

May 15, 2001

MEMORANDUM TO: Stuart A. Richards, Director  
Project Directorate IV & Decommissioning  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

FROM: Stewart N. Bailey, Project Manager, Section 2     /RA/  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF JANUARY 25, 2001, MEETING WITH THE BABCOCK  
AND WILCOX OWNERS GROUP ON RISK-INFORMED AIR  
OPERATED VALVE INSERVICE TESTING

On January 25, 2001, the U. S. Nuclear Regulatory Commission (NRC) met with representatives of the Babcock and Wilcox Owners Group (B&WOG), which included representatives of the Davis-Besse Nuclear Power Station, to discuss B&WOG Topical Report (TR) BAW-2359, "Demonstration Project to Apply Risk-Informed In service Testing (RI-IST) to Air-Operated Valves (AOVs)." The TR was submitted to the NRC for evaluation in a letter dated July 14, 2000. Davis-Besse is the pilot plant for this effort. A related Davis-Besse application dated September 11, 2000, was also discussed at the public meeting.

BAW-2359 provides general guidance on applying the risk categorization and testing methodologies to AOVs using Regulatory Guide (RG) 1.175, "An Approach for Plant-Specific, Risk-Informed Decision making: In service Testing." An appendix included in the TR provides detailed information on the Davis-Besse program. The Davis-Besse submittal requests implementation of this program as an authorized alternative pursuant to 10 CFR 50.55a(a)(3)(i) and provides information on how their program conforms with RG 1.175.

The proposed alternative describes the AOV program currently being developed at Davis-Besse using industry guidance provided in the Joint Owners Group (JOG) AOV Program. This program was developed by representatives of the four owners groups of United States commercial nuclear power plants. A copy of the program was provided to the NRC in a letter from the Nuclear Energy Institute dated July 19, 1999. The Davis-Besse program substitutes stroke time testing at intervals required by the applicable Code with a combination of design verification, baseline and periodic testing, and scheduled maintenance activities. These activities are performed commensurate with the safety significance of each individual or group of AOVs. Both the Davis-Besse AOV program and the B&WOG TR are based on the JOG AOV Program.

A representative from Davis-Besse gave a detailed presentation on their risk-informed AOV program. The staff questioned the representatives of both groups on their presentation and their respective submittals. The areas discussed are summarized below:

### Risk-Informed Approach of Both Methods

The Davis-Besse methodology groups the components in its AOV program into three operational readiness strategy categories. This differs from the B&WOG TR, which groups AOVs into two categories. There was extensive discussion, facilitated by the Davis-Besse presentation, on the Davis-Besse probabilistic safety assessment, safety-significance classification, categorization methods, importance measures used in the classification, aggregate risk, and expert panel decision criteria. The Davis-Besse AOV program described in the B&WOG TR contains 119 AOVs, of which 83 are in the Davis-Besse inservice testing (IST) program. The Davis-Besse Category 1 AOVs, which are highly safety-significant, includes 15 valves in the IST program. Non-safety-related valves were evaluated using the categorization process, but none were found to be Category 1.

### Use of Industry Guidance and Consideration Given to NRC Concerns on Industry Guidance

As stated previously, both the B&WOG TR and the Davis-Besse RI-IST program for AOVs use the JOG AOV program extensively. They also utilize the American Society of Mechanical Engineers (ASME) Operation and Maintenance (O&M) Code Case OMN-3, "Requirements for Safety Significance Categorization of Components Using Risk Insights for In service Testing of Light Water Reactor Power Plants," and a draft ASME O&M code case providing alternate requirements to apply RI-IST to AOVs. The NRC has provided comments on the JOG AOV Program which are referenced in Regulatory Issue Summary 2000-03, "Resolution of Generic Safety Issue 158: Performance of Safety-related Power-operated Valves Under Design Basis Conditions." The NRC has also provided comments on the ASME OMN-3 and draft AOV code cases in committee correspondence. The meeting participants discussed the consideration which the NRC comments were given in the development of their respective programs. It was noted that the Davis-Besse methodology exceeds the minimum guidelines of the JOG AOV program in several areas and some of these areas address NRC comments on the JOG AOV program and ASME code cases.

### Verification of AOV Design Basis Capability, Setpoints, and Vendor Information

There was discussion on the use of dynamic test-based information, which could include plant-specific data, industry validated methodologies, or other acceptable sources, to confirm the design-basis capability, in terms of operating requirements and actuator output, for safety-related valves in the Davis-Besse AOV program. The establishment of setpoints using updated vendor information and the valve data available on site was also discussed. Davis-Besse provided specific strategies in their presentation on both these issues. There was agreement that a spectrum of activities were appropriate with the highest risk-significant valves receiving the most focused treatment. However, it was recognized that the activities associated with the remaining safety-related valves must continue to meet the regulations.

### Long-term Periodic Verification Test Strategies and Acceptance Criteria

The staff had several questions in this area, including the frequency of setpoint verification, activities associated with baseline and periodic testing, and use of diagnostic testing including use in pre- and post-maintenance testing. The establishment of acceptance criteria for periodic testing activities, was also discussed. One issue that did arise in this discussion was the

feasibility of determining the operability of a safety-related AOV in which the only testing activity was periodic setpoint control, where the basis for the setpoints was not validated by information available on site.

#### Related Air System Issues

The Davis-Besse representative stated that their air system air quality was in accordance with the Instrument Society of America (ISA) Standard 7.0.0.01-1996 for dew point and particle size. The Davis-Besse presentation included detailed information on their air-system. The original plant design included two, 100 percent capacity oil-free reciprocating compressors, a 100 percent capacity dryer, a coalescing pre-filter (> 0.6 microns) and a particulate after-filter (>0.9 microns), and point of use filter/regulators. Significant modifications to the air system were performed in 1988 including the addition of a 100 percent capacity centrifugal air-compressor, an additional dryer, larger station air automatic blowdown drain valves, and improved station air-receiver moisture traps. Monitoring of certain air-system parameters was performed once each shift. Preventive maintenance activities were also described.

At the end of the meeting, the NRC staff participants described issues that need clarification in order to complete the safety evaluations for both the B&WOG TR and the Davis-Besse application. In addition, a discussion was held on how best to address the two submittals, since the Davis-Besse submittal relies on much of the Davis-Besse RI-IST program discussion contained in the B&WOG TR (Section 6, as supported by detail worksheets in Appendix D). The NRC will issue requests for additional information to each organization on their respective submittals.

Attached is a list of meeting attendees. The slides used during the meeting are available under ADAMS accession number ML010250324.

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Attachment: Meeting Attendees

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**LIST OF ATTENDEES**  
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**RISK-INFORMED AIR OPERATED VALVE INSERVICE TESTING PROGRAM**  
**JANUARY 25, 2001**

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