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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397**
RESPONSE TO INSPECTION REPORT 05000397/2006002

Reference: Letter dated May 12, 2006, CE Johnson (NRC) to JV Parrish (Energy Northwest), "Columbia Generating Station – NRC Integrated Inspection Report 05000397/2006002"

Dear Sir or Madam:

The purpose of this letter is to provide Energy Northwest's response to the Non-cited Violation (NCV) of Technical Specification 5.4.1.a documented in the referenced inspection report. Energy Northwest denies the NCV identified during closure of Unresolved Item (URI) 05000397/2005005-03. The attachment to this letter contains a restatement of the NCV and provides Energy Northwest's response to the NCV.

Should you have any questions or desire additional information regarding this letter, please call GV Cullen at (509) 377-6105.

Respectfully,

Abdy Khanpour For

WS Oxenford
Vice President, Technical Services
Mail Drop PE04

Attachment: Response to Non-cited Violation

cc: BS Mallett – NRC RIV
Director, Office of Enforcement – NRC
BJ Benney – NRC NRR
NRC Senior Resident Inspector/988C
RN Sherman – BPA/1399
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IE01

Response to Non-cited Violation

Restatement of Violation

Inspection Report 05000397/2006002 documented the basis for closure of Unresolved Item (URI) 05000397/200505-03 as a Licensee Identified Non-cited Violation (NCV). The below excerpts from that report describe the NCV (section headers added).

> Description:
> The inspectors completed an evaluation of the risk significance and assessment of applicable regulatory requirements associated with the circumstances of the application of WD-40 penetrating oil to the standby service water pumps. WD-40 was applied to the pump shaft coupling sleeves to lubricate and aid in assembly of the shaft coupling components. The inspectors interviewed plant personnel, reviewed applicable corrective action documents, and discussed the overall impact of the application of WD-40 on the service water pump shafts with other NRC staff to determine the acceptability of applying WD-40 to the pump shafts.
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> As described in IR 5000397/2005005, Section 4OA5.3, on December 14, 2005, Energy Northwest identified and documented in CR 2-05-09690 that WD-40 was applied to service water pump, SW-P-1B, stainless steel shaft coupling sleeves and shaft segments. This was done to lubricate the components to aid in assembly during a replacement of SW-P-1B. This was of concern because WD-40 typically contains chlorine and sulfates which are known initiators and contributors to intergranular stress corrosion cracking. SW-P-1B was replaced because of pump shaft degradation which occurred as a result of intergranular stress corrosion cracking (IGSCC). Energy Northwest also identified that WD-40 was applied to SW-P-1A shaft components during a replacement of that pump in June 2005. SW-P-1A was also replaced because of shaft coupling degradation as a result of IGSCC.
>
> Energy Northwest concluded that Procedure PPM 10.16.1, "Standby Service Water Pump Overhaul," Revisions 11 and 12, which provided the instructions for the assembly and overhaul of the service water pumps was inadequate in that it did not specify the type of lubricant to use in assembling the shaft components nor did it caution against the use of WD-40 on stainless steel components. Energy Northwest also acknowledged that the application of WD-40 was undesirable and should not have been applied, but that IGSCC of the pump shaft couplings would be very unlikely because:
>
> - WD-40 would be flushed out with water after the pump shafts were wetted and the pump had been operated, therefore no WD-40 would remain in contact with any stainless steel surfaces. Supporting this conclusion was that some fluid flow was noted to occur in the couplings of the replaced service water pumps based on the existence of silting inside the couplings which was identified during pump disassembly.

- Testing indicated that the WD-40 chloride and sulfate concentrations for the WD-40 which was applied were 130 ppm and 320 ppm, respectively. These concentrations were not considered to be high enough to aid in the development of stress corrosion cracking. As a comparison, limits for use on primary system stainless steel as defined in NEDE-31735P are 700 ppm maximum sulfur and 500 ppm maximum chloride.
- WD-40 has a low viscosity which provides good penetrating and wetting ability, but conversely a low surface tension. Under full flow conditions of the service water pump (10,500 gpm) the oil is easily removed from all exposed shaft surfaces.
- Both of the replaced degraded SW-P-1A and 1B pump shafts were manufactured at a heat treatment temperature of 970EF which is conducive to tempering embrittlement. Tempering embrittlement was what initiated the stress corrosion cracking of the stainless steel shaft components. Conversely, the replacement shafts for SW-P-1A and 1B were tempered at a minimum temperature of 1100EF which provides for increased resistance to pitting and stress corrosion cracking (10 times more resistant to the replaced pump shafts). This is supported by the observed condition of other TP410 creviced components under the same conditions with no observed pitting attack.

Energy Northwest also provided that although stress corrosion cracking was highly unlikely given the data as provided above that if any stress corrosion cracking were to occur that it would be a long term degradation issue only. Additionally, Energy Northwest planned to inspect both service water pumps in 2013 which would identify the onset of pitting or stress corrosion cracking. Applicable corrective actions would be taken at that time should any corrosion be noted. The inspectors and other NRC staff expressed concerns regarding the adequacy of Energy Northwest's plans to not inspect the pump shafts until the next 8 years. Additionally, the inspectors determined that although the licensee had concluded that IGSCC was not probable or at worst was a long term degradation issue that IGSCC, although unlikely, could occur due to the application of the WD-40. In response to the NRC's concerns, Energy Northwest implemented work Request 29052915 to inspect the upper shaft coupling of SW-P-1A during a scheduled replacement of the motor during the next refueling outage in May 2007 to determine the as found condition of the coupling and to determine the concentration of any residual chlorides and sulfates.

Enforcement and Significance:
The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy for being dispositioned as a NCV.

TS 5.4.1.a required, in part, that written procedures shall be established that cover the applicable procedures recommended in Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Revision 2, Appendix A, February

1978. Regulatory Guide 1.33, Section 9.a, required in part that maintenance that can affect the performance of safety-related equipment be performed in accordance with procedures appropriate to the circumstances. Contrary to this requirement in June and December 2005 during the replacement of SW-P-1A and SW-P-1B respectively, Procedure PPM 10.16.1, "Standby Service Water Pump Overhaul," Revisions 11 and 12, used for the assembly of the replacement pumps was inadequate. Specifically, it did not specify the type of lubricant to use in assembly of the service water pumps and did not provide precautions against the use of WD-40 on stainless steel components. This finding was more than minor in accordance with MC 0612, Appendix B, because the finding was a procedure quality issue which affected the mitigating systems cornerstone objective to ensure the reliability of systems that respond to initiating events. Specifically, the application of WD-40 to the service water pump shaft components, which contained chlorides and sulfates and is a known contributor to IGSCC of stainless steel components, does not ensure the reliability of the service water pumps because long-term degradation of the shaft couplings could potentially contribute to stress corrosion cracking. The finding was of very low safety significance because it was not a design or qualification deficiency, did not represent a loss of a safety function, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. Energy Northwest implemented corrective actions to revise service water pump overhaul procedures as well as applicable maintenance procedures associated with other safety significant systems that contain stainless steel components.

Response

Energy Northwest disagrees with the characterization of this issue as more than minor and therefore denies the characterization as an NCV. As described in the above excerpts from the inspection report, the finding was characterized as more than minor in accordance with MC 0612, Appendix B, because the finding was considered to affect the mitigating systems cornerstone objective to ensure the reliability of the service water pumps because of the potential for long-term degradation. Contrary to that characterization, Energy Northwest believes that, for the reasons identified in the above excerpts, we have demonstrated that application of WD-40 to these pump components provides extremely low to zero increase in the probability of IGSCC. Any increase in this probability is mitigated by the preventive maintenance inspections applied to these pumps for the purpose of identifying IGSCC related degradation. The preventive maintenance frequency of ten years, with the first implementation to occur in less than eight years, applied to these pumps was generated as a result of the recent shaft degradation due to IGSCC and is adequate to ensure any future degradation is identified prior to the reliability of the pumps being impacted.

MC 0612, Appendix E identifies examples of minor issues. MC 0612, Section 05.03 directs use of Appendix E examples for screening minor issues and only directs use of

the minor screening questions outlined in MC 0612, Appendix B if these examples are not applicable. In addition to the above discussion disagreeing with the application of the minor screening questions, Energy Northwest also contends that this issue is similar to Example f. of Section 4, Insignificant Procedural Errors, of MC 0612, Appendix E. In that example use of an incorrect sealant was considered minor because the error did not impact the operability of a diesel generator. Similar to this example, use of WD-40 on service water pump components did not impact operability of the service water pumps and, as discussed above, adequate measures are in place to ensure operability of the pump will not be impacted in the future.

As noted in the inspection report, Energy Northwest has revised the service water pump overhaul procedures to prohibit the use of WD-40 on stainless steel components because it is considered a good practice to avoid the introduction of chlorides and sulfates into these components. However, Energy Northwest does not consider the previous lack of procedural guidance in this area to be of safety significance since the concentration of these components in WD-40 is below the limits defined in NEDE-31735P as describe in the above excerpts.

Based on the discussion above, Energy Northwest denies the characterization of this issue as a finding of more than minor significance.