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August 25, 2017

Mr. John Lubinski  
Director, Division of Engineering  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**Subject:** Anchor Darling Double Disc Gate Valve Industry Valve Survey Results

**Project Number: 689**

**References:**

- (1) Letter, G. Krueger (NEI) to J. Lubinski (NRC) Anchor Darling Double Disc Gate Valve Industry Resolution Plan, dated August 4, 2017
- (2) Letter, B. Holian (NRC) to G. Krueger (NEI), Response from the Nuclear Regulatory Commission Regarding the Anchor Darling Double Disc Gate Valve Industry Resolution Plan, dated July 31, 2017

Dear Mr. Lubinski:

On behalf of the nuclear energy industry, the Nuclear Energy Institute (NEI)<sup>1</sup> is pleased to provide, for your information, a summary of the Anchor Darling Double Disc Gate Valve (DDGV) industry survey results. This information is being provided to complete Action 3.3 listed in our August 4, 2017 Resolution Plan update (Reference (1) above).

The attached survey results highlight the successive use of a series of filters on the industry Anchor Darling survey data to illustrate the number of valves that ultimately fall into the Categories outlined in the NRC letter of July 31 (Reference (2) above). This survey data is being used to inform the graded response by the industry, and near term actions, by some utilities, to address valves considered "high significance".

The results indicate that approximately 1.5% of the industry safety related Anchor Darling valves with an active safety function (approximately 600 valves) are considered Category A valves, or valves that are high or medium risk and traverse multiple times to perform their safety function. Approximately 4% of the valves

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<sup>1</sup> The Nuclear Energy Institute (NEI) is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations and entities involved in the nuclear energy industry.

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would be considered Category B valves, or valves that are of high or medium risk and only traverse once, open or closed, to perform their safety function. The above population of Category A and B valves exist at a limited number of sites.

The remaining low risk valves (approximately 5%) are associated with low significance functions highlighted in Attachment 1. Some re-analysis of valve susceptibility, subsequent to the initial collection of information, may slightly change the number of valves in some of the above categories.

It should be noted that approximately 90% of the industry Anchor Darling valve population is not considered susceptible based on the existing evaluation guidance. In addition, approximately 20% of the US units either do not have Anchor Darling valves, or have Anchor Darling valves with non-MOV operators. These valves are not included in the total valve population.

NEI continues to coordinate with industry organizations to assure effective communications and completion of recommended actions to remain aligned with the attached plan. We will also continue our interactions with the Staff to provide updates on the status of industry progress and address any identified concerns or information needs. We consider this a living plan with future augmentation expected when necessary to reflect new information, updated issue resolution methods, and interaction results with the NRC.

If you have any questions or would like to discuss aspects of this industry plan, please do not hesitate to contact me at [gak@nei.org](mailto:gak@nei.org) or (202) 739-8099.

Sincerely,

A handwritten signature in black ink, appearing to read "Gregory A. Krueger". The signature is fluid and cursive, with a large initial "G" and "K".

Gregory A. Krueger

Attachment 1 – Industry Anchor Darling Double Disc Gate Valve Survey Results

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**Attachment 1**

**Industry Anchor Darling Double Disc Gate Valve Survey Results**

	<b>Number of Valves</b>	<b>Comments</b>
Total AD DDGV	~700	Represents the industry valves captured from the survey of Anchor Darling DDGVs with MOV operators
Safety Related	~650	Approximately 50 valves are classified as non-safety related
Valves with an Active Safety Function (Open and Close, Open, Close,)	~600	Approximately 50 of the above safety related valves do not have an active safety function
Valves without an acceptable Wedge Pin result	~120	Approximately 480 valves have been shown to have acceptable wedge pin results
Valves without an acceptable Wedge Pin result not yet repaired	62	58 of the 120 valves have been repaired or replaced
Valves not repaired in Category A	9	9 of the above 62 valves are characterized as High/Medium risk, multi-stroke valves
Valves not repaired in Category B	23	23 of the above 62 valves are characterized as High/Medium risk, single stroke valves
Valves not repaired in Category C	30	30 of the above 62 valves are characterized as Low risk valves

In Reference (1), we defined “high significance” as a valve with an active safety function in the open or open and closed directions. This is because the failure mechanism associated with Flowserve Part 21 of March 1, 2013 (Updated July 11, 2017) is in the closed direction. Therefore, valves with a closed only safety function would be considered low significance. Utilities with high significance valves that are susceptible to failure, and have not been repaired, have been requested to report their repair plans to NRC by August 31, 2017. Utilities with low significance valves that are susceptible to failure will report their repair plans to NRC by December 31, 2017. The low significance valve functions, as reported by the utilities in the June 2017 survey, are as summarized follows:

- Reactor recirculation pump isolation valves
- Containment isolation valves

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- Steam generator PORV block valves
- Letdown heat exchanger isolation valves
- Main feedwater isolation valves
- Pressurizer spray isolation valves
- Isolation condenser isolation valves