

ORGANIZATION: EXXON NUCLEAR COMPANY
NUCLEAR FUELS DEPARTMENT
RICHLAND, WASHINGTON

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| REPORT NO.: | 99900081/82-01 | INSPECTION DATE(S) | 9/20-23/82 | INSPECTION ON-SITE HOURS: | 50 |
| CORRESPONDENCE ADDRESS: Exxon Nuclear Company Nuclear Fuels Department ATTN: Mr. C. J. Volmer, Quality Assurance Manager 2955 George Washington Way Richland, Washington 99352 | | | | | |
| ORGANIZATIONAL CONTACT: Mr. C. J. Volmer, Quality Assurance Manager TELEPHONE NUMBER: (509) 375-8257 | | | | | |
| PRINCIPAL PRODUCT: Nuclear Fuel Assemblies | | | | | |
| NUCLEAR INDUSTRY ACTIVITY: Nuclear Fuel Reload supplier for various designed cores. | | | | | |
| ASSIGNED INSPECTOR: <u>W. M. McNeill</u> W. M. McNeill, Reactive & Component Program Section (R&CPS) | | | | <u>10/21/82</u> Date | |
| OTHER INSPECTOR(S): J. Hamilton, R&CPS | | | | | |
| APPROVED BY: <u>I. Barnes</u> I. Barnes, Chief, R&CPS | | | | <u>10/22/82</u> Date | |
| INSPECTION BASES AND SCOPE: | | | | | |
| A. <u>BASES</u> : Exxon Topical Report XM-NE-1A, Revision 4. | | | | | |
| B. <u>SCOPE</u> : Nonconformances and corrective actions; enrichment and impurity controls; moisture and hydrogen controls; records; document controls; and status of previous inspection findings. | | | | | |
| PLANT SITE APPLICABILITY: | | | | | |
| Not identified. | | | | | |
| DESIGNATED ORIGINAL Certified By <u>Reanne Clark</u> | | | | | |

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PDR GA999 EMVEXXN
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A. VIOLATIONS:

None

B. NONCONFORMANCES:

1. Contrary to Criterion V of Appendix B to 10 CFR Part 50 and Section 7.0 of the Topical Report, component vendor quality assurance program effectiveness was not fully assured in the area of Inspection and Test Plans, as evidenced by the following examples:
 - a. Revision 6 of an Inspection and Test Plan identified to be used on a purchase order (R-010645) by a fuel clad vendor was not consistent with purchase order requirements, in that it failed to identify the required CSR testing.
 - b. Although Exxon had approved Revision 7 of this Inspection and Test Plan, not all of the agreed to changes in respect to Revision 6 were incorporated.
 - c. An Inspection and Test Plan submitted by a poison pellet supplier and approved by Exxon allowed a deviation from the product specification in regard to pellet perpendicularity and length sampling.
2. Contrary to Criterion V of Appendix B to 10 CFR Part 50 and Section 15.0 of the Topical Report, nonconforming items were not always controlled in accordance with written procedures, as evidenced by the following examples:
 - a. QA Procedure 15, paragraph 3.4.1, requires suspected material to be segregated and tagged. A bin (No. 550) was observed in the pellet storage area which contained two trays of pellets that had become oxidized after release. This bin was not identified with a red hold tag.
 - b. QC Procedure XN-NF-P69072, paragraph 4.1.2, requires deviating rods to be identified with a red hold tag. A review of bin 13 found that the bin was tagged, but the bin contained acceptable material. Further examination found that the tag in question should have been applied to bin 12 which contained the referenced nonconforming rods.

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c. Approval of a Variance Report (VR 1798) was not in accordance with paragraph 3.5.7 of QA Procedure 15, in that only two of the required three signoffs had been obtained.

3. Contrary to Criterion V of Appendix B to 10 CFR Part 50 and paragraph 3.1 of QA Procedure 17, certain managers were not transmitting records to the custodian in accordance with requirements, as evidenced by the following examples:

a. Quality Assurance Audit Reports are required to be transmitted yearly, but only 1974 through 1978 reports were on file.

b. Quality Assurance Management Reviews, Procurement and Logistics Approved Vendor Lists, and Instrument Repetitive Maintenance records are required to be transmitted yearly, but, in fact, there were not any on file.

C. UNRESOLVED ITEMS:

None

D. STATUS OF PREVIOUS INSPECTION FINDINGS:

1. (Closed) Nonconformance (81-02): No evidence could be found of what specific process outlines and inspection plans by number and revision were applicable to current purchase orders for fuel clad.

Exxon has transmittal letters on file which identify the specific identification and revision of outlines and plans to be used on a given purchase order. In review of this corrective action, nonconformance B.1 was identified.

2. (Closed) Nonconformance (81-02): No evidence could be found of the approval of a revised quality manual of a clad supplier and there was no evidence that the inspection planning in the area of Contractile Strain Ratio testing had been reviewed and approved.

QA Procedure 7, "Procurement Control," has been revised to incorporate the use of Document Transmittal and Routing Forms. As a result, there now is a system to control vendor submittals. The Inspection and Test Plans are being submitted and approved. QA Manuals and their changes are also required to be submitted and approved by Exxon before their use by a vendor.

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3. (Closed) Nonconformance (81-02): Material was received and given full release, although the supplier's testing was incomplete.

The Product Specification will be revised and the QC Standard on receiving inspection has been revised to allow an alternate method of release of cladding. CSR testing for release will be performed by Exxon and the sampling will be on a lot basis rather than a purchase order.

E. OTHER FINDINGS OR COMMENTS:

1. Nonconformances and Corrective Actions - The programmatic requirements were reviewed as identified in QA and QC procedures. The pellet processing, rod processing, and component processing areas of the shop were inspected for implementation of the procedures. The identification, documentation, and disposition of nonconforming material were reviewed. Repair and rework activities were reviewed on rods and components. Trend analyses were found, as well as a preventive action system.

Nonconformance B.2 was identified in this area. It was also noted that the QA and QC procedures appeared out-of-date and in need of revision, in that the QA procedure referenced activities in paragraph 3.7 on trends and followup to be performed by QA; but, in fact, QC was performing the activities. The QC procedure referenced forms no longer in use. Exxon supervision identified that oxidized pellets are not nonconforming material, but only suspect. Exxon management noted that the VR in question cross-referenced another VR which was fully approved; however, it was noted that the QA Procedure 15 did not provide for use of previously approved VR's on a specific subject, as a basis for modifying approval requirements on subsequent VR's.

2. Enrichment and Impurities Controls - The controls of poison pellet manufacture for both in-house and subvended pellets were inspected. The records and documentation of inspections, sampling plans, and administrative controls were reviewed. Analytic chemistry reports were inspected and in-house sampling and inspection were observed. Product and process requirements were found to be verified for lots 245-7P and 245-6P, which were manufactured in-house, and lot 2746, which was subvended.

3. Moisture and Hydrogen Controls - The controls of poison pellet manufacture, which were performed for in-house and subvended pellets, were inspected. The records, sampling plans were verified. The

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drying/outgassing operation was observed for lot 245-6P manufactured in-house. Similar records for lot 2746 (subvended pellets) were also inspected.

4. Records - A sample of four types of Quality Assurance Records were reviewed. These were Management and Administrative, Engineering, Procurement, and Manufacturing/Inspection. In this area, nonconformance B.3 was identified.

It was observed that engineering records were only recently being transmitted to the record custodian. This nonconformance was detected during an internal audit in early 1982. Corrective action was identified in a memorandum of March 19, 1982. A schedule to collect and microfilm these records was established and was being adhered to at the time of this inspection.

Table I of Procedure 17, "Quality Assurance Records," which identifies the records and schedule for transmittal to the custodian was found to be misleading. For example, Test Reports and Nonconforming Material Reports were listed as separate documents for transmittal to the custodian, but were, in fact, a part of QC Release Files which were being separately transmitted to records. Process Technical Analysis Flow Sheets for Reactor Physics, Stress, Thermal-Hydraulics, and Accident Analysis were also shown to be separately transmitted to records, but were, in fact, a part of the Design and Safety Analysis Calculations being transmitted as one entity to records. Seven other types of documents were incorrectly shown to be transmitted to the records custodian after release or issue, but were, however, actually issued by the custodian.

5. Document Control - Documents were reviewed in component preparation, spacer cage fabrication, and rod fabrication areas in the shop. Thirty-six QC Standards and Process Specifications were reviewed and compared to operations and inspections being performed throughout the three areas. It was observed in the fuel rod fabrication area, that only Revision 8 of XN-NF-P20,222, a Process Specification for rework of fuel rods was available. The DRESDEN No. 2 fuel rods being processed at that time required Revision 7 of XN-NF-P20,222. Further inspection established that Revision 7 had been distributed by document control to the appropriate supervisor, but it had not been further distributed to work stations at the time of this inspection. It was observed in the spacer cage assembly area that Revision 0 of XN-NF-P68432, a Quality Control Standard for guide tube assembly and inspection, was available when, in fact, Revision 1 was the latest standard distributed to this area. XN-NF-P68432, Revision 1 is shown as being required for use on Maine Yankee; however, Maine Yankee was not being processed.

Inspector McNeill
 Scope/Module Nonconform. of C.A.

DOCUMENTS EXAMINED

| | | TITLE/SUBJECT | | |
|--------------|--------|---|----------|----|
| 1 | 2 | QA PROGRAM MANUAL | 3 | 1 |
| XN-NF-1 | 4 | TOPICAL REPORT | - | 12 |
| " | 4 | CONTROL OF NONCONFORMING ITEMS | - | 4 |
| QAP# 15 | 3 | CORRECTIVE ACTION SYSTEMS | 10/14/81 | 2 |
| " 16 | 3 | CONTROL OF "IN PROCESS" DEVIATE MATERIAL | 06/10/81 | 3 |
| XN-NF-1610P | 3 | SANDVIK CLAD PURCHASE ORDER | 03/30/78 | 0 |
| R-D106HS | 5 | QUALITY CONTROL STANDARD | - | 0 |
| R-018SS | 5 | PRODUCT SPEC. CLAD | - | 1 |
| XN-NF-Q55010 | 3 | SANDVIK " " | - | 5 |
| XN-NF-555018 | 2 | SANDVIK QQ PLAN | 8/23/82 | 2 |
| M 75010 | 8 | SANDVIK P.O. MEMO IDENTIFYING PLAN, QAM, OUTLINES | 5/7/82 | 7 |
| " | 8 | (POISON) IMPURITIES | 1/9/81 | 6 |
| " | 8 | DESIGN SPECIFICATION | 8/26/82 | - |
| | PELLET | B4C AL2O3 PELLET | - | 4 |
| XN-NF-55030 | 2 | BORON PRODUCTS CERTS | - | 2 |
| R-01067 | 5 | | | |
| | 9 | | | |

Columns:
 1. Sequential Item Number
 2. Type of Document
 3. Date of Document
 4. Revision (If applicable)

Document Types:
 1. Drawing
 2. Specification
 3. Procedure
 4. QA Manual
 5. Purchase Order
 6. Internal Memo
 7. Letter
 8. Other (Specify-if necessary)
 9.

Inspector McMill
 Scope/Module Enrichment of Impurities

DOCUMENTS EXAMINED

| 1 | 2 | TITLE/SUBJECT | 3 | 4 |
|---------------|---|---|---------|----|
| - | 9 | REVERT DATA FROM BORIDE PRODUCTS | - | - |
| - | 9 | EX ANALYTICAL REPORTS ON LOT 2746 | - | - |
| UTR 197 | 9 | NONCOMPARANCE REPORTS | - | - |
| NR 6692 | 9 | " | - | - |
| XU-NF-304/29 | 1 | BORON PELLETS | - | 2 |
| XU-NF-304/29L | 1 | Gd ₂ O ₃ FUEL PELLETS | - | 2 |
| XU-NF-530/20 | 2 | GADOLINIA BEARING URANIUM DIOXIDE PELLETS | 6/22/82 | 22 |
| XU-NF-P68152 | 2 | PELLET PROCESSING AND CERTIFICATION | 7/12/82 | 34 |
| | 9 | LOT CERTIFICATION 245-SP, -6P, FIKES | | |

Columns:
 1. Sequential Item Number
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 3. Date of Document
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Document Types:
 1. Drawing
 2. Specification
 3. Procedure
 4. QA Manual
 5. Purchase Order
 6. Internal Memo
 7. Letter
 8. Other (Specify-If necessary)
 9. Reports

DOCUMENTS EXAMINED

| 1 | 2 | TITLE/SUBJECT | 3 | 4 |
|----|---|---|----------------|---|
| 1 | 3 | Quality Control Standards (12) | — | — |
| 2 | 2 | Process Specification (24) | — | — |
| 3 | 3 | QA Procedure #17 XN-NF-P00,023 | 05/22/80 | 2 |
| 4 | 3 | QA Procedure #6 XN-NF-P00,001 | 5/28/82 | 8 |
| 5 | 8 | Partial Parts List XN-NF-PL-93 | 4/13/81 | ? |
| 6 | 2 | DRESDEN #2 XN-1 Process Spec Index XN-NF-IP-64 | 9/3/82 | 1 |
| 7 | 3 | Quality Control Standards Index XN-NF-10-28 | 8/23/82 | 5 |
| 8 | 3 | Doc. Control Std. Operating Procedure | 6/4/82 | 3 |
| 9 | 8 | Topical Report XN-NF-1A | — | 3 |
| 10 | 8 | Customer List | Sept 2, 1982 | — |
| 11 | 6 | EXXON INTERNAL CORRESPONDENCE ^{To:} C.J. Volmer ^{Fr:} C.J. GRANDO | March 19, 1982 | — |
| 12 | 6 | ✓ ✓ ✓ From C.J. GRANDO | 9 Aug 1982 | — |
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Document Types:

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| 1. Drawing | 5. Purchas Order |
| 2. Specification | 6. Internal Memo |
| 3. Procedure | 7. Letter |
| 4. QA Manual | 8. Other (Specify-if necessary) |

Columns:

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| 1. Sequential Item Number |
| 2. Type of Document |
| 3. Date of Document |
| 4. Revision (If applicable) |