ASME OM-2020

(Revision of ASME OM-2017)

Operation and Maintenance of Nuclear Power Plants

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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Two Park Avenue • New York, NY • 10016 USA

Date of Issuance: June 30, 2020

The next edition of this Standard is scheduled for publication in 2022.

ASME issues written replies to inquiries concerning interpretations of technical aspects of this Standard. Periodically certain actions of the ASME OM Committee may be published as Cases. Cases and interpretations are published on the ASME website under the Committee Pages at http://cstools.asme.org/ as they are issued.

Errata to codes and standards may be posted on the ASME website under the Committee Pages to provide corrections to incorrectly published items, or to correct typographical or grammatical errors in codes and standards. Such errata shall be used on the date posted.

The Committee Pages can be found at http://cstools.asme.org/. There is an option available to automatically receive an e-mail notification when errata are posted to a particular code or standard. This option can be found on the appropriate Committee Page after selecting "Errata" in the "Publication Information" section.

The American Society of Mechanical Engineers
Two Park Avenue, New York, NY 10016-5990

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FOREWORD

This document was developed and is maintained by the ASME Committee on Operation and Maintenance (OM Committee) of Nuclear Power Plants. The OM Committee develops, revises, and maintains codes, standards, and guides applicable to the safe and reliable operation and maintenance of nuclear power plants. The Committee operates under procedures accredited by the American National Standards Institute as meeting the criteria of consensus procedures for American National Standards.

This publication, the 2020 edition of Operation and Maintenance of Nuclear Power Plants, was approved by the ASME Board on Nuclear Codes and Standards. ASME OM-2020 was approved by the American National Standards Institute on May 11, 2020.

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CORRESPONDENCE WITH THE OM COMMITTEE

General. ASME Standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Standard may interact with the Committee by requesting interpretations, proposing revisions or a case, and attending Committee meetings. Correspondence should be addressed to:

Secretary, OM Standards Committee
The American Society of Mechanical Engineers
Two Park Avenue
New York, NY 10016-5990
http://go.asme.org/Inquiry

Proposing Revisions. Revisions are made periodically to the Standard to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Standard. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

Proposing a Case. Cases may be issued to provide alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee web page.

Requests for Cases shall provide a Statement of Need and Background Information. The request should identify the Standard and the paragraph, figure, or table number(s), and be written as a Question and Reply in the same format as existing Cases. Requests for Cases should also indicate the applicable edition(s) of the Standard to which the proposed Case applies.

Interpretations. Upon request, the OM Standards Committee will render an interpretation of any requirement of the Standard. Interpretations can only be rendered in response to a written request sent to the Secretary of the OM Standards Committee.

Requests for interpretation should preferably be submitted through the online Interpretation Submittal Form. The form is accessible at http://go.asme.org/InterpretationRequest. Upon submittal of the form, the Inquirer will receive an automatic e-mail confirming receipt.

If the Inquirer is unable to use the online form, he/she may mail the request to the Secretary of the OM Standards Committee at the above address. The request for an interpretation should be clear and unambiguous. It is further recommended that the Inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry in one or two words.
Edition:	Cite the applicable edition of the Standard for which the interpretation is being requested.
Question:	Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. Please provide a condensed and precise question, composed in such a way that a "yes" or "no" reply is acceptable.
Proposed Reply(ies):	Provide a proposed reply(ies) in the form of "Yes" or "No," with explanation as needed. If entering replies to more than one question, please number the questions and replies.
Background Information:	Provide the Committee with any background information that will assist the Committee in understanding the inquiry. The Inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in the format described above may be rewritten in the appropriate format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

Moreover, ASME does not act as a consultant for specific engineering problems or for the general application or understanding of the Standard requirements. If, based on the inquiry information submitted, it is the opinion of the Committee that the Inquirer should seek assistance, the inquiry will be returned with the recommendation that such assistance be obtained.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME Committee or Subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Attending Committee Meetings. The OM Standards Committee regularly holds meetings and/or telephone conferences that are open to the public. Persons wishing to attend any meeting and/or telephone conference should contact the Secretary of the OM Standards Committee.

PREFACE

GENERAL

In 2008, the OM Committee directed that the two separately published OM Code and the OM Standards and Guides (OM-S/G) publications be combined into one document. This was done to ensure all of our standards and guides documents were readily available to users of the OM Code products. Some of the standards and guides were originally developed as part of the current operating nuclear power plants preoperational testing program conducted during the 1970s and 1980s. These standards and guides will be useful for power uprate projects and for new reactor design plant construction. Combining the OM Code and OM-S/G into one document makes the publication schedules for the Committee more efficient and easier to track.

ORGANIZATION

The consolidated code, standards, and guides for nuclear power plants, titled Operation and Maintenance of Nuclear Power Plants, are arranged into three distinct divisions. The titles of some of the sections were shortened to simplify the presentation purely for the user's ease of review and use. Reference to the individual published code, standard, or guide should be made for the specific title and the application requirements. Subsequent changes made to the Division contents will be detailed in future publications in separately listed summary of changes sections.

Division 1: OM Code: Section IST

[1] *Pre-2000 plant:* a nuclear power plant that was issued its construction permit by the applicable regulatory authority prior to January 1, 2000.
[2] *Post-2000 plant:* a nuclear power plant that was issued (or will be issued) its construction permit, or combined license for construction and operation, by the applicable regulatory authority on or following January 1, 2000.

Division 2: OM Standards

Division 3: OM Guides

ASME OM-2020
SUMMARY OF CHANGES

Following approval by the ASME OM Committee and ASME, and after public review, ASME OM-2020 was approved by the American National Standards Institute on May 11, 2020.

ASME OM-2020 includes the following changes identified by a margin note, **(20)**.

Page	*Location*	*Change*
1	ISTA-1400	(1) Revised
		(2) Table ISTA-1400-1 deleted
4	ISTA-3200	(1) Former subpara. (a) deleted, and remaining subparagraphs redesignated
		(2) Subparagraph (e) added
5	ISTA-5000	Revised
5	ISTA-6000	Revised
6	ISTB-1400	Subparagraph (d) revised
6	ISTB-2000	Definitions of *baseline test* and *pump periodic verification test* added
6	ISTB-3100	(1) First paragraph and subpara. (c) revised
		(2) Subparagraph (d) deleted
7	Table ISTB-3000-1	Second column head and Note (1) revised
7	ISTB-3310	Revised in its entirety
8	Table ISTB-3400-1	Note (1) revised
8	ISTB-3400	Revised
9	Table ISTB-3510-1	(1) Third column head revised
		(2) Fourth column added
9	ISTB-5000	Revised
10	ISTB-5110	Title and subpara. (a) revised
10	ISTB-5122	First paragraph and subparas. (c) and (d) revised
11	ISTB-5124	Added
12	ISTB-5210	Title and subpara. (a) revised
12	ISTB-5222	First paragraph and subparas. (c) and (d) revised
13	ISTB-5224	Added
13	ISTB-5310	Title revised
14	ISTB-5322	First paragraph and subparas. (c) and (d) revised
16	ISTB-5324	Added
16	ISTB-6000	First paragraph added
16	ISTB-6200	Subparagraph (b) revised
16	ISTB-9100	Subparagraph (e) added
18	ISTC-1200	Subparagraph (d) revised
19	ISTC-3000	ISTC-3800 deleted

Page	*Location*	*Change*
20	Table ISTC-3500-1	(1) Third entry in first column and fifth entry in last column revised
		(2) Note (4) added, and subsequent Notes redesignated
22	ISTC-4000	Revised
23	ISTC-5112	Revised
28	Subsection ISTD	Title revised
28	ISTD-1110	Revised
28	ISTD-1400	(1) First paragraph and subpara. (b) revised
		(2) Subparagraph (d) added
28	ISTD-1600	Revised
29	ISTD-1800	Revised
29	ISTD-2000	(1) Definition of *service life* revised
		(2) Definition of *service life monitoring* added
30	ISTD-3240	Revised
30	ISTD-4110	Revised
33	ISTD-5240	Revised
35	ISTD-5331	Revised
37	ISTD-6000	(1) Title revised
		(2) ISTD-6100 and ISTD-6200 revised in their entirety
38	ISTD-9500	Added
42	ISTE-4160	Revised
44	ISTE-5121	Subparagraphs (b) and (c) revised
44	ISTE-5122	Subparagraph (b) revised
45	ISTE-5220	Revised
46	ISTE-6110	Revised
47	ISTF-2000	Definition of *baseline test* added
47	ISTF-3100	(1) First paragraph revised
		(2) Subparagraph (d) deleted
48	Table ISTF-3000-1	Second column head revised
48	ISTF-3310	Revised in its entirety
49	Table ISTF-3510-1	Second column head revised
50	ISTF-5000	Revised
50	ISTF-5110	Title revised
51	ISTF-5210	Title revised
52	ISTF-5310	Title revised
52	ISTF-6000	First paragraph added
55	I-1200	First paragraph revised
56	I-1320	Subparagraphs (a) and (c)(3) revised
56	I-1350	Subparagraph (a)(3) revised
58	I-3220	Revised
65	II-4000	Subparagraph (b)(5) revised
68	III-3500	Subparagraph (a) revised
78	Division 1, Mandatory Appendix V	Deleted
82	Division 1, Nonmandatory Appendix B	Footnote (1) and B-1000 revised

Page	*Location*	*Change*
83	Division 1, Nonmandatory Appendix C	Footnote 1, C-1000, and first sentence of C-2000 revised
84	Division 1, Nonmandatory Appendix D	Footnote 1 and D-1000 revised
85	Division 1, Nonmandatory Appendix E	Footnote 1 revised
88	Division 1, Nonmandatory Appendix F	Footnote 1 revised
90	Division 1, Nonmandatory Appendix G	Footnote 1 revised
92	Division 1, Nonmandatory Appendix H	Footnote 1 revised
107	Part 3, 1	Revised
163	Part 7	Formerly Division 3, Part 7; revised and relocated to Division 2
170	Part 7, Nonmandatory Appendix A	Formerly in Division 3; revised and relocated to Division 2
173	Part 7, Nonmandatory Appendix B	Formerly in Division 3; revised and relocated to Division 2
176	Part 12	Title revised
176	Part 12, 1.1	Revised
176	Part 12, 2	Definition of *LWR* deleted
194	Part 16	Title revised
194	Part 16, 1.1	Revised
215	Part 21	Title revised
282	Part 24, 11.5.1	Revised
294	Part 28	Title revised
294	Part 28, 1.1	Revised
309	Part 28, Mandatory Appendix III	Title revised
311	Part 28, Mandatory Appendix IV	Title revised
315	Part 28, Mandatory Appendix V	Title revised
318	Part 28, Mandatory Appendix VI	Title revised
323	Part 28, Nonmandatory Appendix A	First paragraph revised
324	Table A-1	Title revised
327	Part 28, B-3	Revised
340	Part 29	Deleted
341	Part 11	Revised in its entirety
380	Part 14, 1.1	Revised
400	Part 19	Title revised
400	Part 19, 1.1	First paragraph revised

SPECIAL NOTE: Cases to ASME OM are no longer included in the edition. The Applicability Index for ASME OM Cases appears on the following page. The index and Cases are updated periodically and are available under the "O&M CASES" tab in the left-hand column at http://go.asme.org/OMcommittee.

APPLICABILITY INDEX FOR ASME OM CASES

Cases represent alternatives or additions to the OM Code. A Case can be a method of handling a reply to an inquiry when study indicated that the Code wording needs clarification, or when the reply modifies the existing requirements of the Code or grants permission to use alternative methods.

Cases remain in effect for the applicable editions and addenda until they are annulled.

This Applicability Index includes OM Cases approved as of December 1, 2019. The index and Cases are updated periodically and are available under the "O&M CASES" tab in the left-hand column at http://go.asme.org/OMcommittee.

		Applicability	
OMN Case No.	Title	From	Up to and Including
OMN-1, Rev 2	Alternative Rules for Preservice and Inservice Testing of Certain Electric Motor-Operated Valve Assemblies in Light-Water Reactor Power Plants	1995	2006
OMN-2	Thermal Relief Valve	Annulled 2014	
OMN-3	Requirements for Safety Significance Categorization of Components Using Risk Insights for Inservice Testing of LWR Power Plants	1990	2017
OMN-4	Requirements for Risk Insights for Inservice Testing of Check Valves at LWR Power Plants	1996	2020
OMN-5	Testing of Liquid Service Relief Without Insulation	Annulled in 2014	
OMN-6	Alternate Rules for Digital Instruments	1990	2005a
OMN-7	Alternative Requirements for Pump Testing	1995	2012
OMN-8	Alternative Rules for Preservice and Inservice Testing of Power-Operated Valves That Are Used for System Control and Have a Safety Function per OM-10, ISTC-1.1, or ISTA-1100	1988	2004
OMN-9	Use of a Pump Curve for Testing	1990	1992
OMN-10	Requirements for Safety Significance Categorization of Snubbers Using Risk Insights and Testing Strategies for Inservice Testing of LWR Power Plants	1995	2020
OMN-11	Risk-Informed Testing for Motor-Operated Valves	1995	2006
OMN-12	Alternate Requirements for Inservice Testing Using Risk Insights for Pneumatically and Hydraulically Operated Valve Assemblies in Light-Water Reactor Power Plants	1998	2020
OMN-13, Rev 3	Performance-Based Requirements for Extending Snubber Inservice Visual Examination Interval at LWR Power Plants	1995	2020
OMN-14	Alternative Rules for Valve Testing Operations and Maintenance, Appendix I: BWR CRD Rupture Disk Exclusion	Annulled 2014	
OMN-15, Rev 2	Performance-Based Requirements for Extending the Snubber Operational Readiness Testing Interval at LWR Power Plants	1998	2020
OMN-16, Rev 2	Use of a Pump Curve for Testing	1998	2020
OMN-17, Rev 1	Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves	1995	2020

OMN Case No.	Title	Applicability	
		From	Up to and Including
OMN-18	Alternate Testing Requirements for Pumps Tested Quarterly Within ±20% of Design Flow	1994	2011a
OMN-19	Alternate Upper Limit for the Comprehensive Pump Test	1994	2009
OMN-20, Rev 1	Inservice Test Frequencies	All earlier editions and addendas	2015
OMN-21	Alternate Requirements for Adjusting Hydraulic Parameters to Specified Reference Points	1995	2011a
OMN-22	Smooth Running Pumps	1990	2020
OMN-23	Alternative Rules for Testing Pressure Isolation Valves	2001	2020
OMN-24	Alternative Requirements for Testing ASME Class II & III Relief Valves	2001	2020
OMN-25	Alternative Requirements for Testing Appendix I Pressure Relief Valves	2001	2020
OMN-26	Alternative Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves	2012	2020

CROSS-REFERENCING AND STYLISTIC CHANGES IN ASME OM

There have been structural and stylistic changes to ASME OM that should be noted to aid navigating the contents. The following is an overview of the changes:

Subparagraph Breakdowns/Nested Lists Hierarchy

- First-level breakdowns are designated as (a), (b), (c), etc., as in the past.
- Second-level breakdowns are designated as (1), (2), (3), etc., as in the past.
- Third-level breakdowns are now designated as (-a), (-b), (-c), etc.
- Fourth-level breakdowns are now designated as (-1), (-2), (-3), etc.

Preparation of Technical Inquiries to the Committee on Operation and Maintenance of Nuclear Power

The information on preparation of technical inquiries to the OM Committee has been moved to the Correspondence With the OM Committee page in the front matter.

Cross-References

The cross-references within ASME OM-2020, Division 1, have been linked. The cross-references within Divisions 2 and 3 will be linked in subsequent editions. To facilitate the link functionality, the cross-reference style has changed. The cross-references within a paragraph do not include the designator/identifier of that paragraph. The cross-references to a subparagraph breakdown follow the hierarchy of the designators under which the breakdown appears. The following examples illustrate the revised format:

- If ISXX-1000(a) is referenced in ISXX-1000(b), it is referenced as (a).
- If ISXX-1000(a)(1) is referenced in ISXX-1000(a)(2), it is referenced as (1).
- If ISXX-1000(a)(1) is referenced in ISXX-1000(b), it is referenced as (a)(1).
- If ISXX-1000(a)(1) is referenced in ISXX-2000, it is referenced as ISXX-1000(a)(1).

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DIVISION 1
OM CODE: SECTION IST

Subsection ISTA
General Requirements

ISTA-1000 INTRODUCTION

ISTA-1100 Scope

Section IST establishes the requirements for preservice and inservice testing and examination of certain components to assess their operational readiness in water-cooled reactor nuclear power plants. It identifies the components subject to test or examination, responsibilities, methods, intervals, parameters to be measured and evaluated, criteria for evaluating the results, corrective action, personnel qualification, and record keeping. These requirements apply to

(a) pumps and valves that are required to perform a specific function in shutting down a reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident

(b) pressure relief devices that protect systems or portions of systems that perform one or more of the three functions identified in (a)

(c) dynamic restraints (snubbers) used in systems that perform one or more of the three functions identified in (a), or to ensure the integrity of the reactor coolant pressure boundary

ISTA-1200 Jurisdiction

The jurisdiction of Section IST covers individual components that have met all the requirements of the construction code commencing at the time when the construction code requirements have been met, irrespective of the physical location. When portions of systems or plants are completed at different times, the jurisdiction of this Section shall cover only those components on which all construction related to the components has been completed.

ISTA-1300 Application

ISTA-1310 Components Subject to Testing and Examination. Components identified in Section IST for testing or examination shall be included in the test plan (ISTA-3110). These components include nuclear power plant items such as pumps, valves, and dynamic restraints (snubbers).

ISTA-1320 Classifications. Optional construction of a component in a system boundary to a classification higher than the minimum class established in the component Design Specification (either upgrading from Class 2 to Class 1 or Class 3 to Class 2) shall not affect the overall system classification by which the applicable requirements of Section IST are determined.

ISTA-1400 Referenced Standards and Specifications (20)

When standards and specifications are referenced in Section IST, the Owner shall validate that the specific revisions of the standards and specifications are acceptable for application to Section IST.

ISTA-1500 Owner's Responsibilities

The responsibilities of the Owner of the nuclear power plant shall include the following:

(a) determination of the appropriate Code Class for each component of the plant, identification of the system boundaries for each class of components subject to test or examination, and the components exempt from testing or examination requirements.

(b) design and arrangement of system components to include allowance for adequate access and clearances for conduct of the tests and examinations. Refer to Division 1, Nonmandatory Appendix M for guidance.

(c) preparation of plans and schedules.

(d) preparation of written test and examination instructions and procedures.