ASME OM-2–2024

Component Testing Requirements at Nuclear Facilities

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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150 Clove Road • Little Falls, NJ • 07424 USA

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FOREWORD

Inservice testing (IST) is used at nuclear facilities to examine, test, and monitor pumps, valves, and dynamic restraint devices. ASME OM-2, Component Testing Requirements at Nuclear Facilities, is a component code intended to be used for IST at nuclear facilities of various designs. ASME OM, Operation and Maintenance of Nuclear Power Plants, provides requirements for the performance of IST at water-cooled nuclear power plants. The purpose of IST is to test, examine, and monitor pumps, valves, and dynamic restraint devices to ensure the operational readiness of the component to perform its specified functions. Both ASME OM and ASME OM-2 accomplish this by trending degradation so that such degradation can be detected and remedied prior to the component being incapable of performing its specified functions. ASME prepared ASME OM specifically for light water reactors (LWRs). Additionally, ASME made several accommodations in ASME OM in the testing of components because many components cannot be fully tested with the nuclear power plant online. A reason for this is that ASME prepared ASME OM after many of those plants were built and operating.

With the expansion and evolution of the nuclear industry to facilities that are significantly different than the currently operating LWRs, ASME recognized that another code, ASME OM-2, for IST of components in new and advanced reactors was needed. ASME designed ASME OM-2 with the basic prerequisite that components that are to be part of the IST program for these new facilities are appropriate for the functions that they are to provide, that they are correctly sized and specified for the parameters of the system in which they are to be installed and operating, and that the materials of their construction are compatible with the system fluid conditions, pressures, temperature, and chemistry.

As a prerequisite, components that are to be in the IST program shall have been qualified by ASME QME-1, prior to their installation, or by a qualification method justified by the Owner to the applicable regulatory authority. At the time of preparing ASME OM-2, ASME prepared a reformatted edition of ASME QME-1 to allow its more effective application for nuclear facilities with various designs. As part of that qualification, the Owner is to provide the parameters of the component that need to be periodically monitored to ensure the operational readiness of the component to perform its specified functions. In addition to the periodic and condition-monitoring frequencies specified in this Code, manufacturer-specified inservice activities and associated frequencies shall be met, or alternatives justified by the Owner, and, if required by the applicable regulatory authority, submitted for the regulator's review and acceptance.

With the large number of different types of reactor systems being planned, and those that will be developed in the future, ASME OM-2 does not identify the specific components and specified functions that are to be tested in accordance with this Code. The selection of those specific components and specified functions is required to be completed by agreement between the system and facility designers, the component manufacturer, and the applicable regulatory authority. Once identified, those components must comply with ASME OM-2 unless an alternative is justified by the Owner and, if required by the applicable regulatory authority, submitted for the regulator's review and acceptance.

This Code does not include specific requirements for the application of risk insights. An applicant may use risk insights that takes into consideration the reactor design and planned operation in proposing its IST Program Plan for review and acceptance as required by the applicable regulatory authority.

The ASME Committee on Operation and Maintenance (OM Committee) of Nuclear Power Plants is tasked to ensure that standardized component test requirements contain the general and specific requirements necessary for those components that are selected to be tested. ASME OM-2 is one of these OM Committee codes available for inservice testing of components in nuclear facilities. While ASME prepared ASME OM-2 with nuclear facilities as the focus, non-nuclear facilities may use ASME OM-2 for IST of components in their facilities.

This publication, the 2024 edition of Operation and Maintenance of Nuclear Power Plants, was approved by the ASME Board on Nuclear Codes and Standards. ASME OM-2–2024 was approved by the American National Standards Institute on October 11, 2024.

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In addition, the committee may post errata on the committee web page. Errata become effective on the date posted. Users can register on the committee web page to receive email notifications of posted errata.

This Code is always open for comment, and the committee welcomes proposals for revisions. Such proposals should be as specific as possible, citing the paragraph number, the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent background information and supporting documentation.

Cases

(a) The most common applications for cases are

(1) to permit early implementation of a revision based on an urgent need

(2) to provide alternative requirements

(3) to allow users to gain experience with alternative or potential additional requirements prior to incorporation directly into the Code

(4) to permit the use of a new material or process

(b) Users are cautioned that not all jurisdictions or owners automatically accept cases. Cases are not to be considered as approving, recommending, certifying, or endorsing any proprietary or specific design, or as limiting in any way the freedom of manufacturers, constructors, or owners to choose any method of design or any form of construction that conforms to the Code.

(c) A proposed case shall be written as a question and reply in the same format as existing cases. The proposal shall also include the following information:

(1) a statement of need and background information

(2) the urgency of the case (e.g., the case concerns a project that is underway or imminent)

(3) the Code and the paragraph, figure, or table number

(4) the editions of the Code to which the proposed case applies

(d) A case is effective for use when the public review process has been completed and it is approved by the cognizant supervisory board. Approved cases are posted on the committee web page.

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Committee Meetings. The OM Standards Committee regularly holds meetings that are open to the public. Persons wishing to attend any meeting should contact the secretary of the committee. Information on future committee meetings can be found on the committee web page at https://go.asme.org/OMcommittee.

PREFACE

GENERAL

In 2022, the ASME OM Committee directed that two separately published ASME codes be considered. ASME OM-2, Component Testing Requirements at Nuclear Facilities, is the second published ASME OM Committee code. The first ASME OM Committee code is ASME OM, Operation and Maintenance of Nuclear Plants.

ASME prepared ASME OM-2 to specify provisions for IST programs that will be appropriate for all types of nuclear facilities. Components within the scope of ASME OM-2 include those that perform one of the following functions:

(a) generate, allow, throttle, or isolate fluid flow

(b) provide pressure relief

(c) establish dynamic restraint to ensure the structural integrity of piping systems and their components

To simplify ASME OM-2 language, the components that perform these functions are referred to as pumps, valves, and dynamic restraint devices in ASME OM-2. However, the components performing these functions in certain new or advanced nuclear facilities might have significantly different designs than components performing those functions in current water-cooled reactors. The IST provisions in ASME OM-2 may be specified for application to components that perform the functions within the scope of ASME OM-2 for all types of nuclear facilities, regardless of the design of the components.

ORGANIZATION

ASME OM-2 has a General Requirements section followed by sections that address program and testing requirements for dynamic restraint devices, pumps, and valves. The last two sections are a glossary and a list of references, respectively.

Section GR, General Requirements
Section DRD, Dynamic Restraint Devices
Section CP, Centrifugal Pumps
Section PDP, Positive Displacement Pumps
Section AOV, Air-Operated Valves
Section CV, Check Valves
Section HOV, Hydraulically Operated Valves
Section MOV, Motor-Operated Valves
Section MV, Manual Valves
Section PAV, Pyrotechnic-Actuated Valves
Section PRD, Pressure Relief Devices
Section SOV, Solenoid-Operated Valves
Section VLT, Requirements for Valve Leak Testing
Section GL, Glossary
Section REF, References