

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

Report No. 99900003/80-02

Program No. 51500

Company: General Electric Company
Wilmington Manufacturing Department
Box 780
Wilmington, North Carolina 28401

Inspection Conducted: August 19-22, 1980

Inspectors:

W. M. McNeill

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

8/29/80
Date

Approved by:

D. E. Whitesell

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

9/2/80
Date

Summary

Inspection on August 19-22, 1980 (99900003/80-02)

Areas Inspected: Implementation of the Topical Report including document controls; control of nonconformances and corrective actions; and action on previous inspection findings. The inspection involved twenty-eight (28) inspector-hours on site by one (1) NRC inspector.

Results: In the four (4) areas inspected, no apparent deviations or unresolved items were identified in three (3) areas. The following deviation was identified in the remaining one area.

Deviations: Controls of Nonconformances and Corrective Actions - Nonconforming channels were not segregated and Inspection Reports were not attached as required by Procedure 70-33 (See Notice of Deviation).

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DETAILS SECTION IA. Persons Contacted

J. B. Baldwin, Process Control Engineer
 R. C. Barnhill, Process Control Technician
 *J. T. Duncan, Process Control Engineer
 *C. W. Doyle, Quality Audits and Customer Service Manager
 L. W. Emory, Manufacturing Engineer
 J. M. Eason, Process Control Engineer
 J. A. Ferencak, QC Planner
 W. W. Lace, Quality Engineer
 *E. A. Lees, Quality Assurance Manager
 *J. H. Liberman, QA Engineer
 R. J. Nicklaw, Receiving Inspection Supervisor
 C. H. Soleanes, Hydrodynamics and Mechanical Design Manager
 *L. A. Sheely, Fuel Quality Manager
 K. Toussint, Quality Control Engineer
 *E. D. Singer, Fuel Quality Control Engineering Manager
 J. L. Truitt, Process Control Engineer
 *R. C. Van Dwyne, Equipment Process Engineering Control Manager
 C. B. Weidner, Process Control Engineer

*Denotes those attending the exit interview.

B. Action on Previous Inspection Findings

(Closed) Deviation (Report No. 80-01): The nonconformance system was not fully implemented in the areas of repair planning, documentation of dispositions, tagging of parts under repair and tagging of parts identified as nonconforming. The additional training of the staff and inspectors was documented. A review of Inspection Reports (IRs) on split lots, NDE rejects, first piece rejects, and their associated hardware found in the Equipment Manufacturing shop found no problems.

(Closed) Deviation (Report No. 80-01): The lot quantity identified on Shop Travelers did not agree with the actual quantity. A review of selected lots found no reoccurrence of this problem.

(Closed) Deviation (Report No. 80-01): Welding instruments were not tagged as to be calibrated or to be not calibrated. The instruments were found tagged, or to be tagged shortly. In the close out of this deviation the following open item was identified:

Open Item: The General Electric specification on welding of zirconium alloys identifies chemistry requirements. General Electric has yet to fully document its justification on control of the chemistry requirements via visual standards. General Electric agreed to document its rationale in a Quality Notice by the next inspection.

C. 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 reasonable 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 Topical Report, BWR Quality Assurance Program Description, NEDO-11209-04A, Section 15, Nonconforming, Parts, or Components, and the Wilmington Manufacturing Department Quality Assurance Program, NEDE-20586, Revision 7, Section 6.15, Nonconforming Parts or Components which establish the general requirements.
- b. Review of the following practice and procedures (P/Ps) and Quality Assurance Section Administrative Routines (QASARs) which established the specific requirements:

Material Review, P/P 70-5, Revision 5;

Nonconforming Material Control P/P 70-33, Revision 6;
Shop Documentation System-FCO, P/P 80-27, Revision 2; and

Nonconforming Measurement and Test Equipment, QASAR 320-603, Revision 4.

- c. Inspection of several lots of channels found in the Fuel Component Operations (FCO) shop and verification of the above procedures were implemented. The verification included the disposition, repair and identification of materials.

3. Findingsa. Deviations

(See Notice of Deviation)

b. Unresolved Items

None

c. Comments

Channel serial number (S/N) 96856 was missing IR CH1583 which had been issued on S/N 96856. Channel S/N 81023 had IR CH-1243 with it which was not issued on S/N 81023. The shop travelers did reflect the correct information for these channels.

D. Document Control1. 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 Topical Report, BWR Quality Assurance Program Description, NEDO-11209-04A, Section 6, Document Control and the Wilmington Manufacturing Department Quality Assurance Program, NEDE-20586, Revision 7, Section 6.6, Document Control which establishes the general requirements.
- b. Review of the following practice and procedures (P/Ps) and Quality Assurance Section Administrative Routines (QASARs) which established the specific requirements:

Implementation of Planning Changes - EM, P/P 80-33, Revision 6;

Review and Approval of Engineering Charge Notices/Requests, P/P 80-35, Revision 3;

Implementation of Engineering Change Notices,
P/P 80-36, Revision 3;

Master Planning File - EM, P/P 80-42, Revision 6;

Purchased Material Quality Control Planning, QASAR 320-40.7
Revision 1;

Quality Control Inspection Planning - EM, QASAR 320-100.4,
Revision 2 and;

Quality Control Test Instruction - EM, QASAR 320-100.7,

- c. Inspection of the review, distribution, and control of Quality Control Inspection Instructions, Quality Inspection Standards, Quality Control Test Instruction and Quality Control Examination Instructions. Verification of the above, procedures in the Equipment Manufacturing (EM) shop at six (6) inspection stations.

3. Findings

a. Deviations

None

b. Unresolved Items

None

E. Jet Pump Hold-Down Beam Failures

1. Objectives

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

- a. A study had been made of recent failures of jet pump hold-down beam failures and that the causes of failures, generic considerations, and prevent action have been addressed.
- b. An independent verification of the accuracy and completeness of the information related to the above as can be found at the site.

2. Method of Accomplishment

- a. Review of the problem with design and manufacturing personnel.
- b. Inspection of the subvendor data package, material test reports, assembly records, and nonconformances reports.

3. Findings

a. Deviations

None

b. Unresolved Items

None

c. Comments

At Dresden Unit 3 on February 2, 1980, a Jet Pump Hold-Down Beam Assembly failed. Subsequent ultrasonic examination of the other Jet Pump Beams found 6 of the remaining 19 indicating a crack. Quad Cities 2 found one and Pilgrim 1 found 3 ultrasonic crack indications. The cracking generally starts at the top side of the beam on the ID of the thru thread hole. The threads are ACME stub type. The beam is annealed and heat treated Inconel (ASTM 461GR588). The early BWR Jet Pump Beams were supplied to General Electric by Bingham-Willamette (then Willamette Iron and Steel). The plants fabricated at Willamette were Dresden 2 and 3, Nuclear, Monticello, Pilgrim 1, Quad Cities 2, Peach bottom 2, and Fuskushima. Failures have been reported at Dresden 3 and Nuclear. Ultrasonic indications have been found at Monticello, Pilgrim 1, Quad Cities 2 and Fuskushima. All of these are BWR 2 and 3 designs. BWR 4 and 5 designs have been fabricated at the Wilmington Manufacturing Department. There is reportedly slight increase in the beam size from the BWR 2 and 3 designs to the BWR 4 and 5. The preventative action on this problem is to reduce the preload and change the annealing to a higher temperature. A review of the Willamette and General Electric fabrication records showed no particular uniqueness in the heats involved. The problem appears to be generic to all BWRs. The general Electric position is that the failure mechanism is intergranular stress corrosion.

F. Exit Interview

The inspectors met with management representatives (denoted in paragraph A) at the conclusion of the inspection on August 22, 1980. The inspectors summarized the scope and findings of the inspection. The management representatives had no comments in response to each item discussed by the inspectors.