



Measurement Systems

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From: Clayton Timbs
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4040 Capitol Ave,
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April 1, 2015

AG

To: Eugene Huang

Subject: Unresolved Item (URI) 99901370/2016-201-01 / Cameron CPAR 210125856 - O-Ring Groove Differences

Dear Mr. Huang,

We have completed our review of the subject item and our findings are included below.

CPAR 210125856 Findings:

As a result of NRC inspection 99901370/2016-201 an Unresolved Issue was identified related to the quantity of O-ring vent grooves on valve seats for Model 580A DP Indicating Switches. These vent grooves in the Model 224 DPU (Differential Pressure Unit) that operates the Model 580A DP Indicating Switch are part of the instrument's overrange/underrange protection feature but have no nuclear safety related function with respect to the Nuclear Qualification program associated with these instruments. Engineering report 50277300-C-0012591 identified that under comparison the ITT Barton manufactured instrument had four of these vent grooves while the Cameron manufactured instruments had three of these grooves.

The vent grooves are intended to facilitate passage of the DPU contained fill fluid past the O-ring when an instrument underrange or overrange condition is initially alleviated. This overrange/underrange protection feature is provided to protect the instrument from damage in the event the instrument is inadvertently placed into service or removed from service in an erroneous way that causes the instrument to be subjected to differential pressure in excess of its normal manufactured operating range. While the instrument is protected from damage caused by this abnormal occurrence, it could impact the instrument performance in a manner that the instrument calibration would need to be verified and possibly adjusted.

A review of the engineering document change history for the vent groove requirement on the valve seat components referenced in the report did not show a change in the groove quantity (3) from the original to the current design. However we did find that there were revisions to other versions of the valve seat in the 1980's to change the requirement to "3 GROOVES MIN | GROOVE CONFIGURATION OPTIONAL" (ref ECO 17328 6/28/85). It was also identified that units with the 3 vent grooves were included in the

4/13/16 Original
SunST completed

ML16107A-11

IE09
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Barton report R3-580A-9 nuclear qualification testing program and 4 vent grooves were included in the Barton report R3-580A-29 nuclear qualification testing program.

The existence of 3 or 4 underrange/overrange O-ring vent grooves has no impact on the nuclear safety related operability of the associated nuclear qualified products as this protective feature is considered outside the bounds of the nuclear qualification programs. This and the fact that both vent groove designs were included in nuclear qualification test programs, where DPU performance issues were not a concern, along with the fact that the new non-nuclear qualified Barton Model 224C DPU operated products with the four vent groove design has proven to be highly reliable in military and commercial applications provides reasonable assurance that both the three and four vent groove designs do not represent a nuclear safety significant issue and therefore 10CFR21 reporting is not applicable.

Sincerely,

Clayton Timbs



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