



Energy Harbor Nuclear Corp.  
168 E. Market Street  
Akron, Ohio 44308

**Darin M. Benyak**  
Senior Vice President, Fleet Nuclear Operations

330-436-1380

April 1, 2021  
L-21-072

10 CFR 50.55a

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

Subject:  
Davis-Besse Nuclear Power Station  
Docket No. 50-346, License No. NPF-3

Beaver Valley Power Station, Unit Nos. 1 and 2  
Docket No. 50-334, License No. DPR-66  
Docket No. 50-412, License No. NPF-73  
Proposed Alternative to Use ASME OM Code Case OMN-27

In accordance with the provisions of 10 CFR 50.55a(z)(1), Energy Harbor Nuclear Corp. hereby requests Nuclear Regulatory Commission (NRC) approval of a proposed alternative to the American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code), Subsection ISTC, "Inservice Testing of Valves in Light-Water Reactor Power Plants," for use at Davis-Besse Nuclear Power Station (DBNPS), and Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS-1 and BVPS-2, respectively).

Specifically, Energy Harbor Nuclear Corp. requests approval to use ASME OM Code Case OMN-27, "Alternative Requirements for Testing Category A Valves (Non-PIV/CIV)," to determine valve test frequency in lieu of the two-year leakage rate test frequency requirement specified in ASME OM Code Section ISTC-3630(a) for Category A valves that are not reactor coolant system pressure isolation valves (PIVs) or containment isolation valves (CIVs).

The proposed alternative and supporting information are presented in the Enclosure for DBNPS, BVPS-1 and BVPS-2. Energy Harbor Nuclear Corp. requests approval of the proposed alternative by March 30, 2022.

Davis-Besse Nuclear Power Station  
Beaver Valley Power Station, Unit Nos. 1 and 2  
L-21-072  
Page 2

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Phil H. Lashley, Manager - Fleet Licensing, at (330) 696-7208.

Sincerely,



Benyak, Darin 48813  
Senior Vice President, Fleet Nuclear Operations  
I am approving this document  
Apr 1 2021 8:57 AM

DocuSign

Darin M. Benyak

Enclosure:

10 CFR 50.55a Request to Use ASME OM Code Case OMN-27,  
DBNPS Request RV-2, BVPS-1 Request VRR5, and BVPS-2 Request VRR7

cc: NRC Region I Administrator  
NRC Region III Administrator  
NRC Resident Inspector – Davis-Besse  
NRC Resident Inspector – Beaver Valley  
NRC Project Manager – Energy Harbor Nuclear Corp. Fleet  
Director BRP/DEP  
Site BRP/DEP Representative  
Utility Radiological Safety Board

Enclosure  
L-21-072

10 CFR 50.55a Request to Use ASME OM Code Case OMN-27,  
DBNPS Request RV-2, BVPS-1 Request VRR5, and BVPS-2 Request VRR7

(4 pages follow)

10 CFR 50.55a Request to Use ASME OM Code Case OMN-27,  
DBNPS Request RV-2, BVPS-1 Request VRR5, and BVPS-2 Request VRR7

Proposed Alternative  
in Accordance with 10 CFR 50.55a(z)(1)

-- Alternative Provides Acceptable Level of Quality and Safety --

**1. ASME Code Component(s) Affected**

Davis-Besse Nuclear Power Station (DBNPS) and Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS-1 and BVPS-2, respectively) Category A valves that are not reactor coolant system pressure isolation valves (PIVs) or containment isolation valves (CIVs).

**2. Applicable Code Edition and Addenda**

American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) 2004 Edition through 2006 Addenda.

**3. Applicable Code Requirement**

ASME OM Code Section ISTC-3630, subparagraph (a), "Frequency," states that:

Tests shall be conducted at least once every 2 years.

**4. Reason for Request**

ASME OM Code Case OMN-27, "Alternative Requirements for Testing Category A Valves (Non-PIV/CIV)," (hereafter referred to as Code Case OMN-27) establishes requirements for implementing and maintaining a Category A valve performance-based leakage test methodology that may be implemented in lieu of the two-year leakage rate test interval required per subparagraph ISTC-3630(a). Code Case OMN-27 has not been approved for use in Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code," Revision 3, dated October 2019.

The alternative described in Section 5 below is proposed to extend the test interval for the applicable DBNPS, BVPS-1, and BVPS-2 Category A valves in accordance with the valve performance-based methodology of Code Case OMN-27.

**5. Proposed Alternative and Basis for Use**

Energy Harbor Nuclear Corp. proposes to use Code Case OMN-27 requirements for implementing and maintaining a performance-based valve leakage test methodology as an alternative to the once every two-year valve leakage rate test interval required by ASME OM Code subparagraph ISTC-3630(a). Code Case OMN-27 does not apply to pressure isolation valves (PIVs) or containment isolation valves (CIVs). The Code Case OMN-27 requirements are presented in subsections 5.1 through 5.5 below.

**5.1 Groupings**

Each Category A valve shall be individually tested.

## 5.2 Analysis

The Owner shall perform an analysis of the test and maintenance history of each valve to establish the basis for extending leakage test intervals beyond the initial two-year interval. The analysis shall include the following:

- (a) Analyze leakage test results and maintenance history to determine their significance and impact to valve leakage performance.
- (b) Determine if periodic preventive maintenance and examination activities would be effective in monitoring for component degradation.
- (c) The Owner shall ensure that the impact to plant safety is evaluated prior to extending the leakage test interval.

## 5.3 Leak-Rate Monitoring Activities

Category A valve leakage test intervals shall be sufficient to maintain leakage rates within acceptable limits. Trending and evaluation of existing data shall be used as the bases to justify the time interval between tests. As part of the leak-tight integrity monitoring of the valves within the scope of Code Case OMN-27, the Owner shall perform the following activities to support the leakage rate testing intervals allowed by this code case:

- (a) Evaluate any applicable preventive maintenance activities including their associated intervals that shall be implemented to maintain the continued acceptable performance of the valve.
- (b) Identify the leakage test interval. Interval extensions shall be limited to one refueling cycle or two years per extension, whichever is less. Intervals shall not exceed the maximum interval of six years. Each valve shall pass two (2) as-found leakage test before the test interval can be extended. The successful completion of two as-found leakage tests demonstrates that the valve is stable with respect to its leak-tight integrity. If a valve exceeds its leak rate acceptance criteria, it shall be returned to its initial two-year test interval.
- (c) Adequate margin shall exist and be trended such that leakage shall not exceed acceptance criteria prior to the next scheduled leakage test.
- (d) Where a valve's leak rate test result exceeds 75% [percent] of its leak rate acceptance criteria, the valve leak test interval shall not be extended and maintenance shall be evaluated.
- (e) Extension of leakage test intervals shall evaluate plant safety and be supported by trending and evaluating both generic and plant-specific performance data to ensure the component is capable of performing its intended function(s) over the entire interval.

#### 5.4 Corrective Maintenance

The following actions shall be performed when activities are performed on the valve that affect the valve's leak tightness:

- (a) An as-found leakage test shall be performed prior to any maintenance, repair, modification, or adjustment activity that could affect the leak tightness of the valve. An as-left test shall be performed following maintenance, repair, modification, or adjustment activity unless an alternate testing method or analysis is justified and documented to provide reasonable assurance that such work does not affect the leak tightness of the valve and the valve will still perform its intended function.
- (b) If the as-found and as-left test results are both below the acceptance criteria, change to the test interval is not required. If as-found or as-left test results are greater than the allowable acceptance criteria, the valve shall be returned to its initial two-year test interval.
- (c) The testing interval shall be returned to the initial two-year test interval if a valve is replaced or analysis determines that modification of the valve has invalidated the performance history. Testing at the initial two-year test interval shall continue until the conditions of the Leak-Rate Monitoring Activities are met to extend the test interval.
- (d) If corrective maintenance is performed on a valve due to failure to meet its leakage rate acceptance criteria, the leak test frequency shall return to the initial two-year interval. In addition, a cause determination shall be performed, and corrective actions identified that focus on those activities that can eliminate the cause of failure. Once the cause determination and corrective actions have been completed, acceptable performance may be reestablished and the testing frequency returned to the extended interval in accordance with the specified Leak-Rate Monitoring Activities.

#### 5.5 Documentation

The basis for each extension of the leak test interval beyond the initial two-year frequency shall be documented per ISTA-9000 and shall include the attributes described under Analysis and Leak-Rate Monitoring Activities, as applicable.

#### 5.6 Basis for Use

Code Case OMN-27 was developed based on other industry practices such as 10 CFR 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," OMN-23, "Alternative Rules for Testing Pressure Isolation Valves," reactor coolant system leak rate monitoring, as well as the following:

- Increased focus on equipment reliability which has resulted in a marked decrease in critical component failures including those associated with non-PIV and non-CIV Category A valves,

- Improved trending tools,
- Industry expectations with respect to trending and,
- The existing and extensive test history that each plant has for its non-PIV and non-CIV Category A valves.

Code Case OMN-27 has been approved by ASME and is listed in the Applicability Index from ASME Codes and Standards, as applicable through the 2020 Edition of the ASME OM Code.

DBNPS, BVPS-1, and BVPS-2 have been testing their Category A (Non-CIV and non-PIV) valves every two years. Consequently, the trending history for these valves will provide adequate justification to implement Code Case OMN-27. Code Case OMN-27 requires that when a valve is replaced (for example, when a new Category A valve is installed in the future), the valve test interval shall be returned to the initial two-year test interval and testing at the two-year test interval shall continue until the Leak-Rate Monitoring Activities provisions of Code Case OMN-27 are met.

#### 5.7 Conclusion

Implementing the requirements of ASME approved Code Case OMN-27 would provide adequate detection of component degradation and would continue to provide reasonable assurance of the operational readiness of the affected valves. Therefore, compliance with the requirements of Code Case OMN-27, as an alternative to ASME OM Code subparagraph ISTC-3630(a), would result in an acceptable level of quality and safety pursuant to 10 CFR 50.55a(z)(1).

#### **6. Duration of Proposed Alternative**

The proposed alternative, if approved, would be implemented from the date of approval to the end of the fourth 10-year interval for DBNPS (September 20, 2022), fifth 10-Year Interval for BVPS-1 (September 19, 2027), and fourth 10-Year Interval for BVPS-2 (September 19, 2027).