

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

Report No. 99900005/81-02

Program No. 51500

Company: Westinghouse Electric Corporation
Nuclear Fuel Division
P. O. Box 355
Pittsburgh, PA 15230

Inspection
At: Columbia, South Carolina

Inspection
Conducted: May 4-7, 1981

Inspector: W. M. McNeill 6/22/81
W. M. McNeill, Contractor Inspector
Components Section,
Vendor Inspection Branch
Date

Approved By: D. E. Whitesell 6/22/81
D. E. Whitesell, Chief
Components Section,
Vendor Inspection Branch
Date

Summary

Inspection May 4-7, 1981 (Report No. 99900005/81-02).

Areas Inspected: Implementation of Topical Report and other applicable codes and standards, including control of special processes and equipment calibration. The inspection involved 27 inspector-hours on site by one NRC inspector.

Results: In the two areas inspected four nonconformances were identified.

Nonconformances: Control of Special Processes - A plating voltage outside the limits was being used contrary to the Operating Procedure OP-711001, Part 01, and Section 5 of the Topical Report (Notice of Nonconformance, Item A). Control of Special Processes - Procedures for plating were found which did not have the appropriate acceptance criteria and applicable parametric limits, contrary to Section 5 of the Topical Report (Notice of Nonconformance, Item B.). Control of Special Processes - there was not sufficient documentation to demonstrate that the procedure currently used for heat treatment of top nozzle springs had been qualified; contrary to the Quality Control Manual, QCOP-9.1 and Section 5 of the Topical Report

(notice of Nonconformance, Item C). Equipment Calibration - A Maintenance Calibration card failed to record a calibration that had been performed, and an entry was misdated; contrary to Quality Control Instruction QCI-000140, and Section 5 of the Topical Report (Notice of Nonconformance, Item D).

DETAILS SECTIONA. Persons Contacted

- *T. A. Bettendorf, Mechanical Operations Manager
- J. R. Bond, Quality Control Engineer
- J. Bowen, Maintenance Foreman
- *W. H. Britton, Manufacturing Manager
- G. T. Bullock, Manufacturing Supervisor
- *J. R. Bush, Quality Control Manager
- *H. J. Corey, Inspection Manager
- *R. R. Cost, Operations Product Assurance Manager
- M. A. Engle, Inspection Supervisor
- M. J. Field, Quality Control Engineer
- B. Greene, Manufacturing Supervisor
- *J. Hubick, Maintenance and Construction Manager
- *L. P. Kays, Plant Operations Product Assurance Manager
- R. L. Kesterson, Quality Control Engineer
- *W. Mauterer, Plant Operations Product Assurance Engineer
- M. A. Parker, Quality Control Development Manager
- *L. H. Reiland, Quality Control Engineer
- G. F. Rice, Plant Operation Product Assurance Engineer
- P. H. Strand, Analytical Services Supervisor
- J. M. Walters, Manufacturing Engineer

*Denotes those attending the Exit Interview.

B. Control of Special Processes1. Objectives

The objectives of this area of the inspection were to verify that special processes are properly qualified and controlled in accordance with Criterion IX, Appendix B, 10 CFR Part 50, and the Quality Assurance Manual.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the Westinghouse NFD Topical Report WCAP 7800, Revision 5A, Section 9, Control of Special Processes, which established the general requirements for controls of special processes.

- b. Review of the Quality Control Manual, Section 9.1, Revision 5, Control of Special Processes, which established the specific requirements.
- c. Review of the following design documents which established design requirements:

Drawing Grid Strap, 1137E42, Revision 7;

Process Specification, Brazing and Heat Treatment of Austenitic Stainless Steel and Inconel-718 Components, NPS 595210, Revision 21;

Process Specification, Nickel Plating of Inconel-718 for Brazing Purposes, NPS 595221, Revision 10;

Process Specification, Heat Treatment of Austenitic Stainless Steel Components, NPS 83032ZA-ZB, Revision 5;

Product Specification, Stainless Steel Nozzle Assemblies, NFP-310037, Revision 13;

Product Specification, Nickel-Alloy Fuel Assembly Grids, NFP-31039, Revision 18; and

Material Specification, Hardenable Nickel-Chromium-Iron Alloy Sheet, Strip, and Plate NFP-31002, Revision 9.

- d. Review of the following Quality Control Instructions (QCIs) and Operating Procedures (OPs) which established additional requirements.

Inner and Outer Grid Straps - Plating Inspection, Bend Test, Packing, QCI-934001, Revision 11;

Nickel Plate Thickness Tester - Nickel Scope QCI-934002, Revision 7;

Tensile Test and Hardness Test - After Age Hardening - Grids, T/N Springs and Spring Retainers QCI-934102, Revision 14;

Grids, Spiders, T/N Springs, Machined Components, Spring Retainers - Furnance Temperature and Vacuum Charts, QCI-934103, Revision 22;

Plate Strap, OP-711001, Revision 12;

Prepare Pre-etch Solution, OP-715103, Revision 1;
Prepare Electro-Clean Solution, OP-715105, Revision 2;
Prepare Nickel Strike Solution, OP-715202, Revision 2;
Prepare Nickel Plating Solution, OP-715203, Revision 3;
Check Pre, Post and Plating Solutions, OP-715210, Revision 1;
Operate pH Meter, OP-715219, Revision 2;
Age Harden Grids, OP-710905, Revision 2; and
Age Harden Top Nozzle Springs, OP-710908, Revision 2.

- e. Inspection of plating, and age hardening activities in process in the shop. This inspection included the implementation of the above procedures. Also, the translation of design requirements into procedures was verified for all of the above procedures. The qualification reports of the above procedures were inspected. The use of approved visual standards and calibrated equipment was verified. The documentation of inspections and inspection results were verified. The Analytical Chemistry Work Requests were inspected to check implementation of the above. The use of current procedures at the work stations was verified.

3. Findings

a. Nonconformances

Notice of Nonconformance, Items A, B, and C.

b. Unresolved Items

None

c. Comments

The Process Specification, Nickel Plating of Inconel-718 for Brazing Purposes, 595221, Revision 10, Sections 4.1.1 and 4.1.2 required a plating sample to be taken each hour, or fraction of an hour of production. The Quality Control Instruction, Inner and Outer Grid Strap - Plating Inspection, Bend Test, Packing QCI-934001, Revision 11, defined a sample to be taken each hour and did not address fractions of hours. In this process the operator physically draws the sample for

the quality control inspector. The Operating Procedure, Plate Strap, OP-711001, Revision 12, defined one strap from each lot of 26 racks or less to be sampled. Dependent on design, one hour of production could be significantly more or less than 26 racks. Before the end of this inspection the Process Specification, Quality Control Instruction, and Operating Procedure were all being revised to a yet different sampling plan.

The Process Specification, 595221, required the current density for etch, strike, and plate baths, to meet given ampere limits. The Operating Procedure OP-711001 did not exactly translate these limits. The Operating Procedures limits were broader than the Process Specification limits. Before the end of this inspection, steps were being taken to change the ampere limits to an informational note in the Process Specification.

C. Equipment Calibration

1. Objectives

The objectives of this area of the inspection were to verify that the control of measuring and test equipment (M&TE) assures that only properly calibrated M&TE are utilized in the manufacturing and inspection of fuel.

2. Method of Accomplishment

The preceding objectives were accomplished by:

- a. Review of the Westinghouse WFD Topical Report WCAP 7800, Revision 5A, Section 12, Control of Measuring and Test Equipment, which established the general requirements for equipment calibration.
- b. Review of the Quality Control Manual, Section 12.1, Revision 6, Control of Measuring and Test Equipment, which established the specific requirements for equipment calibration.
- c. Review of the following Quality Control Instruction (QCIs) which established additional requirements for calibration:

Tool and Gage Control, OCI-000140, Revision 9; and

Balance and Scale Calibration and Operational Checks, QCI-910202, Revision 11.

- d. Inspection of a sample of 25 tools, scales, balances, gages, instruments, etc. found to be in use on the shop floor. The inspection verified the implementation of the above procedures. The inspection included verification of the status, identification, records, gage inspection procedures, schedules and standards used for gage inspection.

3. Findings

a. Nonconformance

Notice of Nonconformance, Item D

b. Unresolved Items

None

D. Exit Interview

The inspector met with management representatives (denoted in paragraph A) at the conclusion of the inspection on May 7, 1981. The inspector summarized the scope and findings of the inspection. The management representatives had no comment in response to the items discussed by the inspector.