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United States Nuclear Regulatory Commission

Protecting People and the Environment

Valve Position Indication Requirements

Public Meeting

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Agenda

- Purpose
- Background
- Risk Insights
- §50.55a Alternative Requests
- Summary
- Q&A

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Purpose

The purpose of this public meeting is to discuss:

- ASME OM Code requirements for valve position indication
- Supplemental requirements in §50.55a
- Alternative requests related to valve position indication.

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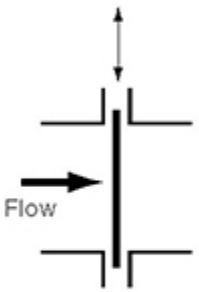
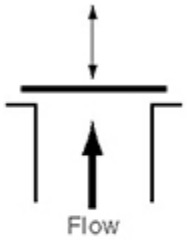
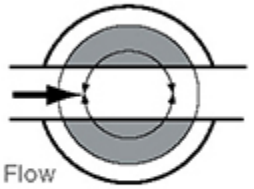
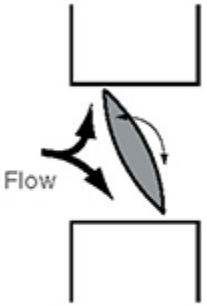
Obturator Motion in Basic Valve Types

Valve movement	Linear		Rotary	
Operating motion of the closing device (obturator)	Straight line		Rotating about an axis at right angles to the direction of flow	
Direction of flow in the seating area	At right angles to the operating motion of the obturator	Longitudinal to the operating motion of the obturator	Through the obturator	Around the obturator
Basic types	Gate valve	Globe valve	Ball valves	Butterfly valve
Schematic				

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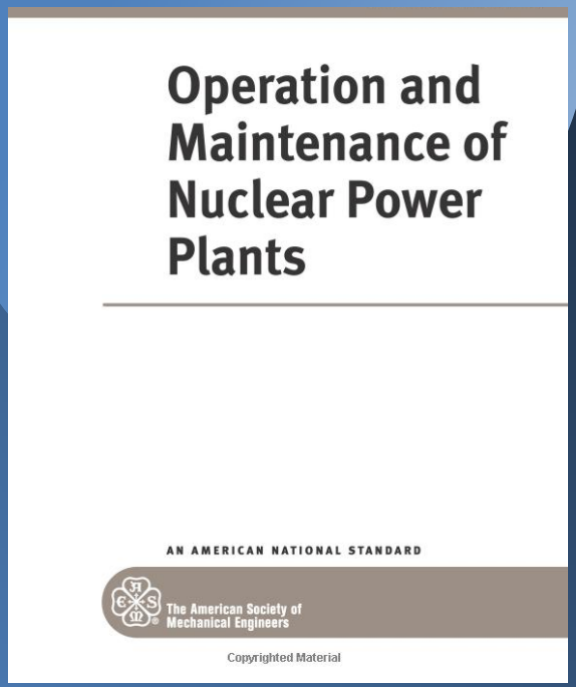
ASME OM Code ISTC-3700



"Valves with remote position indicators shall be observed locally at least once every 2 yr to verify that valve operation is accurately indicated. Where practicable, this local observation should be supplemented by other indications such as use of flow meters or other suitable instrumentation to verify obturator position. These observations need not be concurrent. Where local observation is not possible, other indications shall be used for verification of valve operation. Position verification for active MOVs shall be tested in accordance with Mandatory Appendix III of this Division."

- ASME OM Code, ISTC-3700 (2017 Edition)

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NUREG-1482

- Beginning in 1995, NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," emphasized the ASME OM Code requirements for valve position indication.
- Most recently, NUREG-1482 (Revision 3) indicates that ASME OM Code allows flexibility to licensees in verifying that operation of valves with remote position indicators is accurately indicated.
- NUREG-1482 refers to various methods to verify valve operation, such as nonintrusive techniques, flow initiation or absence of flow, leak testing, and pressure testing.

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Operating Experience

- Over many years, operating experience revealed that some licensees were not implementing ISTC-3700 in a manner that provides reasonable assurance that the remote indicating lights for valves within the scope of their IST Program are accurately verifying the position of the valve obturator.
- IN 2017-03, "Anchor/Darling Double Disc Gate Valve Wedge Pin and Stem-Disc Separation Failures," dated June 15, 2017 (ADAMS Accession No. ML17153A053).

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Risk Insights

What can happen?

- Stem-disc separation and other causes of inaccurate position indication have occurred.

How likely is it?

- Some valve designs are more susceptible to stem-disc separation than others.

What are the consequences?

- Unexpected loss of valve function when called upon. The safety consequences differ based on application.

Review should be commensurate with safety significance.

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OM Condition: Valve Position Indication in §50.55a(b)(3)(xi)

In 2017, the NRC added 10 CFR 50.55a(b)(3)(xi) as follows:

“When implementing paragraph ISTC-3700, ‘Position Verification Testing,’ in the ASME OM Code, 2012 Edition through the latest edition and addenda of the ASME OM Code incorporated by reference in paragraph (a)(1)(iv) of this section, licensees shall verify that valve operation is accurately indicated by supplementing valve position indicating lights with other indications, such as flow meters or other suitable instrumentation to provide assurance of proper obturator position for valves with remote position indication within the scope of Subsection ISTC including its mandatory appendices and their verification methods and frequencies.”

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OM Condition: Valve Position Indication in §50.55a(b)(3)(xi)

Federal Register Notice and NRC Response to Public Comments:

> "§50.55a(b)(3)(xi) to emphasize the provisions in OM Code, 2012 Edition, Subsection ISTC-3700, 'Position Verification Testing,' to verify that valve obturator position is accurately indicated." (82 FR 32934)

> "The NRC is requiring this condition for the implementation of the 2012 Edition of the OM Code for the 120-month IST interval in order to allow additional time for licensees to comply with this condition." (82 FR 32934)

In NRC Response to Proposed Rule Public Comments (ADAMS Accession No. ML16130A531):

- NRC stated that this condition is not a backfit.
- NRC declined to allow an additional 24 months beyond implementation of ASME OM Code (2012 Edition) to perform valve position indication tests.
- NRC indicated that licensees may submit alternative requests if needed.

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NRC Information Notice 2021-01

- IN 2021-01 alerts licensees to lessons learned from recent NRC inspections of the design-basis capability of power-operated valves (POVs) at nuclear power plants.
- IN 2021-01 addresses implementation of §50.55a(b)(3)(xi) in addition to other POV inspection lessons learned.
- NRC staff held public meetings in December 2020 and January 2021 to discuss the POV inspection lessons learned, including the schedule for implementing §50.55a(b)(3)(xi).

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Proposed Modification of OM Condition: Valve Position Indication in §50.55a(b)(3)(xi)

On March 26, 2021, the NRC issued a proposed rule in the Federal Register (86 FR 16087) to incorporate by reference the 2020 Edition of the ASME OM Code into §50.55a.

Proposed modification to §50.55a(b)(3)(xi) states:

"*For valves not susceptible to stem-disk separation, position verification testing specified in ISTC-3700 may be performed on a 10-year interval where the licensee documents a justification, which is made available for NRC review, demonstrating that the stem-disk connection is not susceptible to separation based on the internal design and evaluation of the stem-disk connection using plant-specific and industry operating experience and vendor recommendations.*"

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Alternatives via 50.55a(z)

(z) Alternatives to codes and standards requirements. Alternatives to the requirements of paragraphs (b) through (h) of this section or portions thereof may be used when authorized by the Director, NRR. A proposed alternative must be submitted and authorized prior to implementation. The applicant or licensee must demonstrate that:

(1) Acceptable level of quality and safety. The proposed alternative would provide an acceptable level of quality and safety; or

(2) Hardship without a compensating increase in quality and safety. Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

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Alternative Requests for the Initial Implementation of §50.55a(b)(3)(xi)

NRC has authorized alternative requests to extend the **initial implementation** of §50.55a(b)(3)(xi) following the IST Program 10-year update :

- Ginna Verbal Authorization 4/26/2021 (ML21117A031)
- Perry VR-6 SE 5/5/2021 (ML21123A217)

NRC review considered:

- Basis for assuming that the remote indicating lights for each valve properly indicate the open and close obturator position (such as by previous opening for flow and closing for leakage testing) to justify the requested extension of initial implementation of §50.55a(b)(3)(xi).
- Planned actions to meet the requirements in the ASME OM Code as supplemented by §50.55a(b)(3)(xi) when implemented.

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Extension of ISTC-3700 2-Year Interval

NRC has authorized requests for extensions of the OM Code required test interval on a plant-specific basis:

- Palo Verde VRR-01 SE 11/13/2019 (ML19310F679)
- Fermi 2 VRR-004 SE 7/8/2020 (ML20169A652)
- Fermi 2 VRR-012 SE 3/7/2018 (ML17354B002)

NRC review considered:

- Justification for the extended interval based on the successful history of remote indicating lights for the applicable valves to properly indicate the open and close obturator position (such as flow and leakage testing) to support the proposed test interval.
- Planned actions to meet the requirements in the ASME OM Code as emphasized by §50.55a(b)(3)(xi) when valve position verification is conducted for the remote position indicating lights at the proposed interval.

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ASME OM Code Cases in Alternative Requests

- The NRC staff has accepted the use of ASME OM Code Cases in alternative requests in advance of generic acceptance where all aspects of a code case will be implemented.
- Code Case OMN-28 addresses the extension of the 2-year ISTC-3700 test interval and testing activities for valves determined to have a stem-disk connection not susceptible to separation.
- NRC staff is reviewing OMN-28 for incorporation into a future revision to Regulatory Guide 1.192.
- For valves outside the scope of OMN-28, licensees will need to follow ISTC-3700 as supplemented by §50.55a(b)(3)(xi) or be addressed in a valve-specific alternative request.

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NRC Review of Alternative Requests

- If licensees provide the necessary information to meet §50.55a(z), the NRC staff will be able to promptly and thoroughly review the alternative request for valve position indication requirements in a timely manner.
- Recommend that licensees contact NRC Project Manager to alert the NRC staff that an alternative request for the valve position indication requirements will be submitted.
- Licensees may explore submitting alternative requests through the Web-Based Relief Request (WRR) Portal (https://wrr.nrc-gateway.gov) to improve the efficiency of the process.

For more information contact:

Web-BasedReliefRequests.Resource@nrc.gov

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Web-based Relief Requests

New Proposed Alternative

Request for Alternative under 10 CFR 50.55a(z)(1) and 10 CFR 50.55a(z)(2)

This online form can be utilized by operating power reactor licensees to submit requests for alternatives under Title 10 of the *Code of Federal Regulations*, Section 50.55a(z)(1) and 10 CFR 50.55a(z)(2).

APPROVED BY OMB NO. 3150-0244 Expiration Date: 01/31/22

Estimated burden per response to comply with this collection request: 4 hours. This form is used to submit requests for an alternative under Title 10 of the Code of Federal Regulations (10 CFR) Section 50.55a(z), "Alternatives to codes and standards requirements." Send comments regarding burden estimate to the FOIA, Library, and Information Collections Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov (mailto:Infocollects.Resource@nrc.gov) and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0018), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection.

A link to the WRR User Guide can be found here (https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML21078A154).

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General

1. Project Title (255 Character Limit) *

Test

251 characters remaining

2. Licensee *

Exelon Corporation, LLC

3. Licensee Contact *

Test

4. Licensee Contact Phone Number *

(123) 456-7899

5. Licensee Contact Email Address

6. Request Type

7. Inservice Inspection or Inservice Testing

8. Document Sensitivity

Non-Sensitive

EPRI Technical Report 3002019621

- NRC staff is evaluating whether a recent EPRI report can be reviewed for acceptance to help with this issue.
- EPRI Technical Report 3002019621, "Susceptibility of Valve Applications to Failure of the Stem-to-Disk Connection," provides guidance for licensees to implement ISTC-3700 as supplemented by proposed modification to §50.55a(b)(3)(xi) or request use of ASME OM Code Case OMN-28.
- EPRI describes its review of various valve stem-disk connection designs, and its evaluation of industry operating experience to determine the susceptibility of these stem-disk connection designs to separation under applicable operating conditions.

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Summary

- ISTC-3700 as supplemented by §50.55a(b)(3)(xi) specifies requirements for valve position indication.
- Licensees may submit an alternative request for valve position indication testing in accordance with §50.55a(z).
- Alternative requests may specify the use of Code Case OMN-28 or describe plant-specific approaches.
- NRC staff will be able to review alternative requests promptly and thoroughly in a timely manner if necessary information is provided in the submittal.

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Questions or Comments?

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Acronyms

ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
EPRI	Electric Power Research Institute
FRN	Federal Register Notice
IN	Information Notice
IST	Inservice Testing
OM	Operation and Maintenance of Nuclear Power Plants
OMN-28	Alternative Valve Position Verification Approach to Satisfy ISTC-3700 for Valves Not Susceptible to Stem-Disk Separation
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation

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