

Part 21 (PAR)

Event # 52487

<b>Rep Org:</b> CURTISS WRIGHT ELECTRO MECHANICAL C	<b>Notification Date / Time:</b> 01/13/2017 13:56 (EST)
<b>Supplier:</b> WESTINGHOUSE ELECTRIC CORPORATION	<b>Event Date / Time:</b> 01/12/2017 (EST)
	<b>Last Modification:</b> 06/29/2017
<b>Region:</b> 1	<b>Docket #:</b>
<b>City:</b> CHESWICK	<b>Agreement State:</b> Yes
<b>County:</b>	<b>License #:</b>
<b>State:</b> PA	
<b>NRC Notified by:</b> JAY GARDINER	<b>Notifications:</b> SCOTT SHAEFFER R2DO
<b>HQ Ops Officer:</b> JOHN SHOEMAKER	PART 21/50.55 REACTORS EMAIL
<b>Emergency Class:</b> NON EMERGENCY	
<b>10 CFR Section:</b>	
21.21(a)(2) INTERIM EVAL OF DEVIATION	

**PART 21 INTERIM REPORT - EXCESS MATERIAL CONDITION ON THE CASING FOR THE AP1000 REACTOR COOLANT PUMP**

The following summary was excerpted from report #EMD-GM-17-02, provided by the Curtis-Wright Electro-Mechanical Corporation:

"Curtiss-Wright Electro-Mechanical Corporation (CW-EMD) has identified a condition which is currently being evaluated to determine if a significant safety hazard exists in the casing for the AP1000 Reactor Coolant Pump (RCP). The investigation is underway, but will not be completed within the required 60 days from discovery as required by paragraph 21.21(a)(1) of the regulation. This submission constitutes CW-EMD's interim report on the condition in accordance with paragraph 21.21(a)(2) of the regulation.

"Casings for the AP1000 Reactor Coolant Pump. The casings have an excess material condition in the transition region between the cast bowl and the suction nozzle. The condition is a discontinuous (non-tangential) axisymmetric feature between the cast bowl region and machined suction nozzle OD. The as-built transition feature on the casings has not been analyzed and is not included in CW-EMD Engineering Memorandum 7242, Revision 1, Volume 1, which is the applicable generic design report for the AP1000 RCP casing and main closure.

"At present, the following domestic deliveries have been made:

- 8 casings have been provided to V.C. Summer Units 2 and 3.
- 8 casings have been provided to Vogtle Units 3 and 4.

"Name and address of the individual or individuals informing the Commission:

Brian W. Eckels, General Manager  
Curtiss-Wright Electro-Mechanical Corporation

IEI9  
NR0

1000 Wright Way Cheswick, Pa 15024"

\*\*\* UPDATE AT 1238 EDT ON 06/29/17 FROM JAY GARDINER TO JEFF HERRERA \*\*\*

The following update was received via email:

"Curtiss-Wright Electro-Mechanical Corporation (CW-EMD) submitted an interim report concerning a deviation in the AP1000 Reactor Coolant Pump casing via letter EMD-GM-17-02, dated January 12, 2017. This letter updates the status of the investigation.

"1. Extent of condition evaluation has been completed. CW-EMD has confirmed that the discontinuous (non-tangential) axisymmetric feature between the cast bowl region and machined suction nozzle OD is limited (domestically) to the 8 AP1000 RCP casings delivered to V.C. Summer units 2 & 3.

"2. AP1000 RCP casing stress and fatigue supplemental analyses have been performed to assess the excess material condition discovered on the suction nozzle OD. The deviation has been determined to still satisfactorily meet the pressure boundary stress requirements of the ASME Code and can therefore be accepted as-is.

"3. The analysis included generation of a 2D axisymmetric FEA [Finite Element Analysis] of the casing with a bounding representation of the as-built geometry, based on extraction of cross-sectional profiles from the V.C. Summer laser scan data of 2 casings. The 2D FEA was used to determine the stress concentration factor(s) associated with the as-built deviated feature, enabling a fatigue strength reduction factor to be estimated and applied to the existing 3D FEA casing fatigue (nominal design) analysis.

"4. The maximum fatigue usage at the location of the deviation on the casing suction nozzle was conservatively estimated to increase from 0.287 to 0.633. This condition still satisfies the 1.0 usage limit specified in the ASME Code.

"5. Therefore, this deviation does not constitute a substantial safety hazard, and the condition has been determined to be not reportable under the provisions of Title 10 Code of Federal Regulations, Part 21."

Notified the R2DO(Bartley) and Part 21 Group (via email).

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EMD  
EMS Division  
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EMD-GM-17-32

June 29, 2017

Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Attn: Document Control Desk

Subject: Report of Potential Substantial Safety Hazard in accordance with Title 10 Code of Federal Regulations, Part 21

Reference: a) Curtiss Wright Electro-Mechanical Corporation letter EMD-GM-17-02, dated January 12, 2017

Curtiss-Wright Electro-Mechanical Corporation (CW-EMD) submitted an interim report concerning a deviation in the AP1000 Reactor Coolant Pump casing via Reference a. This letter updates the status of the investigation.

1. Extent of condition evaluation has been completed. CW-EMD has confirmed that the discontinuous (non-tangential) axisymmetric feature between the cast bowl region and machined suction nozzle OD is limited (domestically) to the 8 AP1000 RCP casings delivered to V.C. Summer units 2 & 3.
2. AP1000 RCP casing stress and fatigue supplemental analyses have been performed to assess the excess material condition discovered on the suction nozzle OD. The deviation has been determined to still satisfactorily meet the pressure boundary stress requirements of the ASME Code and can therefore be accepted as-is.
3. The analysis included generation of a 2D axisymmetric FEA of the casing with a bounding representation of the as-built geometry, based on extraction of cross-sectional profiles from the V.C. Summer laser scan data of 2 casings. The 2D FEA was used to determine the stress concentration factor(s) associated with the as-built deviated feature, enabling a fatigue strength reduction factor to be estimated and applied to the existing 3D FEA casing fatigue (nominal design) analysis.
4. The maximum fatigue usage at the location of the deviation on the casing suction nozzle was conservatively estimated to increase from 0.287 to 0.633. This condition still satisfies the 1.0 usage limit specified in the ASME Code.
5. Therefore, this deviation does not constitute a substantial safety hazard, and the condition has been determined to be not reportable under the provisions of Title 10 Code of Federal Regulations, Part 21.

  
Brian W. Eckels, General Manager  
Curtiss-Wright Electro-Mechanical Corporation

Copy to: Westinghouse Electric Company