

ORGANIZATION: WESTINGHOUSE ELECTRIC CORPORATION
 PENSACOLA PLANT
 PENSACOLA, FLORIDA

REPORT NO.:	99900104/82-02	INSPECTION DATE(S)	7/26-29/82	INSPECTION ON-SITE HOURS:	25
CORRESPONDENCE ADDRESS: Westinghouse Electric Corporation Pensacola Plant ATTN: Mr. T. D. Miller, Manager, Product Assurance P. O. Box 1313 Pensacola, FL 32596					
ORGANIZATIONAL CONTACT: Mr. T. D. Miller, Manager, Product Assurance TELEPHONE NUMBER: (904) 477-0535					
PRINCIPAL PRODUCT: Nuclear Reactor Vessel Internals, Steam Generators, and Pressurizers					
NUCLEAR INDUSTRY ACTIVITY: Approximately 90%					
ASSIGNED INSPECTOR:	<u>R. E. Oller</u>			<u>8-19-82</u>	Date
	R. E. Oller, Reactive and Component Program Section (R&CPS)				
OTHER INSPECTOR(S):					
APPROVED BY:	<u>I. Barnes</u>			<u>8-19-82</u>	Date
	I. Barnes, Chief, R&CPS				
INSPECTION BASES AND SCOPE:					
A. <u>BASES</u> : 10 CFR Part 50 Appendix B, and 10 CFR Part 21.					
B. <u>SCOPE</u> : This inspection was performed to evaluate the implementation of the vendor's QA program in the areas of: material identification and control; weld joint fitup and welding; weld heat treatment; and liquid penetrant examination. In addition, a followup was made in respect to a 10 CFR Part 50.55(e) construction deficiency report by Northeast Utilities/Millstone Unit 3, and a Westinghouse 10 CFR Part 21 report concerning susceptibility for stress corrosion cracking of control rod guide tube support pins.					
PLANT SITE APPLICABILITY:					
All domestic plants having Westinghouse PWR's.					
DESIGNATED ORIGINAL Certified By <u>Rheanne Smith</u>					

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A. VIOLATIONS:

None

B. NONCONFORMANCES:

None

C. UNRESOLVED ITEMS:

None

D. OTHER FINDINGS AND COMMENTS:

1. Material Identification and Control: The NRC inspector reviewed Section 8 of the vendor's QA Manual, which was applicable to identification and control of materials.

Observations were made of the heat numbers and/or serial numbers (low stress steel stampings) on 10 subassemblies which made up the Four-Loop Upper Internal and Core Barrel Fitup Assembly of reactor pressure vessel internals for Job Order No. 424 (Vogtle No. 2), to verify that traceable identification is maintained during fabrication and the markings are legible and not detrimental to the item.

To verify that material is identified, controlled, and the results documented in accordance with requirements, a review was made of: manufacturing route sheets for three major reactor vessel internal assemblies; an engineering release for six manufacturing instructions; two manufacturing instructions; an inspection instruction, numerous assembly status sheets; and a fabrication drawing.

Within this area of the inspection, no nonconformances or unresolved items, in respect to NRC, ASME Code, and QA Program requirements, were identified.

2. Weld Joint Fitup and Welding: The NRC inspector reviewed Section 9 of the vendor's QA Manual, which was applicable to the control of fitup and welding.

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Observations were made of in-process Code welding on two different steam generator subassemblies to verify that the essential variables and other parameters of the applicable welding procedure specification (WPS) were being followed at the work stations; also, that the welding equipment was in good condition and calibrated where required.

To verify that the welding is conducted in accordance with a process control traveler; the welding is performed by qualified personnel; weld geometry and fitup meet Code requirements; repairs by welding are performed in accordance with Code requirements by qualified personnel; and the welding is suitably documented, a review was made of: an in-process route sheet controlling the welding of a trunnion to a steam generator barrel; the specified WPS; the related QC weld log record; a weld repair route sheet controlling a stainless steel cladding repair in a nozzle of a steam generator channel head; the related weld status sheet record; and qualification records for the three welders who performed the observed welding.

Within the area of the inspection, no nonconformances or unresolved items, in respect to the NRC, ASME Code, and QA program requirements, were identified.

3. Weld Heat Treatment: The inspector reviewed paragraph 9.5 of Section 9 of the vendor's QA Manual, which was applicable to the control of post-weld heat treatment (PWHT) of welds.

Observations were made of the stress-relieved girth welds and thermo-couple attachment areas, on a steam generator lower shell assembly, which had just been removed from a vertical electric furnace. Also, the calibration status of the six temperature controllers on the furnace control console was observed.

To verify that the PWHT of the welds in the steam generator assembly was controlled by a process control traveler; the PWHT was performed in accordance with an approved procedure; and the results were documented and evaluated; a review was made of: three pages of the applicable route sheet for the observed assembly on Shop Order No.4032; the specified PWHT Procedure No. DMP-15-4-5524, Revision 9; Inspection Procedure No. QIP-3146, Revision 2; and the QIP-3146 heat treatment summary record sheet.

Within this area of the inspection, no nonconformances or unresolved items, in respect to the NRC, ASME Code, and QA program requirements, were identified.

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4. Liquid Penetrant Examination: The NRC inspector reviewed paragraph 9.4 of Section 9 of the vendor's QA Manual, which was applicable to the control of nondestructive examination.

Observations were made of liquid penetrant examination (PT) of a machined hardfacing surface on a vessel clevice, and of an electron beam butt weld in an instrumentation column assembly. Also, the containers of two dye penetrants, the developer, and the cleaner in use were observed for Westinghouse identification heat numbers, to verify traceability.

To verify that the performance of PT is controlled by a process traveler, performed in accordance with an approved and qualified procedure by qualified personnel, and the results are properly documented and evaluated, a review was made of: the controlling original route sheet and a repair route sheet for the PT of the hardfacing of the above vessel clevice; the related quality inspection procedure; the sensitivity report for the PT materials; the demonstration record for the PT Procedure QIP-8102; the P. O., receiving inspection report, quality release and the supplier's certifications for all of the observed PT materials; the route sheet controlling the PT of the above butt weld, and records of certification for the two Level 2 NDE technicians who performed the above PT.

Within this area of the inspection, no nonconformances or unresolved items, with regard to the NRC, ASME Code, and QA program requirements, were identified.

5. Control Rod Guide Tube Support Pins:

- a. Introduction: This item is a followup at the Westinghouse Pensacola, Florida, reactor vessel internals manufacturing plant, of a 10 CFR Part 50.55(e) report by Northeast Utilities/Millstone Unit 3, and a 10 CFR Part 21 report by Westinghouse Electric Corporation to the NRC, concerning the identification of potential failures of control rod guide tube support pins due to stress corrosion cracking. This matter was previously followed up on at the Westinghouse Nuclear Technology Division in Monroeville, Pennsylvania (see Inspection Report No. 99900404/81-02).

The event which prompted Westinghouse to report this matter was an inspection at a foreign plant where stress corrosion cracking of these pins was detected. Northeast Utilities reported this matter to the NRC, based on information which Westinghouse supplied to them.

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Prior to 1982, pin failures had occurred only in foreign plants. Since then, pin failures have occurred in the North Anna Unit 1 Plant in May 1982, and in a French plant.

- b. Findings: Review during this inspection, verified that Millstone 3 was initially reported by Westinghouse as containing support pins which had been solution heat-treated at less than 1800° F, and were, therefore, considered susceptible to stress corrosion cracking. However, during a later review of manufacturing information by Westinghouse, it was determined that Millstone 3 pins had received an 1800° F solution heat treatment and were no longer considered suspect.

In regard to the overall pin problem, the support pins furnished by Westinghouse for domestic plants are made from Inconel X-750 material, and purchased from various suppliers in a final machined, solution annealed and age-hardened heat-treated condition. Review of an early Westinghouse purchase specification (1967) for support pins showed requirements for only chemical composition, a 1325° F age-hardening heat treatment, and a minimum hardness value as evidence of mechanical properties. In later purchase specifications, an 1800° F solution treatment and 1350° F age-hardening heat treatment were specified by ordering the pin material to Grade 688, Type 2 of the ASME SA-637 specification. The most recent Westinghouse purchase specification No. A637C01, Revision A, dated September 30, 1981, specifically identifies a required 2000° F solution heat treatment and a 1300° F age-hardening heat treatment. This 2000° F treatment is based on research performed by Westinghouse and is considered the temperature which will provide the optimum resistance to stress corrosion cracking in the support pin material. All replacement pins, including those for North Anna 1, will have the 2000° F heat treatment.

Other corrective/preventive actions by Westinghouse were to redesign the pin dimensions and to lower the pin installation torque requirements.

Review also verified that Westinghouse has accounted for all domestic operating and nonoperating plants with pins having low solution heat treatment (1625° F) and all domestic plants which

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have had the pins replaced with the improved solution heat-treated pin material. All foreign plants in both categories have also been accounted for.

Westinghouse has contacted all affected operating plants. They have issued two written notifications dated July 1 and July 22, 1982, to their affected clients, in which their report to the NRC has been noted concerning the suspect pins. Also, a recommendation for monitoring and inspection of the pins was made.

In addition, after a recent French plant pin failure, Westinghouse conducted an information exchange on June 2, 1982, with the NRC Office of Inspection and Enforcement in Bethesda, Maryland, with regard to the status of the pin problem.

This inspection verified that the 10 CFR Part 21 reporting requirements were met by Westinghouse concerning informing the NRC and affected clients.

Within this area of the inspection, no nonconformances, unresolved items, or violations were identified.

Inspector R.E. OllerDocket No. 9980104Report No. 82-02Page 1 of 6Scope/Module Material Identification
and ControlDOCUMENTS EXAMINED

1	2	TITLE/SUBJECT	3	4
1	4	Westinghouse Pensacola Plant (WPP) QA Manual Section 8	6-30-81	3
2	8	Following in-process route sheets and other records for reactor internal assemblies for Job order 424:		
		(1)(a) Route Sheet for a Four Loop Core Barrel and Core Plate Assembly S.N. - 69325.	-	N.A.
		(b) Inspection Instruction for Operation 340 of the R.S.	-	"
		(c) Related Assembly Status Sheets (14)	-	"
		(2)(a) Route sheet for a Four Loop Core Barrel Assembly S.N. - 69325		
		(b) Assembly Status Sheets	-	"
		(3)(a) Route Sheet for a Four Loop - Barrel Former Assembly S.N. - 69325.		
		(b) Assembly Status Sheets		
		(4) Engineering Release No. 702 for Six Manufacturing Instructions	-	"
		(5) Manufacturing Instructions No. 080-01 & No. 240-01	-	"
		(6) Fabrication Drawings 611 7E08, Sub. 5, Four Loop, core Barrel Assembly, sheet 1 of 2 and 2 of 2	-	-

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) |

DOCUMENTS EXAMINED

1	2	TITLE/SUBJECT	3	4
1	4	WPP QA Manual Section 9 "Control of Construction Processes"	4-27-82	5
2	8	Following related job records and procedures: (1) Route Sheet for Steam Generator Lower Barrel, SN. 82371, for Shop Order 4051, weld operation 240. (2) QC Weld Log record for above weld operation (3) Welding Procedure Specification NPS-4148-2 Rev. 4 and Fitup sketch.	-	NA.
3	8	Following related job records and procedure: (1) Weld Repair Route Sheet, MRR-3115 for Steam Generator Channel Head Nozzle Clad Repair on Shop Order No 4013. Assembly 1513 EIR-A01, SN. DB97 (2) Weld Status Sheet for above welding.	-	"
4	8	Qualification Records for Welders No. 541, No. 8061 and No. 8007.	-	"

Document Types:

- 1. Drawing
- 2. Specification
- 3. Procedure
- 4. QA Manual
- 5. Purchase Order
- 6. Internal Memo
- 7. Letter
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1	2	TITLE/SUBJECT	3	4
1	4	WPP QA Manual paragraph 9.5, "Control of Heat Treatment" of Section 9.	4-27-82	5
2	8	Following related job records and procedures: (1) Route Sheet for Steam Generator Lower Shell, SN 79195 pp. 15, 16 & 17, Shop Order 4032, Dwg 1513E62, It. G-01, covers post-weld heat treatment of girth welds completed (2) QIP-3146 Heat Treatment Summary record sheet. (3) Detailed Manufacturing Procedure No. DMP-15-4-5524 "Heat Treatment Procedure" (4) Quality Inspection Procedure No. QIP-3146	- - 7-2-82 -	NA " 9 2

Document Types:

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| 1. Drawing | 5. Purchase Order |
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1	2	TITLE/SUBJECT	3	4
1	4	WPP QA Manual paragraph 9.4, "Control of Nondestructive Examination" of Section 9.	4-27-82	5
2	8	Following related job records and procedures: (1) Route Sheet for core support hard facing of vessel clevice, Shop Order 445, SN. BE63-AC5	-	NA
		(2) Repair Route sheet per MRR # 3286	-	"
		(3) Quality Inspection Procedure QIP-8102	-	15
		(4) Liquid Penetrant Sensitivity Report sheet for QIP-8102 for PT materials	1-12-82	NA
		(5) Demonstration of NDE QIPs record for QIP-8102	6-16-82	"
		(6) WPP P.O. 54-3, 6188333 for penetrant materials	-	"
		(7) W Quality Release No. 152287	1-8-82	"
		(8) Four supplier certificates for PT materials	-	"
		(9) WPP Receiving Inspection Report for PT Materials	1-8-82	"
3	8	Route Sheet for PT of Bolt Instrumentation Column Assembly" for Shop Order 334, Dwg. 6120E66, Sub. 02	-	"
4	8	Qualification & Certification records for two Level 2 NDE Technicians for ^{the} PT technique	Various	"

Document Types:

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Support PinsDOCUMENTS EXAMINED

1	2	TITLE/SUBJECT	3	4
1	7	Westinghouse Electric Corporation Letter, March 14, 1980, NS-TMA-2214, to Victor Stelle, Director, Office of Inspection & Enforcement, USNRC.	3-14-80	N.A.
2	7	North East Utilities/Millstone 3 Letter, April 15, 1980 to USNRC.	4-15-80	"
3	7	Westinghouse Memorandum, July 8, 1982, status of PWR Operating & Non-Operating plants with Less Than 1800°F, and status of replacement support pin program	7-8-82	"
4	7	Copy of WPP letter text sent on 7-22-82 to utility operating units affected by support pins heat treated at less than 1800°F	7-22-82	"
5	3	W Purchase Specification PD Spec. 15106 DA, Rev. A "Hardenable Nickel Alloy Bars"	2-5-67	A
6	3	W Purchase Specification PS 83020 HF, Rev. 1, "Precipitation Hardening Treatment For A Nickel Base Alloy"	6-2-75	1
7	3	W Purchase ^{Chase} Specification NO A637E01, Rev A, 8-30-81		

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Document Types:

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

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Inspector R.E. Oller
 Scope/Module Control Rod Guide
 Tube Support Pins

DOCUMENTS EXAMINED

1	2	TITLE/SUBJECT	3	4
7 (cont)	3 (cont)	"SA-637, Grade 688, Bars (Special Requirements)	83081	A
8	3	WPP Procedure No PS-83020-TW, Rev. 2, "Heat Treatment And Other Requirements For A Nickel Base Alloy"	4-2580	2
9	8	Record consisting of W manufacturing information data log sheet p10 of 10 covering Millstone 3 support pin heat treatment.	-	N.A.
10	3	W Corporate standard process Specification 291841 & 830309A, Rev B, Apr, 1976	April, 1976	"

- Document Types:
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