

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

Report No. 99900002/80-01

Program No. 51500

Company: Combustion Engineering Inc.
1000 Prospect Hill Road
Windsor, Connecticut 06095

Inspection
Conducted: March 10-14, 1980

Inspector: W. M. McNeill
W. M. McNeill, Contractor Inspector
Components Section I
Vendor Inspection Branch

3-26-80
Date

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

3-26-80
Date

Summary

Inspection on March 10-14, 1980 (99900002/80-01)

Areas Inspected: Implementation of 10 CFR 50, Appendix B, including fuel assembly fabrication controls; control of nonconformances and corrective actions; review of manufacturing activities and action on previous findings. The inspection involved twenty-seven (27) inspector hours on site by one NRC inspector.

Results: In the four (4) areas inspected no apparent deviations or unresolved items were identified in the two (2) areas. The following deviation and unresolved item were identified in the remaining two (2) areas.

Deviation: Nonconformances and Corrective Actions - a lot of nonconforming fuel rods was not properly identified and one Deviation Notice was changed improperly in respect to Criterion V of Appendix B and the QA Manual. (See Notice of Deviation, Enclosure)

Unresolved Item: Fuel Assembly Controls - time did not permit retrieval of the Upper End Fitting Post's crimp qualification. C.E. agreed to find this report for the next inspection.

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DETAILS SECTION

A. Persons Contacted

P. A. Ferwerda, QC Engineering Supervisor
M. Gishard, Records Clerk
D. Kessler, Records Clerk
J. Moody, Manufacturing Foreman
A. Stathoplos, Reload Projects Manager
*M. R. Thomas, QC Manager
*J. E. Wahler, QA Manager

*Denotes those attending the Exit Interview.

B. Action on Previous Inspection Findings

Unresolved Item (Report No. 79-01): C. E. Engineering will specify the leak rate for acceptance of fuel rods in terms of air or helium. Procedure QC-15-11 has been revised to address the leak rate as "air equivalent." This procedure has been approved by the design department.

C. Fuel Assembly Fabrication Controls1. Objectives

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

- a. Quality control procedures and practices relating to final fuel assembly operations are sufficient to give assurance that the final assembled fuel bundle meets specifications and contractual requirements.
- b. The manufacturer's system is capable of producing quality fuel assemblies.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the Quality Assurance Manual dated March 1, 1977, Sections 1, Instruction, Procedures, and Drawings; 6, Inspection; 8, Inspection, Test and Operating Status which established the general requirements for fuel assembly fabrication controls.

- b. Review of the Standard Engineering Specification for 14 x 14 Fuel Assemblies, 00000-FCD-0100, Revision 0, and drawing Fuel Bundle Assembly Batch G, E8067-701-401, Revision 2 which established the specific requirements of fuel assembly fabrication.
- c. Witness of the inspection activities at the four (4) inspection stations and verification that Operation Sheets, Fuel Assembly Inspection, O. S. 1582, Revision 19, and Bundle Slewing Inspection, O. S. 1766, Revision 1 were properly implemented and consistent with the specification.
- d. Inspection of the Shop Travelers and their associated reports and verification that the above procedures were implemented and consistent with the specification.

3. Findings

a. Deviations

None

b. Unresolved Items

The Upper End Fitting Post are crimped. A drawing note requires the crimps to be capable of meeting a minimum torque. C. E. reportedly has qualified the crimping process but time did not permit retrieval of this from the files. C. E. agreed to find the report for the next inspection.

D. Nonconformances and Corrective Actions

1. Objectives

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

- a. The manufacturer's system contains sufficient measures to provide assurance that nonconforming materials, parts, or components are not inadvertently utilized and that prompt corrective actions are taken.
- b. The manufacturer's system meets the requirements of Criteria XV and XVI, Appendix B, 10 CFR 50.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the Quality Assurance Manual, dated March 1, 1977, Sections, 9, Nonconforming Items and 13, Corrective Action which established the general requirements for nonconformances corrective actions.
- b. Inspection of approximately 15 nonconforming items such as fuel rods, fuel assemblies, flow plates, end fittings, sleeves, and spacers and verification that the above was implemented properly. Review, approval, disposition, identification and document were verified.

3. Findings

a. Deviation

See Notice of Deviation

b. Unresolved Items

None

c. Comments

- (1) In regard to part A of the deviation the fuel rods, 35 of them, were in a storage box with one other rod on a different DN. The odd rod was rejected for a different reason and properly identified. The DN reportedly had been removed for dispositioning, however, the DN tear away corner was not left with the fuel rods. The lot was reidentified before the end of the inspection as corrective action.
- (2) In regard to part B of the deviation, the Lower End Fittings was reviewed by the QC department as corrective action. It appears that the manufacturing engineer, after the initial review and disposition, change the DN. The change appears to be the move of an inspection operation from one point in fabrication to a latter point. This change did not have the Quality Control Engineerings concurrence.

E. 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. In addition, the objectives were to identify any systematic or generic problems with fuel fabricated by the manufacturer. And, the objectives were to identify anticipated changes in fuel manufacturing and processing or in scope of supply.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Discussion with management and technical personnel on the above subjects.
- b. Observation of shop manufacturing activities on the above subjects.

3. Findings

At Maine-Yankee a higher than normal rate of fuel rod failures were noted and reported on PNO-I-80-31. These failures were associated with reloads EF, G and H. As of to date, the mechanism of failure has not been identified. A review was performed of the manufacturing data and the order input data (design) used by Combustion Engineering Nuclear Products Manufacturing. The pellet, spacer, spring, tubing lots of the specific failed rods were reviewed for reloads G and H. The identification of the specific failed rods for EF was unavailable. There appears to be no common element between the failed rods. There appears no unusual elements making these rods unique from others, nonfailures, processed at the same time.

F. Exit Interview

The inspector met with management representatives (denoted in paragraph A) at the conclusion of the inspection on March 14, 1980. 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.