC INSPECTION REPORT NO. 70-1201/2000-02

Dear Mr. Matheson:

This refers to the inspection conducted March 8-9, 2000, at the Lynchburg Manufacturing Facility (LMF). The enclosed report presents the results of this inspection.

During the inspection period, your conduct of activities at the LMF 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 enclosure will be placed in the NRC Public Document Room.

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

Sincerely,

**/RA/**

Edward J. McAlpine, Chief  
Fuel Facilities Branch  
Division of Nuclear Materials Safety

Docket No. 70-1201  
License No. SNM-1168

Enclosure: NRC Inspection Report

cc w/encl: (See Page 2)

cc w/encl:

T. S. Wilkerson, Manager  
 Quality, Health/Safety and Licensing  
 Framatome Cogema Fuels  
 Lynchburg Manufacturing Facility  
 P. O. Box 11646  
 Lynchburg, VA 24506-1646

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-1201

License No.: SNM-1168

Report No.: 70-1201/2000-02

Licensee: Framatome Cogema Fuels, Inc.

Facility: Lynchburg Manufacturing Facility

Location: Lynchburg, VA

Dates: March 8-9, 2000

Inspector: A. Gooden, Health Physicist

Approved by: E. McAlpine, Chief  
Fuel Facilities Branch  
Division of Nuclear Materials Safety

## EXECUTIVE SUMMARY

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 covers a two day inspection effort by a regional-based fuel facility inspector.

- External exposures were significantly less than occupational limits in 10 CFR 20.1201. The estimated collective exposure for calendar year (CY) 99 (pending final air sample data) resulted in approximately a twenty-one percent decrease when compared to CY 98 (Paragraph 2.a).
- The maximum estimated committed effective dose equivalent (CEDE) in CY 99 (1.73 rem) was two times greater than the CY 98 exposure (0.824 rem). The licensee believed the exposure increase was caused by an increase in pellet dust from the pellet handling operations. As an as low as is reasonably achievable (ALARA) initiative to reduce the dust exposure, the licensee initiated a review of the design of the pellet trays (Paragraph 2.b).
- Administrative dose limits were established and all assigned exposures were well below the regulatory limits (Paragraph 2.b).
- Two workers were interviewed regarding ALARA to assess training, familiarity, and understanding of ALARA concepts. Both interviewees lacked knowledge and/or understanding regarding ALARA concepts (Paragraph 2.c).
- The inspector noted that trending of CY 99 exposure data to identify unfavorable trends for CY 99 was not included in Safety Review Board meetings until the third quarter of CY 99. Such delays could result in the lack of management attention and support to ensure that adequate resources are provided in a timely manner to resolve unfavorable trends in exposures and compliance issues (Paragraph 2.c).

### Attachment:

Persons Contacted and Exit Meeting

Inspection Procedures Used

List of items Opened, Closed, and Discussed

List of Acronyms

## REPORT DETAILS

### 1. Summary of Plant Status

There were no plant upsets or unusual operational occurrences during the inspection. Plant operations were normal with typical activities for the service equipment refurbishment facility (SERF) ongoing.

### 2. Radiation Protection (83822) (R1)

#### a. External Exposure Control (R1.04)

##### (1) Inspection Scope

The inspector reviewed licensee procedures to determine if controls were in place to monitor occupational dose, and verify that administrative limits were established to control occupational dose as low as is reasonably achievable (ALARA). Personnel exposure data for 1999 was examined to determine if exposures were in compliance with 10 CFR Part 20 limits.

##### (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 Part 20. The inspector reviewed and compared assigned exposures for calendar years (CYs) 98 and 99. Table 1 displays the maximum assigned exposure data for CY 98 and projected data for CY 99 based on partial air sampling data and twelve months of thermoluminescent dosimeter (TLD) data. The results were as follows: 1) Committed Effective Dose Equivalent (CEDE) was 0.824 rem in CY 98 and 1.73 rem estimated in CY 99 (approximately 34.6 percent of 10 CFR 20 limit); 2) Total Effective Dose Equivalent (TEDE) was 1.14 rem in CY 98 and 1.10 rem estimated in CY 99 (approximately 22 percent of 10 CFR 20 limit); and 3) the collective exposure estimated for CY 99 (20.3 person-rem) was a twenty-one percent decrease from CY 98 (25.6 person-rem). Exposure results were significantly less than the limits in 10 CFR 20 (See Table 1 below). The estimated TEDE (1.10 rem) for CY 99 was less than the ALARA goal of 1.50 rem.

Table 1. Annual Exposures

Year	Deep Dose Equivalent (DDE)	Shallow Dose Equivalent (SDE)	Total Effective Dose Equivalent (TEDE)	Collective TEDE (person-rem)	Committed Effective Dose Equivalent (CEDE)
1998	0.180 rem	2.49 rem	1.14 rem	25.6	0.824 rem
1999	0.500 rem	1.33 rem	1.10 rem	20.3	1.73 rem

**\*NOTE:** The 1999 exposures were incomplete pending additional air sample and bioassay results and were considered as estimates only.

(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 air sample data) resulted in approximately a twenty-one percent decrease when compared to CY 98. The estimated TEDE (1.10 rem) for CY 99 was less than the ALARA goal of 1.50 rem.

b. 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. Bioassay and exposure data based on air sampling results were reviewed to determine if exposures resulting from various plant operations exceeded limits in 10 CFR Part 20.

(2) Observations and Findings

The licensee's automated data management system for exposure control was out of service during the time of the inspection due to software problems. The licensee informed the inspector that all the exposure data required for completing the internal/external exposures in accordance with 10 CFR 20 was available, but manual calculations would be required. As verification that the licensee could corroborate the sample results within the sample database and provide timely exposure details, the inspector reviewed the Safety and Licensing Deficiency Report (SLDR) logbook and randomly selected elevated air samples from the period May 9, 1999 through August 23, 1999. The inspector concluded that although the manual procedures were laborious, the licensee met the intent of 10 CFR 20.2106 regarding exposure records. Table 1 above presents the maximum assigned CEDE exposure data for CY 98 and estimated results for CY 99. The maximum estimated CEDE in CY 99 (1.73 rem) was two times greater than the CY 98 exposure (0.824 rem). The licensee believed the exposure increase was caused by an increase in pellet dust from the pellet handling operations. As an as low as is reasonably achievable (ALARA) initiative to reduce the dust exposure, the licensee initiated a review of the design of the pellet trays.

(3) Conclusions

Based on the interviews and documentation reviewed, the inspector determined that the licensee's internal exposure control program was adequate for evaluating and monitoring personnel exposures. Administrative dose limits were established and all assigned exposures were well below the regulatory limits. The estimated CEDE for CY 99 (1.73 rem) was two times greater than the CY 98 exposure (0.824 rem) and exceeded the 1.50 rem ALARA goal.

c. Implementation of ALARA Program (R1.10)

(1) Inspection Scope

The licensee's ALARA program was reviewed to determine if the program and ALARA goals were being developed and implemented in accordance with the license. In addition, the program for reinforcing ALARA concept among employees was assessed.

(2) Observations and Findings

Two workers were interviewed regarding ALARA to assess training, familiarity, and understanding of ALARA concepts. Both interviewees lacked knowledge and/or understanding regarding ALARA. In response to the inspector's observations, the licensee indicated that the employee safety training detailed all aspects of ALARA including philosophy, definition, examples of ALARA, etc. During the exit meeting, the inspector was informed that a computer based training approach with a test to demonstrate competency may be considered in the future to improve employee comprehension.

On a quarterly basis during CY 99, the Safety Review Board (SRB) met to review action items, radiological deficiencies, contamination levels, and status of projects. However, the inspector noted that trending of CY 99 exposure data to identify unfavorable trends was not included in meetings until the third quarter of CY 99. Such delays may result in the lack of management attention and support to ensure that timely, adequate resources are provided to resolve unfavorable trends in exposures and compliance issues. The inspector discussed the trending and tracking of personnel exposures by the SRB as an area for improvement.

(3) Conclusions

Based on records review and interviews, the inspector noted two areas for improvement to the ALARA program: the employee safety training associated with ALARA; and timely trending of exposure data during the quarterly SRB meetings.

d. Management Oversight of Program (R1.11)

(1) Inspection Scope

The inspector reviewed the adequacy of management controls for ensuring program compliance with the regulations and license requirements.

(2) Observations and Findings

The inspector reviewed the following details: quarterly meeting minutes from the SRB involving ALARA data; the results from internal and independent audits conducted during CY 99; and selected incidents from the SLDRs logbook. The before mentioned reports provided management with summary details for ensuring the radiation protection program was properly implemented.

SLDRs were issued by health physics personnel to report any unusual occurrence involving radiation safety requiring management attention. The inspector reviewed SLDRs for the period January to November 1999 to determine if the licensee was taking actions in response to incidents consistent with procedural requirements. Based on documentation from SLDRs and bioassay results, the licensee was properly documenting and responding to unusual occurrences. However, improvements were necessary to the timely issuance of SLDRs as evidenced by one example where the SLDR was not issued for more than thirty days after the incident. The total number of SLDRs increased approximately 51 percent in CY 99 (80) when compared to CY 98 (53). The increase was attributed to the licensee's internal investigation level for air samples which exceeded the daily action level of four derived air concentration-hours (DAC-Hrs.).

(3) Conclusions

The quarterly ALARA report to the SRB, periodic audits, and SLDR provided management with a mechanism for review and taking actions as appropriate to ensure compliance with license commitments and regulations. The SLDRs were generated in the event limits (action, regulatory and/or license) were exceeded to ensure management attention, and involvement, in the development and implementation of corrective actions.

3. Exit Interview

The inspection scope and results were summarized and discussed in detail on March 9, 2000, 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. Dissenting comments were not received from the licensee.

## ATTACHMENT

### LIST OF PERSONS CONTACTED

#### Licensee

- \*T. Allsep, Manager, Radiation Protection
- \*R. Freeman, Manager, Licensing and Nuclear Material and Accountability  
D. Gordon, Project Engineer
- \*A. Jenkins, Manager, SERF 3 and 4 Facilities
- \*G. Lindsey, Health Physicist
- \*J. Matheson, Plant Manager
- \*S. Wilkerson, Manager, Quality, Health/Safety and Licensing

### INSPECTION PROCEDURES USED

IP 83822      Radiation Protection

### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

### LIST OF ACRONYMS USED

ALARA	As Low as is Reasonably Achievable
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
CY	Calendar Year
DAC-HRS.	Derived Air Concentration-Hours
DDE	Deep Dose Equivalent
NRC	Nuclear Regulatory Commission
SDE	Shallow Dose Equivalent
SLDR	Safety and Licensing Deficiency Report
SRB	Safety Review Board
SERF	Service Equipment Refurbishment Facility
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter