

**From:** [Farnan, Michael](#)  
**To:** [Drake, Jason](#)  
**Subject:** FW: Questions For NRC Regarding AD DD Part 21 Stem-to-Wedge Thread Connection  
**Date:** Thursday, December 6, 2018 2:46:48 PM

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Per our email exchange the other day, below is the email question from Paul Knittle of MPR Associates concerning the use of an anti-rotation device to be used on Anchor/Darling gate valves and my response to his question. This was the question that was brought up at the public meeting in November but didn't make the meeting minutes.

Michael F. Farnan  
Mechanical Engineer  
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**From:** Farnan, Michael  
**Sent:** Thursday, March 1, 2018 7:43 AM  
**To:** 'Knittle, Paul' <pknittle@mpr.com>  
**Subject:** RE: Questions For NRC Regarding AD DD Part 21 Stem-to-Wedge Thread Connection

Paul,

Sorry it took me awhile to respond. I have been busy tying up other loose ends.

I had a discussion with NRC staff concerning your alternative to address the Anchor Darling Double Disc Gate Valve issue. An external anti-rotation device would be acceptable provided the design-basis capability of the MOV is demonstrated with this additional friction load. The design would need to ensure that the anti-rotation device prevents the stem-disc connection from undergoing actuator torque for the full valve stroke.

During our phone conversation the other day, I mentioned that topics such as these need to be in a public meeting for NRC staff to properly comment. If NEI discusses this possible approach at the next public meeting, then the NRC staff could indicate that such an approach would be acceptable provided the qualification of the MOV design-basis capability is maintained.

If licensees rely on less than stall actuator torque and/or thread friction in evaluating the acceptability of the stem-disc connection in threaded Anchor/Darling DDGVs, the potential for the stem-disc connection of those Anchor/Darling DDGVs to fail will continue in the future. This is also true for your proposal to rely on sampling internal inspections of Anchor/Darling DDGVs.

A valve modification to install a T-head connection, or an anti-rotation device with MOV qualification demonstrated, would be acceptable methods to fully resolve the stem-disc connection issue for Anchor/Darling DDGVs.

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**From:** Knittle, Paul [<mailto:pknittle@mpr.com>]  
**Sent:** Thursday, February 22, 2018 9:45 AM  
**To:** Farnan, Michael <[Michael.Farnan@nrc.gov](mailto:Michael.Farnan@nrc.gov)>  
**Cc:** Simons, John <[jsimons@mpr.com](mailto:jsimons@mpr.com)>; Swanner, Craig <[cswanner@mpr.com](mailto:cswanner@mpr.com)>; Butler, Patrick <[pbutler@mpr.com](mailto:pbutler@mpr.com)>  
**Subject:** [External\_Sender] Questions For NRC Regarding AD DD Part 21 Stem-to-Wedge Thread Connection

Hi Mike,

As a follow-up to the last Thursday's NRC-NEI public meeting, here are my questions relative to approaches for addressing the Flowserve AD DD Part 21 issue associated with the stem-to-wedge threaded connection:

- 1) For valves where the condition of the threads provide sufficient thrust capacity, the wedge pin functions as a stem anti-rotation device to prevent the valve stem from unthreading from the upper wedge. For the same thread condition, would an externally mounted device which acts as a stem anti-rotation device be considered an acceptable alternative to the pin, provided all other aspects of operation are shown to be equivalent ?
  
- 2) After a period of operation, if the thread condition of a valve is verified by inspection to provide sufficient capacity with no evidence of degradation, would that be a reasonable justification or basis to accept other alike valves in a similar application as also having a threaded condition that is not degraded, provided it can be shown to have similar operating histories and load exposures ?

Please let me know if you need clarification or have any questions.

Sincerely,  
*Paul Knittle, Engineer*  
*MPR Associates, Inc.*  
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