

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 70-1257/85-06

Docket No. 70-1257

License No. SNM-1227

Safeguards Group: I

Licensee: Exxon Nuclear Company
2101 Horn Rapids Road
Richland, Washington 99352

Facility Name: Richland Facility

Inspection at: Richland, Washington

Inspection conducted: May 13-17, 1985

Inspectors:	<u>B. L. Brock</u>	<u>6/6/85</u>
	B. L. Brock, Fuel Facilities Inspector	Date Signed
	<u>P. R. Zurakowski</u>	<u>6/7/85</u>
	P. R. Zurakowski, Radiation Specialist	Date Signed
Approved By:	<u>R. D. Thomas</u>	<u>6/19/85</u>
	R. D. Thomas, Chief Nuclear Materials Safety Section	Date Signed

Summary:

Inspection on May 13-17, 1985 (Report No. 70-1257/85-06)

Areas Inspected: A routine unannounced inspection was conducted of management organization and controls, operator training and retraining, criticality safety, operations review, maintenance and surveillance testing, radiation protection, transportation/radioactive waste management, emergency preparedness and deactivation/decontamination activities.

The inspection involved a total of 56 man-hours onsite by two NRC inspectors.

Results: No violations were identified in the nine areas inspected.

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DETAILS

1. Persons Contacted

*R. G. Frain, Manager, Operations - Richland
*R. Nilson, Manager, Corporate Licensing
*R. H. Purcell, Manager, Safety and Security Operations
*C. W. Malody, Licensing and Compliance, Operating Facilities
*T. C. Probasco, Supervisor, Radiological and Industrial Safety
*L. D. Gerrald, Licensing and Compliance Engineer
*J. E. Pieper, Specialist, Health Physics
*B. E. Berst, Manager, Speciality Fuels
J. Ryden, Manager, Maintenance Engineering
E. L. Foster, Radiological Safety Assistant
R. A. Schneider, Staff Specialist, Safeguards
H. Thiss, Manager, Purchasing
G. Mulligan, Supervisor, Shipping and Warehousing
*M. K. Valentine, Manager, Plant Operations
T. Luzzo, Electrical Engineer, Preventative Maintenance
W. M. Welden, Quality Control Supervisor
R. Hahn, Shift Supervisor, Conversion
J. Englund, Shift Supervisor, Conversion
R. R. Roper, Technician Specialist, Specialty Fuels
R. A. Nunamaker, Lead Material Control Technician
W. F. Bazemore, Maintenance Air Balance Technician
S. M. Mason, Lead Material Control Technician
*S. R. Lockhaven, Specialist, Industrial Hygiene
D. J. Doremus, Senior Technician
J. Lawson, Technician 2
J. W. Green, Senior Chemical Engineer
M. J. Hill, General Supervisor, Chemical Operations
B. R. Black, Manager, Quality Control Engineering
T. Stafford, Rework Technician

*Denotes those attending the exit interview.

2. Management Organization and Controls

Section 9 of license SNM-1227 incorporated Part I and the Appendices to Part I of the licensee's application as license conditions.

A. Organizational Structure

Section 2.4 of the license application requires certain organizational divisions of responsibility to provide a check and balance system in the important areas of plant safety.

The licensee's organizational structure is unchanged since the February 11, 1985 inspection. However, fourteen changes to improve the licensee's Criticality Safety Control System were recommended by an internal task force on Criticality Safety. The additional changes are being implemented practicably and their status will be reviewed in subsequent inspections (85-02-05).

B. Procedure Controls

Section 3.1.1 of the license application requires that the licensee establish and maintain radiation protection standards and procedures which shall be maintained by annual reviews and updated as appropriate. These standards and procedures are also based on and in compliance with 10 CFR Part 20.

The inspector reviewed procedure revisions recently made by the licensee to improve criticality safety controls. The procedure revisions had been appropriately reviewed and approved.

C. Internal Reviews and Audits

Section 3.13.1 and 3.13.2 of the license applications requires Radiological Safety and Criticality Safety inspections monthly and bimonthly respectively.

(1) Radiological Safety Audits

Radiological Safety audits are conducted as required. See Section 7.D for details.

(2) Criticality Safety Audits

The bimonthly criticality safety audit by the Criticality Safety Component indicated that the program strengthening actions identified in the licensee's letter to the NRC, dated May 1, 1985, had been completed. The NRC inspector reviewed the procedure revisions, the responsibility reassignments and the letter emphasizing the need to follow the procedures. The revised procedures are being followed. This closes item 85-02-04.

No violations were identified.

3. Training and Retraining

Section 3.10 of the license requires that the licensee conduct a training program covering radiation protection, criticality safety, industrial safety, fire protection and emergency procedures.

During this inspection certain aspects of the radiological and respiratory protection program were examined by the inspector. As was discussed in the previous inspection report, the required yearly retraining is normally conducted during the latter part of the third quarter and the records for this training will not be available until the fourth quarter of 1985. However, special training sessions in radiological safety, criticality safety and respiratory protection are conducted throughout the year on an as needed basis. Such a training session was held for 15 employees on April 30, 1985, to discuss various aspects of the respiratory protection program needed in planned decontamination work in the MO Building glove box line. The instructor for this class had recently been retrained in respiratory protection

techniques at Central Connecticut State University. This one week course has been approved for continuing education credit by the American Board of Health Physics.

No violations were identified.

4. Criticality Safety

Section 3.2 of the license application requires assurance of criticality safety through both administrative and technical practices.

Criticality Safety Analysis

Section 3.2.1.1 of the license application requires criticality safety analysis of all applicable processes in accordance with Section 2.3.20 of the license application and all determinations of Nuclear Criticality Safety be reviewed and approved by a second party reviewer in accordance with the requirements.

Six criticality safety analyses were completed since the last inspection. Five were modifications to existing operations and one was for an operation yet to be implemented. The criticality safety analyses were approved by a second party reviewer as required. The second party reviewer indicated that periodic discussions with the analyst resulted in his being familiar with the criticality safety analysis prior to his review of it. The analyst now provides additional detail in the criticality safety analysis package which facilitates the second party review. Two of the analyses were necessary as corrective actions where an internal audit identified the licensee's failure to follow procedures. As indicated in Section 2.C.(2) of this report, the subsequent audit found the appropriate corrective actions had been implemented.

No violations were identified.

5. Operations Review

Section 2.1 of the license application requires, the licensee to conduct it's business in a manner so as to assure that licensee facilities are safe from radiation and other nuclear hazards, and that it's operations will not be detrimental to the environs and to assure that personnel radiation exposures, both in-plant and offsite, are maintained as low as is reasonably achievable (ALARA). In providing this assurance, conditions of applicable NRC licenses shall be complied with, and full regard shall be given to applicable NRC Regulatory Guides.

A. Conduct of Operations

- (1) The licensee is preparing to increase the throughput of the pilot uranium recovery process. The outdoor process has been shut down since the winter of 1984. Startup has been delayed pending receipt and installation of the new equipment needed for increased throughput.

- (2) The modifications being made to the gadolinium scrap recovery process were observed. Filters, a scrubber, and a slab mixing tank for extractant cleanup, are being added. The work is about 75 percent completed.
- (3) The chemistry laboratory was visited. The inspectors questioned a laboratory worker regarding criticality safety practices. The answers given indicated the employee understood and adhered to the Criticality Safety Specifications.
- (4) The licensee is installing the equipment for the Miscellaneous Uranium Recovery System (MURS). This system will reduce the uranium content of recovery streams prior to their input to the lagoons.
- (5) The inspector's followup inspection of Storage Warehouse No. 4 found that the required storage array boundary has been adequately maintained. The licensee's corrective action was taken during the previous inspection, immediately after the violation was identified.
- (6) The licensee's planned use of a Non Destructive Assay (NDA) enrichment measurement was not reviewed since the NDA procedure had not yet been written. Preliminary results indicate the system is adequate for the licensee's needs. This item remains open (85-02-06)

B. Facility Modification Review and Examination

The licensee operations observed were conducted in accordance with procedures. In Room 173, of the Specialty Fuels Building, a special operation currently underway involved measurement of residual plutonium contamination in glove boxes used in the former UO_2 - PuO_2 , mixed oxide, pellet production line. The measurements, by a contract laboratory, are a necessary part of determining the level of cleanup needed to prepare the glove boxes for packaging, transportation and appropriate disposal. For further details see Section 10.

No violations were identified.

6. Maintenance and Surveillance Testing

Section 3.12 of the license application requires that periodic tests and inspections are conducted in accordance with written procedures and are properly documented.

A. Maintenance

- (1) The licensee's air balance system for the UO_2 Building was reviewed by the inspectors. The panels on which differential pressures are recorded were also observed. The log sheets reflecting the routine readings taken at eight hour intervals

were current. Weekly air lock smoke tests supplement the evaluation of the system's performance.

- (2) The inspector reviewed the historical file of the monthly generator tests provided from the computer file. The record indicated the tests were appropriately conducted.

No violations were identified.

7. Radiation Protection

Pursuant to 10 CFR Part 20, the licensee is required to provide protection against radiation hazards associated with licensee activities.

A. Bioassay Results

Urinalysis results for the first quarter of 1985 and those available to date were examined by the inspector. Four results above the minimum level of detection were observed in the records for this time interval. The two highest results were 19.1 and 20.7 ug/L which did not exceed the licensee's action level of 25 ug/L.

B. Lung Count Results

Lung count records for the first quarter of 1985 and those available to date were examined by the inspector. It was found that even though the licensee is having lung counts done with a very sensitive intrinsic germanium (IG) system, the number of counts above the .26 nCi action level appears to be decreasing. The highest count noted in the records was .21 nCi. None exceeding the action level were observed in the records for the time interval specified.

C. Whole Body Exposure

External exposure records for the first quarter of 1985 were examined and it was again confirmed that low enriched fuel fabrication facility operations personnel have a low potential for receiving whole body exposures. Almost all exposures were at or near the lower limit of detection. No reported exposures for persons working at the Richland Facility exceeded the licensee's action levels or NRC Part 20 requirements.

An examination of the licensee's 1984 ALARA Committee Report disclosed that the downward trend in both internal and external exposures is continuing. The downward trend may be due in part to improvements made in the ventilation system, particularly in the pellet grinding area, and improved surveillance related to visible contamination and spills in the Lube Blend Room and pellet press area.

D. Radiological Safety Audits

Radiological safety audits are being performed monthly by a Senior Radiological Engineer as required by Section 3.13.1 of the current

license application. The radiological safety practices in the plant are reviewed during these audits and the findings are included in a written report to management.

One finding disclosed contamination of 10,000-30,000 DPM around the Room 180 barrel tumbler. Further investigation indicated the drum lid seal as the most probable cause of the problem. The drum lid is being redesigned. As a temporary solution to the problem the contamination is being cleaned up as it occurs. The licensee's progress in this area will be reviewed during the next inspection (85-06-01). The problem involving the cause of contaminated pallets originating in the Lube Blend Room has not yet been resolved. The pallets are being washed and decontaminated as needed until the root cause can be determined. Item (84-10-02) will remain open.

No violations were identified.

8. Transportation/Radioactive Waste Management

10 CFR Part 61 requires that all radioactive waste prepared for disposal is classified in accordance with paragraph 61.55 and meets the waste characteristics requirements in paragraph 61.56. The licensee's program for packaging and transportation of radioactive waste must also be conducted in accordance with 10 CFR Part 20.311 and 10 CFR Part 71.

Since the last inspection six shipments of radioactive waste have been made to the commercial waste disposal site on the Hanford Reservation (U.S. Ecology). Twelve 4'x4'x6' metal boxes of waste were being prepared for shipment during this inspection and the preparations were observed by the inspector. All paperwork associated with the six shipments were examined by the inspector and it was found that all requirements of the applicable parts of 10 CFR 20, 61 and 71 were met. In addition, it was observed by the inspector that these shipments were made in conformance with the licensee's internal procedures XN-NF-759 "Shipping Standard Including Low-Level Waste" and XN-NF-281 "Shipment of Uranium Waste to Disposal Sites". These procedures are consistent with the requirements of 10 CFR Parts 20, 61 and 71.

The twelve boxes of waste that were examined by the inspector were found to be well sealed with the containers free of any dents, holes, cracks or significant rust. The containers were marked and labeled properly. The containers were well constructed of heavy gauge steel and appeared to be able to withstand the normal rigors of transportation as required by DOT regulations.

Discussions with the Manager, Quality Control Engineering disclosed that in order to further insure compliance with NRC, DOT and internal procedures, QC audits of packaging and monitoring techniques in the UO₂ Building will commence during the third quarter of 1985. This audit will be in addition to the QC audit of waste drums prior to shipment as required by the licensee's internal document XN-NF-P68538 entitled "Inspection of Waste Drums." The licensee's progress in this area will be reviewed during the next inspection (85-06-02).

No violations were identified.

9. Emergency Preparedness

Section 3.9 of the license application addresses the licensee's Emergency Plan (XN-NF-32) which includes a listing of procedures that have been prepared to implement the plan.

A. Fire Protection

- (1) Fire extinguishers throughout the plant were found current with regard to required monthly inspections.
- (2) Housekeeping improvements continue to reduce flammable material accumulations.
- (3) The licensee is endeavoring to eliminate the Class "D" designation from the site. Reevaluation and some modifications may be required to make this change. The Class "D" designation restricts the use of water in fire fighting in the posted area. If removal of this designation is justified, the licensee's plant would then be consistent with other large plants in the area.

No violations were identified.

10. Deactivation/Decontamination Activities

The inspectors toured Room 173 of the Speciality Fuels (SF) Building, formally called the Plutonium Glove Box Facility of the Mixed Oxide Building. The inspectors observed preparations being made for the removal of contaminated equipment within the glove boxes and eventually the glove boxes. The Radiation Work Procedure (RWP) No. SF-85-3 controlling this work was examined. Discussions were held with the author of the RWP, who is the Senior Technician in charge of the health physics aspects of the project. The RWP was found to be sufficiently detailed to adequately control the hazards associated with the project when used by properly trained personnel. Discussions with the Supervisor, Radiological and Industrial Safety disclosed that they are planning to hire (within a few weeks) two experienced senior health physics technicians whose sole assignment will be to oversee the day to day aspects of the project. New respiratory protection equipment and other safety-related items have been purchased for the work. Weekly planning meetings are being held by licensee management to discuss details of the project.

It is anticipated that decontamination work inside of the glove boxes will start in a few weeks and the entire project will be completed and ready for an NRC overcheck by the middle of the fourth quarter of 1985. A preliminary copy of the decontamination plan was given to the inspectors for informational purposes. A final copy will be forwarded to NRC headquarters for review.

11. Exit Meeting

The results of the inspection were discussed with members of the licensee's staff identified in Section 1. The topics included:

- ° no violations were identified
- ° the areas inspected
- ° the status of open items (5 of 8 items remain open)
- ° criticality safety practices relative to procedures and task force recommendations
- ° need for appraising NRC of the schedule for cleanup of Room 173 in the Speciality Fuels Building
- ° training of technical personnel
- ° 10 CFR Part 61 performance
- ° planned licensee QC inspections of waste packaging
- ° the procedure for measurement of enrichment by Nondestructive Analysis should include a difference limit and action to be taken when the limit is exceeded
- ° improvements needed in the UO₂ Building air balance instrumentation

The licensee indicated the cause of contamination of pallets in the powder blending room was known and efforts were directed toward controlling the contamination while they sought to make modifications to significantly reduce it.