

U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
REGION IV

Report No. 99900081/79-01

Program No. 51500

Company: Exxon Nuclear Company, Inc.  
Nuclear Fuels Department  
2101 Horn Rapids Road  
Richland, Washington 99352

Inspection Conducted: April 24-26, 1979

Inspector: *W. M. McNeill for*  
W. M. McNeill, Contractor Inspector, Vendor  
Inspection Branch

*8-11-79*  
Date

Approved by: *D. E. Whitesell for*  
D. E. Whitesell, Chief, Components Section I,  
Vendor Inspection Branch

*8-11-79*  
Date

Summary

Inspection on April 24-26, 1979 (99900081/79-01)

Areas Inspected: Implementation of Topical Report including document control; moisture and hydrogen controls; pellet attribute controls; review of manufacturing activities; and action on previous inspection findings. The inspection involved twenty-four (24) inspector hours on site by one (1) NRC inspector.

Results: In the five (5) areas inspected no apparent deviations or unresolved items were identified.

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DETAILS SECTIONA. Persons Contacted

- \*B. R. Black, Supervisor QC Engineering
- R. R. Brinkerhoff, Supervisor Manufacturing
- C. A. Brown, Design Coordinator
- K. M. Chidester, Supervisor
- R. M. Crawford, Manufacturing Engineering Manager
- \*T. L. Davis, QA Manager, Nuclear Fuels
- \*I. E. Fravala, Document Control Manager
- W. R. Gority, QC Engineer
- \*E. N. Harbinson, Supervisor Inspection
- E. D. Haugen, Document Control Supervisor
- J. A. Hays, Lead Technician
- D. J. Hill, Chemist
- R. D. Jones, M.O. Building Supervisor
- W. Korpi, Supervisor Manufacturing
- I. J. Miller, Supervisor Manufacturing
- \*J. A. Ferry, Quality Assurance Manager
- \*C. J. Volmer, QC Manager
- J. J. Wing, Analytical Laboratories Manager

\*Denotes those attending the exit interview.

B. Action on Previous Inspection Findings

(Closed) Deviation (Report No. 78-02): Penetrant testing was not in accordance with ASTM E-165. The procedure, P69044, formerly 7.48, has been revised to comply with ASTM E-165-75.

(Closed) Deviation (Report No. 78-02): Records of past performance of NDE inspectors were not maintained. The records have been updated to include evidence of past performance.

(Closed) Deviation (Report No. 78-02): Balances were not calibrated. The analytical balances in question have been added to the calibration program and a complete review of the entire shop has been done and some twenty-three (23) new items were added to the calibration program.

(Closed) Deviation (Report No. 78-02): Implementing records procedures did not address all requirements of ANSI 45.2.9 and the QA Procedure. The procedure XN-NF-365 has been revised to address the requirements of a vault description and method of verifying records received.

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(Closed) Deviation (Report No. 78-02): Required preventative action was not established. The required preventative action has been established and implemented. The DMR log and an open items list have been modified to identify preventive action and the status of the preventative action.

(Closed) Unresolved Item (Report No. 78-02): Radiographic qualification data was not available. The qualification records were made available and reviewed.

(Closed) Unresolved Item (Report No. 78-02): An inconsistency in the handling of radiographs as records. The inconsistency in the procedures was resolved by revision of one procedure and clearly establishing radiographs as not records.

C. Document Control

1. Objectives

The objectives of this area of the inspection were to verify that:

- a. The fuel manufacturer's document control system for design, manufacturing, and quality assurance documents is consistent with Regulatory requirements.
- b. The document control system includes all drawings, specifications, procedures, instructions, etc. which affect quality.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the Exxon Topical Report, XN-NF-1A, Revision 2A, Section 6.0, Titled "Document Control", which establishes the general requirement for document control.
- b. Review of the Parts List, QC Standards List and Process Specifications Index, for a recent project which established a sample of 24 drawings, specifications, and procedures.
- c. Review of the distribution records for the above documents, which established a sample of the work locations where the above documents were in use by Exxon personnel.

- d. Inspection of the work stations to verify that the proper documents were present and not marked up. It was also verified that the documents were properly reviewed and approved.

3. Findings

a. Deviations

None.

b. Unresolved Items

None.

D. Moisture and Hydrogen Controls

1. Objectives

The objectives of this area of the inspection were to verify that:

- a. Moisture and hydrogen control measures are sufficient to provide confidence that internal hydriding failures will not occur in service (i.e. meets specifications and contractual requirements).
- b. The moisture and hydrogen control and the inspection techniques are qualified.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the Exxon Topical Report, XN-NF-1A, Revision 2A, Section 5, Titled "Instructions, Procedures, and Drawings"; Section 10, Titled "Inspection"; Section 14, Titled "Inspection, Test, and Operating Status", which establishes the general requirements for moisture and hydrogen controls.
- b. Review of Product Specification, Titled Uranium Dioxide Pellets, XN-S30061, Revision 24; and Process Specification, Titled "Vacuum Outgasing Pellets", XN-NF-P20, 204, Revision 5, which establishes the design requirements.
- c. Review of Quality Control Standard, "Pellet Processing and Certification", XN-NF-E68152, Revision 25, and Analytical Procedure, "Hydrogen in UO<sub>2</sub> XN-NF-P69293, Revision 4, which establishes additional specific requirements.

- d. Witness of the testing of a recent lot of pellets, and inspection of the Leco RH-1 equipment, control charts, and analytical reports, to verify that the above procedures were implemented.
- e. Inspection of the drying of a recent lot of pellets, the vacuum outgasing furnaces, station logs, and glove box hygrometer, to verify that the above procedures are implemented.

3. Findings

a. Deviations

None.

b. Unresolved Items

None.

E. Pellet Attribute Controls

1. Objectives

The objectives of this area of the inspection were to verify that:

- a. Sufficient inspections of pellet attributes are made to give assurance that pellets meet specifications and contractual requirements.
- b. The manufacturer's system is capable of detecting cracked, chipped, or otherwise defective or degraded pellets, and rejecting them, or controlling their utilization.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the Exxon Topical Report, XN-NF-1A, Revision 2A, Section 5, Titled "Instructions, Procedures, and Drawings"; Section 10, Titled "Inspection"; Section 14, Titled "Inspection, Test, and Operating Status" which establishes the general requirements for pellet characteristics.
- b. Review of Product Specification, Titled "Uranium Dioxide Pellets", SN-S30061, Revision 24; Drawing, Titled "Fuel Pellet", XN-NF-303, 225, Revision 1, and various process specifications which establishes the design requirements.

- c. Review of Quality Control Standard, "Pellet Processing and Certification", XN-NF-P68152, Revision 25, and "Pellet Inspection", XN-NF-P69026, Revision 14.
- d. Inspection of recent lots of pellets, the optigage equipment, mics, scales, pellet inspection reports, and the visual standards used for inspection, to verify that the above procedures are implemented.
- e. Inspection of the resintering and sintering furnaces, temperature controls, and furnace charts, to verify that proper controls are being implemented.

3. Findings

a. Deviations

None.

b. Unresolved Items

None.

F. Review of Manufacturing Activities

1. Objectives

The objectives of this area of the inspection were to review the work load in terms of existing capacity, identification of principal contracts and unique differences between contracts in fuel assembly design, manufacture, and QC/QA requirements. Also to identify any systematic or generic problems that might exist relative to the fuel fabricated; and, to identify anticipated changes in fuel manufacturing and processing, or in the scope of supply.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Discussion with management, and technical personnel, concerning the above objectives.
- b. Observation of the shop manufacturing activities on the work in progress.

### 3. Findings

- a. The work load was observed to be limited to contracts in-house with no new contracts pending.
- b. No significant differences were observed between existing contract requirements and the on going fuel design, manufacture, assembly and QA/QC activities.
- c. No generic problems were identified, and no significant changes in the manufacturing processes, or the scope of supply, are anticipated.
- d. On March 21, 1979, Exxon Topical Report XN-NF-1A was approved which now becomes the inspection base.
- e. On March 15, 1979, Mr. L. R. Raymond became the President of Exxon Nuclear.

### G. Exit Interview

The inspector met with management representatives (denoted in paragraph A) at the conclusion of the inspection on April 26, 1979. The inspector summarized the scope and findings of the inspection. The management representatives had no comment in response to each item discussed by the inspector.