ASME NQA-1–2017
(Revision of ASME NQA-1–2015)

Quality Assurance Requirements for Nuclear Facility Applications

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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The American Society of Mechanical Engineers

Two Park Avenue • New York, NY • 10016 USA

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The next edition of this Standard is scheduled for publication in 2019.

ASME issues written replies to inquiries concerning interpretations of technical aspects of this Standard. Interpretations are published on the ASME Web site under the Committee Pages at http://cstools.asme.org/ as they are issued.

Errata to codes and standards may be posted on the ASME Web site 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

CONTENTS

(A detailed Contents precedes each NQA Part.)

FOREWORD

This Standard is intended to serve the global nuclear industry responsible for the safety and quality of nuclear facilities and activities.

It is intended to be applied to any structure, system, component, activity, or organization that is essential to the safe, reliable, and efficient performance of a nuclear facility and any activities independent of a facility that may affect performance. It is also intended to be applied to all phases of a nuclear facility life cycle and to related activities.

This Standard reflects industry experience and current understanding of the quality assurance requirements necessary to achieve safe, reliable, and efficient utilization of nuclear energy and management and processing of radioactive materials. The Committee on Nuclear Quality Assurance (NQA) actively endorses the growing worldwide movement toward rational, cost-effective quality assurance practices — practices that focus on results. The NQA Committee also maintains liaison with national and international groups that have similar interests in quality to assure consistency and maximum applicability of the Standard in a global setting. Consequently, the NQA Committee has regularly updated and revised the Standard since its first edition was issued in 1979 to improve its utility, effect on nuclear safety, and value to the nuclear industry.

This Standard includes requirements and guidance and is organized in the following four parts:

(a) Part I contains requirements for a Quality Assurance Program for nuclear facility applications.

(b) Part II contains additional quality assurance requirements for the planning and conduct of specific work activities conducted under a Quality Assurance Program developed in accordance with Part I.

(c) Part III contains guidance for implementing the requirements of Parts I and II.

(d) Part IV contains guidance for the application of NQA-1 and comparisons of NQA-1 with other quality requirements.

Early in 1975, the American National Standards Institute (ANSI) assigned overall responsibility for coordination among technical societies and development and maintenance of nuclear power quality assurance standards to the American Society of Mechanical Engineers (ASME). The ASME Committee on NQA was constituted on October 3, 1975, and assumed responsibility for the ANSI/ASME N.45 series documents. Currently, the NQA Committee operates under the ASME requirements for Nuclear Codes and Standards Development Committees.

This Committee initially prepared

ANSI/ASME NQA-1–1979	Quality Assurance Program Requirements for Nuclear Power Plants
ANSI/ASME NQA-2–1983	Quality Assurance Requirements for Nuclear Power Plants
ANSI/ASME NQA-3–1989	Quality Assurance Requirements for High Level Waste Management

For a detailed history of the NQA Committee and evolution of the Standard, go to: http://cstools.asme.org/csconnect/CommitteePages.cfm?Committee=O10500000&Action=16897

Requests for interpretation or suggestions for improvement of this Standard should be submitted in accordance with Correspondence With the NQA Committee.

For a listing of the NQA publication history, refer to the following table:

Historical Listing of NQA Publications

NQA-1			NQA-2			NQA-3		
Editions and Addenda	Designator	Issued	Editions and Addenda	Designator	Issued	Editions and Addenda	Designator	Issued
1st Ed.	**NQA-1–1979**	8/31/1979		...	...		...	...
Add.	NQA-1a–1981	4/30/1981		...	...		...	...
Add.	NQA-1b–1981	1/31/1982		...	...		...	...
2nd Ed.	**NQA-1–1983**	7/1/1983	1st Ed.	**NQA-2–1983**	8/31/1983		...	...
Add.	NQA-1a–1983	12/31/1983	Add.	NQA-2a–1985	10/15/1985		...	...
Add.	NQA-1b–1984	3/15/1985		...	...		...	...
Add.	NQA-1c–1985	12/31/1985		...	...		...	...
3rd Ed.	**NQA-1–1986**	7/1/1986	2nd Ed.	**NQA-2–1986**	7/1/1986		...	...
Add.	NQA-1a–1986	2/15/1987	Add.	NQA-2a–1986	2/15/1987		...	...
Add.	NQA-1b–1987	3/15/1988	Add.	NQA-2b–1987	4/15/1988		...	...
Add.	NQA-1c–1988	2/28/1989	Add.	NQA-2c–1988	2/28/1989		...	...
4th Ed.	**NQA-1–1989**	9/15/1989	3rd Ed.	**NQA-2–1989**	9/30/1989	st Ed.	**NQA-3–1989**	3/23/1990
Add.	NQA-1a–1989	3/31/1990	Add.	NQA-2a–1990	5/ /1 90		...	...
Add.	NQA-1b–1991	4/15/1991	Add.	NQA-2b–1991	5/12/ 92		...	...
Add.	NQA-1c–1992	9/30/1992		...	...		...	...
5th Ed.	**NQA-1–1994** [Note (1)]	7/29/1994		...	...		...	...
Add.	NQA-1a–1995	1/19/1996		...	...		...	...
6th Ed.	**NQA-1–1997**	12/31/1997		...	...		...	...
Add.	NQA-1a–1999	5/25/1999		...	...		...	...
7th Ed.	**NQA-1–2000**	5/21/2001		...	...		...	...
Add.	NQA-1a–2002	12/6/2002		...	...		...	...
8th Ed.	**NQA-1–2004**	12/22/2004		...	...		...	...
Add.	NQA-1a–2005	5/3/2006		...	...		...	...
Add.	NQA-1b–2007	6/1/2007		...	...		...	...
9th Ed.	**NQA-1–2008**	3/ 4/ 08		...	...		...	...
Add.	NQA-1a–2009	/20/2009		...	...		...	...
Add.	NQA-1b–2011	1/4/2011		...	...		...	...
10th Ed.	**NQA-1–2012**	3/15/2013		...	...		...	...
11th Ed.	**NQA-1–201**	2/20/2015		...	...		...	...
12th Ed.	**NQA-1–2017**	1/18/2018		...	...		...	...

GEN[illegible] NQA editions and addenda prior to 1989 were titled ANSI/ASME NQA.

NOTE:

(1) This edition is a consolidation of NQA-1 and NQA-2.

(17)

CORRESPONDENCE WITH THE NQA 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, NQA 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.

Interpretations. Upon request, the NQA 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 NQA 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 NQA 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 NQA 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 NQA Standards Committee.

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(As of December 19, 2016)

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INTRODUCTION

This Standard is to be applied to any structure, system, component, activity, or organization that is essential to the safe, reliable, and efficient performance of a nuclear facility and any activities independent of a facility that may affect performance (e.g., transportation of nuclear materials) of those activities. The extent to which this Standard should be applied depends upon the specific type of facility, items, or services involved and the nature, scope, and relative importance of the activity being performed. It is also to be applied to all phases of a nuclear facility life cycle (e.g., siting, design, construction, operation, and decommissioning) and all types of activities (e.g., training, testing, software development or use).

The Standard also applies to activities that could affect the quality of nuclear material applications, structures, systems, and components of nuclear facilities.

Examples of nuclear facilities are those for power generation, spent fuel storage, waste management, fuel reprocessing, nuclear material processing, fuel fabrication, nuclear research, and other related facilities. Examples of activities include siting, designing, procuring, developing or using software, fabricating, constructing, handling, shipping, receiving, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, refueling, modifying, and decommissioning.

This Standard is organized in the following four parts:

(a) Part I contains requirements for developing and implementing a Quality Assurance Program for nuclear facility applications.

(b) Part II contains additional quality assurance requirements for the planning and conduct of specific work activities under a Quality Assurance Program developed in accordance with Part I.

(c) Part III contains guidance for implementing the requirements of Parts I and II.

(d) Part IV contains guidance for application of NQA-1 and comparisons of NQA-1 with other quality requirements.

The arrangement of the requirements in Parts I and II and the guidance in Parts III and IV permit the judicious application of the Standard or portions of the Standard. Applicable requirements of Parts I and II are to be implemented to ensure conformance with NQA-1. The application of this Standard, or portions thereof, shall be invoked by written contracts, policies, procedures, specifications, or other appropriate documents.

This Standard reflects industry experience and current understanding of the quality assurance requirements necessary to achieve safe, reliable, and efficient utilization of nuclear energy and management and processing of radioactive materials. The Standard focuses on the achievement of results, emphasizes the role of the individual and line management in the achievement and sustainment of quality, and fosters the application of these requirements in a manner consistent with the relative importance of the item or activity (i.e., a "graded approach").

ASME NQA-1–2017
SUMMARY OF CHANGES

Following approval by the ASME Standards Committee on Nuclear Quality Assurance and ASME, and after public review, ASME NQA-1–2017 was approved by the American National Standards Institute on December 6, 2017.

ASME NQA-1–2017 consists of NQA-1–2015; editorial changes, revisions, and corrections; as well as the following changes identified by a margin note, **(17)**.

Page	*Location*	*Change*
vi	Correspondence With the NQA Committee	Added to replace "Preparation of Technical Inquiries to the Nuclear Quality Assurance Committee"
18	Part I, Requirement 7, 200	Subparagraphs (b) and (c) revised
34–36	Part II Contents	Updated
89, 90	Part II, Subpart 2.14, 603	(1) Subparagraph (h) revised (2) Subparagraph (j) added
101, 102	Part II, Subpart 2.17	Added
103, 104	Part II, Subpart 2.18, 200	Revised in its entirety
105	Part II, Subpart 2.18, 402	Subparagraph (b) revised
106, 107	Part II, Subpart 2.19	Added
118, 119	Part III Contents	Updated
127, 128	Fig. 300	Revised in its entirety
142	Part III, Subpart 3.1-4.1, 701	Examples (c) through (e) revised
145, 146	Part III, Subpart 3.1-7.1, 302	Revised
149–151	Part III, Subpart 3.1-15.1	Added
155–158	Part III, Subpart 3.1-17.1	Revised in its entirety
159–163	Part III, Subpart 3.1-17.2	Revised in its entirety
165, 166	Part III, Subpart 3.1-18.1, 302.5	Last two sentences added
177, 178	Part III, Subpart 3.2-2.7.2, 200	Revised in its entirety
	Part III, Subpart 3.2-2.7.2, 201	Revised
179–183	Fig. 201-1	Revised in its entirety
184	Fig. 201-2	Revised in its entirety
185	Fig. 201-3	Revised in its entirety
186	Fig. 201-4	Added
187	Fig. 201-5	Added
188	Fig. 201-6	Added

Page	*Location*	*Change*
189	Fig. 201-7	Added
190	Fig. 201-8	Added
191–193	Fig. 201-9	Added
194	Fig. 201-10	Added
195, 196	Fig. 201-11	Added
197	Fig. 201-12	Added
219–222	Part IV Contents	Updated
224–238	Part IV, Subpart 4.1.1	Revised in its entirety
244–250	Part IV, Subpart 4.1.3	Revised in its entirety
289	Table 600-1	Row 15 revised
	Table 600-2	"Applied" and "Development and support" rows revised
290	Part IV, Subpart 4.2.1, 603.1	Revised
	Part IV, Subpart 4.2.1, 603.4	Revised
292	Part IV, Subpart 4.2.1, 611.2.1	Revised
	Part IV, Subpart 4.2.1, 611.4	Revised
	Part IV, Subpart 4.2.1, 615	Revised in its entirety
295	Part IV, Subpart 4.2.2	Deleted

SPECIAL NOTE:

The interpretations to ASME NQA-1 are no longer included in the edition. Interpretations can be accessed on the ASME Web site under the Committee Pages at http://go.asme.org/Interpretations.

PART I: REQUIREMENTS FOR QUALITY ASSURANCE PROGRAMS FOR NUCLEAR FACILITIES
(FROM FORMER NQA-1)

CONTENTS

PART I
INTRODUCTION

This Standard reflects industry experience and current understanding of the quality assurance requirements necessary to achieve safe, reliable, and efficient utilization of nuclear energy, and management and processing of radioactive materials. The Standard focuses on the achievement of results, emphasizes the role of the individual and line management in the achievement of quality, and fosters the application of these requirements in a manner consistent with the relative importance of the item or activity.

100 PURPOSE

Part I — this Part — establishes requirements for the development and implementation of a Quality Assurance Program (QAP) for nuclear facility applications. It is arranged by Requirements 1 through 18.

Part II contains additional quality assurance requirements for the planning and conduct of specific work activities under a Quality Assurance Program developed in accordance with Part I. It is arranged by Subparts.

Part III contains guidance for implementing the requirements of Parts I and II. It is arranged by Subparts.

Part IV contains guidance for application of NQA-1 and comparisons of NQA-1 with other quality requirements. It is arranged by Subparts.

200 APPLICABILITY

This Part — Part I — is to be applied using a graded approach to any structure, system, component, activity, or organization that is essential to the safe, reliable, and efficient performance of a nuclear facility and to any activities independent of a facility that may affect performance (e.g., transportation of nuclear materials) of those activities. It is also to be applied using a graded approach to all phases of a nuclear facility life cycle (e.g., siting, design, construction, operation, and decommissioning) and to all types of activities (e.g., training, testing, software development and use). A Quality Assurance Program developed in accordance with Part I is to be applied when implementing Part II requirements.

300 RESPONSIBILITY

The organization invoking this Part shall be responsible for specifying applicable requirements and appropriately relating them to specific items, activities, and services. The organization implementing this Part and applicable Part II requirements shall be responsible for complying with the specific requirements to achieve quality results in compliance with this Standard.

400 TERMS AND DEFINITIONS

The following definitions are provided to assure a uniform understanding of select terms as they are used in this Standard:

acceptance criteria: specified limits placed on the performance, results, or other characteristics of an item, process, or service defined in codes, standards, or other requirement documents.

assessment: an all-inclusive term that may include review, evaluation, inspection, test, check, surveillance, or audit to determine and document whether items, processes, systems, or services meet specified requirements and perform effectively.

audit: a planned and documented activity performed to determine by investigation, examination, or evaluation of objective evidence the adequacy of and compliance with established procedures, instructions, drawings, and other applicable documents, and the effectiveness of implementation. An audit should not be confused with surveillance or inspection activities performed for the sole purpose of process control or product acceptance.

audit, external: an audit of those portions of another organization's quality assurance program not under the direct control or within the organizational structure of the auditing organization.

audit, internal: an audit of those portions of an organization's quality assurance program retained under its direct control and within its organizational structure.

audit finding: a condition adverse to quality identified during an audit requiring follow-up by or for the auditing organization.

Certificate of Conformance: a document signed or otherwise authenticated by an authorized individual certifying the degree to which items or services meet specified requirements.

certification: the act of determining, verifying, and attesting in writing to the qualifications of personnel, processes, procedures, or items in accordance with specified requirements.