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SUBJECT: Updates responses to NRC Bulletin 89-002 re stress  
 corrosion cracking in 410 stainless steel components.

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 TITLE: Bulletin Response 89-02 re Cracking of High-Hardness Type 410 Bolting

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October 3, 1990

U. S. Nuclear Regulatory Commission  
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Gentlemen:

Docket 50-305  
Operating License DPR-43  
Kewaunee Nuclear Power Plant  
NRC Bulletin 89-02 Update

- References:
- 1) NRC IE Information Notice No. 85-59 dated July 17, 1985
  - 2) NRC Information Notice No. 88-85 dated October 14, 1988
  - 3) NRC Bulletin No. 89-02 dated July 19, 1989
  - 4) Letter from C. R. Steinhardt (WPSC) to Document Control Desk (NRC) dated January 19, 1990.
  - 5) Letter from C. R. Steinhardt (WPSC) to Document Control Desk (NRC) dated June 11, 1990

The NRC first alerted licensees of potential stress corrosion cracking problems with 410 stainless steel (SS) components in Information Notices 85-59 (reference 1) and 88-85 (reference 2). Based on these notices and other industry literature, Wisconsin Public Service Corporation (WPSC) performed a detailed study of the safety related valves at the Kewaunee Nuclear Power Plant (KNPP). On July 19, 1989, the NRC issued Bulletin 89-02 (reference 3) which requested that licensees identify, disassemble and inspect certain types of swing check valves which may contain Type 410 stainless steel bolting material. WPSC provided a schedule for inspections at KNPP in reference 4 and committed to submitting the inspection results in accordance with the Bulletin requirements. Reference 5 contained the results of the inspections performed during the 1990 refueling outage. This submittal corrects information provided in reference 5 and supersedes reference 5 in its entirety.

*TEBZ*  
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Reference 4 detailed WPSC's engineering evaluation which concluded that 33 safety related check valves with at least one Type 410SS component would be inspected. The 33 valves were separated into the following three categories based on the priority assigned to the valve in the engineering evaluation:

1. The first category contains four 12" Anchor Darling Model S350W swing check valves with Type 410SS retaining block studs and nuts. The valves were specifically mentioned in the Bulletin as being very susceptible to stress corrosion cracking and, therefore, were given the highest priority.
2. The second category contains valves with Type 410SS components, not necessarily bolting, that have been evaluated by WPSC to be susceptible to stress corrosion cracking. There are 17 valves in category 2.
3. The third category contains valves with Type 410SS components that have been evaluated to be less susceptible to stress corrosion cracking. The 12 valves in category 3 are in the component cooling (CCW), service water (SW) and make up (MU) water systems which are low temperature systems. The temperatures are typically much less than 200°F which significantly reduces the crack initiation probability and stress corrosion crack rate. WPSC is examining category 3 valves, but does not consider them under the scope of Bulletin 89-02.

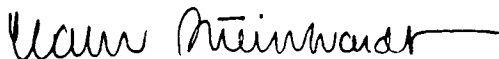
Reference 5 provided the results of the inspections performed during the 1990 refueling outage at the KNPP. However, reference 5 incorrectly stated that the 410SS components for the one category 3 valve inspected (SW-901C) were replaced. As stated in reference 5 and repeated in this letter, WPSC does not consider category 3 valves under the scope of Bulletin 89-02 and 410SS components on category 3 valves will only be replaced if necessary. The 410SS components on SW-901C were found to be in acceptable condition.

All four category 1 valves, 11 of the 17 category 2 valves, and 1 of the 12 category 3 valves were visually examined during the recent 1990 refueling outage. All of the 410SS components on the 15 category 1 and 2 valves were replaced as part of this effort. Details of this inspection are provided in the attachment to this letter. The only recordable indications observed were two very small linear indications at the face-to-thread region of the disk nut on valve CVC-300. CVC-300 is located on 4" diameter piping from the refueling water storage tank to the charging pumps suction. The lengths of the indications were documented as 1/16 inches and 1/32 inches. The visual examination was supplemented by a surface examination to further determine the relevancy of the indications (i.e., depth, shape, and orientation). During the surface examination, no bleed out was observed at the face-to-thread region. Since the linear indications were small in size and do not appear to be deep, they were classified as non-injurious imperfections. These non-injurious imperfections were likely created during fabrication and/or during torquing and are considered to be somewhat common. Because the size of these indications did not progress to an unacceptable length and since the component was replaced, a failure analysis is not being performed.

The remaining 6 valves in category 2 will be inspected and 410SS components replaced during the 1991 refueling outage. Results of these category 2 inspections will be provided to the NRC in accordance with the Bulletin requirements. The eleven remaining category 3 valves will be inspected as part of the Kewaunee Check Valve Reliability Program. This program inspects a significant amount of the safety related and important to operation check valves on a five-year frequency. As stated earlier, the 410SS components on the category 3 valves will only be replaced if necessary. Examination results of category 3 valves will be on file in the QA Vault at KNPP and available for inspection.

WPSC regrets any problems that may have been caused due to the information provided in reference 5. Please contact a member of my staff if there are any questions.

Sincerely,



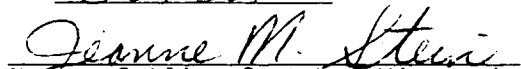
C. R. Steinhardt  
Vice President-Nuclear Power

PMF/jms

Attach.

cc - Mr. Patrick Castleman, US NRC  
US NRC, Region III

Subscribed and Sworn to  
Before Me This 3<sup>rd</sup> Day  
of October 1990

  
Notary Public, State of Wisconsin

My Commission Expires:  
June 23, 1991

BULLETIN 89-02 CHECK VALVE INSPECTION RESULTS - 1990

<u>Valve ID</u>	WSPC <u>Engineering</u> <u>Category</u>	<u>Manufacturer</u>	<u>Model #</u>	<u>Environment</u> <u>(Fluid)</u>	<u>Temperature</u> <u>(°F)</u>	<u>410 SS</u> <u>Component(s)</u>	<u>Result</u>
SI-21A	1	Anchor/Darling	S350W	BA <sup>1</sup>	<200	Retaining Block Stud	No indication
SI-21B	1	Anchor/Darling	S350W	BA	<200	Retaining Block Stud	No indication
SI-22A	1	Anchor/Darling	S350W	BA	<200	Retaining Block Stud	No indication
SI-22B	1	Anchor/Darling	S350W	BA	<200	Retaining Block Stud	No indication
SI-13A	2	Velan	B143114B-13M	BA	<200	Disk Nut	No indication
SI-13B	2	Velan	B143114B-13M	BA	<200	Disk Nut	No indication
SI-303A	2	Velan	B143114B-13M	BA	<200	Disk Nut	No indication
SI-303B	2	Velan	B143114B-13M	BA	<200	Disk Nut	No indication
SI-304A	2	Velan	B143114B-13M	BA	<200	Disk Nut	No indication
SI-304B	2	Velan	B143114B-13M	BA	<200	Disk Nut	No indication
CVC-2	2	Anchor/Darling	D-1026-3D	BA	<200	Disk Nut	No indication
CVC-300	2	Anchor/Darling	D-1026-3D	BA	<200	Disk Nut	Recordable Indication
CVC-810	2	Anchor/Darling	D-1026-3D	BA	<200	Disk Nut	No indication
FW-13A	2	Atwood & Morrill	Pattern 1650	Water <sup>2</sup>	450	Load Key & Shaft	No indication
FW-13B	2	Atwood & Morrill	Pattern 1650	Water <sup>2</sup>	450	Load Key & Shaft	No indication
SW-901C <sup>3</sup>	3	Powell	1561 AWE	Water	<100	Disk Holder & Seat Ring	No indication

1 - BA = Boric Acid

2 - Contains 1-5 ppm boric acid

3 - Category 3 valve, not part of Bulletin 89-02 scope