



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
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December 20, 2002

Framatome ANP, Inc.  
ATTN: Mr. Robert Freeman  
Site Manager  
Lynchburg Manufacturing Facility  
P. O. Box 11646  
Lynchburg, VA 24506-1646

SUBJECT: NRC INSPECTION REPORT NO. 70-1201/2002-03

Dear Mr. Freeman:

This refers to the inspection conducted on December 2-5, 2002, 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 the safe transport of radioactive material, careful radiological work controls, and the maintenance of an emergency response capability.

Based on the results of this inspection, the NRC has determined that a licensee identified non-compliance was a violation of NRC requirements. This licensee identified violation is being treated as a non-cited (NCV) consistent with Section VI.A.8 of the Emergency Policy.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room 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 DEBORAH A. SEYMOUR  
ACTING FOR/**

David A. Ayres, Chief  
Fuel Facilities Branch  
Division of Nuclear Materials Safety

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

Enclosure: (See Page 2)

Enclosure: NRC Inspection Report

cc w/encl:

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-1201

License No.: SNM-1168

Report No.: 70-1201/2002-03

Licensee: Framatome Cogema Fuels, Inc.

Facility: Lynchburg Manufacturing Facility

Location: Lynchburg, VA

Dates: December 2-5, 2002

Inspectors: A. Gooden, Health Physicist  
M. Crespo, Fuel Facility Inspector

Approved by: D. Ayres, Chief  
Fuel Facilities Branch  
Division of Nuclear Materials Safety

Enclosure

## EXECUTIVE SUMMARY

### Framatome Cogema Fuels NRC Inspection Report No. 70-1201/2002-03

This routine unannounced inspection involved observation of work activities, a review of selected records, and interviews with plant personnel regarding radiation protection, emergency preparedness, and transportation of radioactive materials. The report covers a four-day inspection effort by two regional-based inspectors.

#### **Radiation Protection**

- Equipment used for detecting the presence of radioactive materials on smears, air samples, personnel, and within the workplace as well as the nuclear criticality detection system were properly maintained and performed the intended safety function in a reliable manner (Paragraph 2.a).
- The external exposure control program was adequate for evaluating and monitoring personnel exposures. Based on projected exposures for calendar year 2002, external exposures were the lowest in more than five years and significantly less than occupational limits in 10 CFR 20.1201 (Paragraph 2.b).
- Based on exposure data as of November 2002, the projected maximally assigned internal exposure will be reduced significantly when compared to previous years (Paragraph 2.c).
- Respiratory protection equipment was periodically serviced and maintained in a state of readiness for certified users (Paragraph 2.d).
- The contamination survey program was effective in the identification and control of contamination. The licensee maintained positive control of sealed sources and the leak testing was performed in accordance with the license and NRC requirements (Paragraph 2.e).
- The licensee's performance in notification and reporting was in accordance with requirements. The Safety and Licensing Deficiency Reports selected for review did not require notification to NRC (Paragraph 2.f).

#### **Emergency Preparedness**

- Key organization changes did not appear to impact the effectiveness of the emergency management program (Paragraph 3.a).
- The licensee maintained an emergency response training program which provided instructions to those individuals expected to implement Emergency Procedure SL-1308 (Paragraph 3.b).
- The equipment used for emergency response was periodically inspected and tested to ensure proper operations (Paragraph 3.c).

**Transportation**

- An inadvertent shipment of rods containing enriched uranium resulted in a licensee identified non-cited violation. Other activities associated with the packaging, classification, and shipments were conducted in a manner to promote safety during transport (Paragraph 4.a).
- Current Certificates of Compliance were on file for the shipping containers in use (Paragraph 4.b).

**Attachment:**

List of Persons Contacted

Inspection Procedures Used

List of items Opened, Closed, and Discussed

List of Acronyms

## REPORT DETAILS

### 1. **Summary of Plant Status**

During the assessment period, fuel rod loading operations, and typical activities for the service equipment refurbishment facility (SERF) were ongoing. No significant plant upsets occurred during the inspection.

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

#### a. Radiation Protection Program Equipment (R1.03)

##### (1) Inspection Scope

Equipment used to identify the presence of radioactive materials on smears, air samples, and personnel was examined to determine if the selected equipment was adequately maintained and reliable to perform the intended safety function. Similarly, the inspector reviewed the nuclear criticality detection system calibration records for the last two years to verify that the system was being properly maintained.

##### (2) Observations and Findings

The inspector interviewed personnel performing operability checks on laboratory analytical equipment, survey meters, the criticality detection system, and the Pellet Loading Room (PLR) warning system for loss of air flow and pressure. The documentation for selected equipment routine checks and calibrations was also reviewed. Based on interviews and documentation, the selected equipment was properly maintained and results from operability checks and calibrations indicated that the equipment provided reliable results.

##### (3) Conclusions

Equipment used for detecting the presence of radioactive materials on smears, air samples, personnel, and within the workplace as well as the nuclear criticality detection system were properly maintained and performed the intended safety function in a reliable manner.

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

##### (1) Inspection Scope

The inspector reviewed and discussed with licensee representatives personnel exposure data to determine if exposures were in compliance with 10 CFR Part 20 limits, and if controls were in place to maintain occupational doses As Low As Reasonably Achievable (ALARA).

(2) Observations and Findings

Table 1 below displays the maximum assigned exposure data for calendar year (CY) 2001, and the projected exposures for CY 2002 based on data as of November 2002. No regulatory or license limits were met. Exposures were significantly less than the occupational limits in 10 CFR 20.1201.

The licensee discussed plans to improve the detection capability for controlling the skin, extremity, and deep dose from potentially high specific activity particles, referred to as discrete radioactive particles.

Table 1. Annual Exposures

Year	Deep Dose Equivalent (DDE)	Shallow Dose Extremity (SDE)	Total Effective Dose Equivalent (TEDE)	Collective TEDE (person-rem)	Committed Effective Dose Equivalent (CEDE)
2001	0.46 rem	3.70 rem	0.91 rem	16.39	0.62 rem
2002	0.35 rem	1.70 rem	0.39 rem	17.03	0.29 rem

**\*Note:** The projected annual exposures are based on air sampling data as of November and thermoluminescent dosimeter data as of October 2002.

(3) Conclusions

The external exposure control program was adequate for evaluating and monitoring personnel exposures. Based on projected exposures for calendar year 2002, external exposures were the lowest in more than five years and significantly less than occupational limits in 10 CFR 20.1201.

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 and less than occupational limits.

(2) Observations and Findings

Table 1 above presents the maximum assigned committed effective dose equivalent (CEDE). Based on the maximally assigned CEDE exposure as of November 2002 (0.29 rem), the projected CEDE for CY 2002 (0.29 rem) would result in an approximately fifty-three percent reduction in exposure when compared to CY 2001 exposure (0.62 rem).

(3) Conclusions

Based on exposure data as of November 2002, the projected maximally assigned internal exposure would be reduced significantly when compared to previous years.

d. Respiratory Protection (R1.06)

(1) Inspection Scope

Respiratory protection equipment storage, and training was reviewed for adequacy in assuring that equipment was properly stored and being obtained by certified users only.

(2) Observations and Findings

The inspector observed a respirator user demonstrate the proper technique for performing a negative pressure check on a full-face respirator and no problems were noted. In addition, when names were selected for training verification, personnel were considered certified to use the equipment. Self-contained breathing apparatus (SCBA) equipment was stored in a state of readiness for use.

(3) Conclusions

Respiratory protection equipment was periodically serviced and maintained in a state of readiness for certified users.

e. Surveys

(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. The inventory, control, and periodic leak testing of sealed sources was reviewed to determine if program controls were in place to identify leaks and inaccurate inventories.

(2) Observations and Findings

The inspector determined from observation of personnel performing contamination surveys during the packaging and loading of scrap fuel pellets, and the review of contamination survey forms for the SERF, that the licensee took appropriate actions for contamination results greater than the action limits.

Sealed sources leak testing records were reviewed to confirm that sealed sources were tested in accordance with the license and NRC requirements. In addition, the inspector verified that selected sources were at the assigned location and properly controlled to prevent unauthorized use.

(3) Conclusions

The contamination survey program was effective in the identification and control of contamination. The licensee maintained positive control of sealed sources and the leak testing was performed in accordance with the license and NRC requirements.

f. Notifications and Reports (R1.09)

(1) Inspection Scope

The licensee's file containing Safety and Licensing Deficiency Reports (SLDR) was reviewed for determining the reportability of events to NRC and workers.

(2) Observations and Findings

The inspector observed that issues were being identified, corrective actions were timely, and the corrective actions adequately addressed the root causes. The incidents reviewed did not require notification to NRC. For incidents which required worker notification to ensure that personnel were aware of the potential for exposure, and work restrictions, the licensee provided follow up.

(3) Conclusions

The licensee's performance in notification and reporting was in accordance with requirements. The SLDRs selected for review did not require notification to NRC.

3. **Emergency Preparedness (88050) (F3)**

a. Review of Program Changes (F3.01)

(1) Inspection Scope

Changes to the emergency response program since the last inspection were reviewed to determine the effectiveness on the program.

(2) Observations and Findings

Since the last inspection, key changes were made to the normal plant organization, resulting in changes to the emergency organization. The organization changes should have minimal impact on the effectiveness of the response program due to the majority of the personnel having previously been assigned to the emergency organization.

3) Conclusions

Key organization changes did not appear to impact the effectiveness of the emergency management program.

b. Training and Staffing of Emergency Organization (F3.03)

(1) Inspection Scope

Emergency response training was reviewed to determine if the licensee had provided training to response personnel in accordance with Emergency Procedure SL-1308.

(2) Observations and Findings

The inspector observed the Emergency Team classroom training which provided response personnel with recent changes to procedures, concept of operations, and recent program deficiencies. Documentation was also reviewed to show that other specialized team training was conducted during CY 2002.

(3) Conclusion

The licensee maintained an emergency response training program which provided instructions to those individuals expected to implement Emergency Procedure SL-1308.

c. Emergency Equipment and Facilities (F3.06)

(1) Inspection Scope

The Emergency Operations Facility and equipment were inspected to determine whether the facility, emergency response equipment, instrumentation, and supplies were maintained in a state of operational readiness.

(2) Observations and Findings

The inspector verified that fire brigade personal protective equipment was being periodically surveillance and properly maintained. No significant problems were noted. All radiation detection equipment had current calibration stickers, and with one exception, were operational. The one exception was a hand-held survey instrument which was removed from the kit for replacement. Calibration documentation for select instruments was reviewed to determine the reliability and operability of equipment. No problems were noted.

(3) Conclusions

The equipment used for emergency response was periodically inspected and tested to ensure proper operations.

#### 4. **Transportation (86740)**

##### a. Preparation of Packages for Shipment (R4.01, R4.02)

###### (1) Inspection Scope

Transportation activities associated with the packaging and shipment of radioactive material were reviewed, to verify that activities were in accordance with NRC and Department of Transportation (DOT) regulations in 10 CFR Part 71 and 49 CFR Parts 171-180.

###### (2) Observations and Findings

The inspector reviewed procedures and observed the licensee's performance in container preparation, loading, and container markings for a shipment involving scrap fuel pellets. Based on the inspector observations, the appropriate container labeling/markings, and radiation and contamination surveys were applied. In addition, randomly selected shipping documentation involving equipment used in the SERF-4 field operations, and shipment of fuel assemblies, was verified as including the appropriate container labeling/markings, radiation and contamination surveys, and that vehicle placarding were applied. Shipments involving fuel assemblies were made utilizing containers with a current NRC Certificate of Compliance (CoC). Shipping papers included the appropriate emergency response information and a twenty-four hour emergency response telephone number.

As part of the fuel fabrication transition from Framatome-Lynchburg to Framatome-Richland, rods thought to contain brass pellets or depleted uranium pellets were shipped to Richland on May 6, 2002, for use in building a mock fuel assembly. Framatome-Richland scanned all rods to segregate the brass rods from the rods containing depleted uranium. During the scanning process, it was determined that four of the rods contained enriched uranium. In response, a stop work order was issued and a very detailed investigation and review of the event initiated. As a result of the investigation, on June 5, 2002, a licensee identified non-compliance was written due to the inaccurate characterization of shipment. As a result of the mis-characterization of material, the licensee identified other inaccuracies associated with packaging, activity level, type of material, chemical form, and container markings. In response to the event, the licensee took corrective actions as follows:

- All loose rods and test bundles at Lynchburg Facility were located, scanned, and in most cases, downloaded, if accurate documentation was not available to identify the rods. The results did not identify any other examples of rods containing enriched material.
- The transportation procedure was revised to require that any rod similar in size and shape to a fuel rod, be either scanned through the fuel rod gamma scanner or the rod internals visually inspected prior to shipment.

The failure to comply with hazard communication requirements, including those for shipping papers, shipper's certification and package labeling, licensed material control and storage requirements, and the package documentation requirements of 49 CFR 173.415(a) was identified as a violation. The inspector concluded that the occurrence was an isolated event and that the scope of the licensee's investigation and corrective actions were appropriate to prevent this recurrence. This non-repetitive, licensee-identified and corrected violation is being treated as a non-cited violation (NCV), consistent with Section VI.A.8 of the NRC Enforcement Policy (NCV 70-1201/2002-03-01: Failure to describe the proper shipping name, class of material, form of material, activity level, and container markings).

(3) Conclusions

An inadvertent shipment of rods containing enriched uranium resulted in a licensee identified non-cited violation (NCV). Other activities associated with the packaging, classification, and shipments were conducted in a manner to promote safety during transport.

b. Certificates of Compliance (R4.04)

(1) Inspection Scope

Verify that the licensee's CoCs were maintained current and complied with requirements in 10 CFR Part 71.

(2) Observations and Findings

The inspector reviewed documentation for three shipping containers used to transport material. Based on the documentation, each shipping container's CoC was current. The transportation procedure checklist required container maintenance and pre-load inspection prior to use. Documentation for several fuel assembly shipments were reviewed and determined to be in accordance with CoC requirements. The inspector observed contamination surveys and packaging of scrap material prior to transport. No problems were noted.

(3) Conclusions

Current Certificates of Compliance were on file for the containers in use.

c. Records and Reports

(1) Inspection Scope

Safety and Licensing Deficiency Reports were reviewed to determine if problems involving transportation were properly documented and reported.

(2) Observations and Findings

As discussed above in Paragraph 4.a, the licensee conducted a detailed investigation into an event involving an inadvertent shipment of material to Framatome-Richland. No reporting requirement was necessary but the licensee notified NRC for information only.

(3) Conclusions

No transportation related incidents required reporting.

5. **Exit Interview**

The inspection scope and results were summarized and discussed in detail on December 5, 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. Dissenting comments were not received from the licensee.

## ATTACHMENT

### 1. LIST OF PERSONS CONTACTED

#### Licensee

T. Blanks, Radiation Protection Specialist  
\*R. Freeman, Site Manager  
G. Lindsey, Health Physicist  
\*S. Newsom, Supervisor, Radiation Protection  
\*L. Tupper, Manager, Environmental, Health, Safety and Licensing

Other Licensee employees contacted included technicians, production workers, security, and office personnel.

\*Attended exit meeting on December 5, 2002

### 2. INSPECTION PROCEDURES USED

IP 83822      Radiation Protection  
IP 86740      Transportation  
IP 88050      Emergency Preparedness

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

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
70-1201/2002-03-01	Open/Closed	NCV - Failure to describe the proper shipping name, class of material, form of material, activity level, and container markings (Paragraph 4.a).

### 4. LIST OF ACRONYMS USED

ALARA	As Low as is Reasonably Achievable
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
CoC	Certificate of Compliance
CY	Calendar Year
DDE	Deep Dose Equivalent
DOT	Department of Transportation
LIV	Licensee Identified Violation
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PLR	Pellet Loading Room
rem	Roentgen Equivalent Man
SCBA	Self Contained Breathing Apparatus
SDE	Skin Dose Equivalent
SERF	Service Equipment Refurbishment Facility
SLDR	Safety and Licensing Deficiency Report
TEDE	Total Effective Dose Equivalent