

AN AMERICAN NATIONAL STANDARD



ASME NQA-1a-1989

ADDENDA

to

ASME NQA-1-1989 EDITION
QUALITY ASSURANCE PROGRAM
REQUIREMENTS FOR NUCLEAR FACILITIES

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

United Engineering Center • 345 East 47th Street • New York, N.Y. 10017

Date of Issuance: March 31, 1990

ASME is the registered trademark of The American Society of Mechanical Engineers.

This code or standard was developed under procedures accredited as meeting the criteria for American National Standards. The Consensus Committee that approved the code or standard was balanced to assure that individuals from competent and concerned interests have had an opportunity to participate. The proposed code or standard was made available for public review and comment which provides an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

ASME does not "approve," "rate," or "endorse" any item, construction, proprietary device, or activity.

ASME does not take any position with respect to the validity of any patent rights asserted in connection with any items mentioned in this document, and does not undertake to insure anyone utilizing a standard against liability for infringement of any applicable Letters Patent, nor assume any such liability. Users of a code or standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

Participation by federal agency representative(s) or person(s) affiliated with industry is not to be interpreted as government or industry endorsement of this code or standard.

ASME accepts responsibility for only those interpretations issued in accordance with governing ASME procedures and policies which preclude the issuance of interpretations by individual volunteers.

No part of this document may be reproduced in any form,
in an electronic retrieval system or otherwise,
without the prior written permission of the publisher.

Copyright © 1990 by
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
All Rights Reserved
Printed in U.S.A.

ASME NQA-1a-1989

Following approval by the Main Committee of the Committee on Nuclear Quality Assurance, and after public review, ASME NQA-1a-1989 was approved by the American National Standards Institute on January 22, 1990.

Addenda to the 1989 Edition of ASME NQA-1 are issued in the form of replacement pages. Revisions, additions, and deletions are incorporated directly into the affected pages. It is advisable, however, that this page, the Addenda title and copyright pages, and all replaced pages be retained for reference.

SUMMARY OF CHANGES

This is the first Addenda to be published to ASME NQA-1-1989 Edition.

Changes given below are identified on the indicated pages by a margin note, **1a-89**, placed next to the affected area. The pages not listed are the reverse sides of the listed pages and contain no changes.

<i>Page</i>	<i>Location</i>	<i>Change</i>
18	3S-1, 5	Second paragraph added
50-52	3A-1	Revised in its entirety
53-55	Figs. 3A-1.1- 3A-1.3	Deleted

SPECIAL NOTE

The Interpretations to ASME NQA-1 issued between November 1, 1988, and November 30, 1989, follow the last page of this Addenda as a separate section. This section is not part of the Addenda or of the Standard itself and is included for the user's convenience.

After the above Interpretations, the active Case for ASME NQA-1 follow as a separate supplement. This supplement is not part of ASME NQA-1 or the Addenda and is included for the user's convenience.

CONTENTS

Foreword	iii
Preparation of Technical Inquiries to the Nuclear Quality Assurance Committee	v
Standards Committee Roster	vii
I INTRODUCTION.....	1
1 Purpose	1
2 Applicability	1
3 Responsibility	1
4 Definitions	1
II BASIC REQUIREMENTS.....	2
1 Organization	2
2 Quality Assurance Program	2
3 Design Control	2
4 Procurement Document Control	2
5 Instructions, Procedures, and Drawings	3
6 Document Control	3
7 Control of Purchased Items and Services	3
8 Identification and Control of Items	3
9 Control of Processes	3
10 Inspection	3
11 Test Control	3
12 Control of Measuring and Test Equipment	3
13 Handling, Storage, and Shipping	3
14 Inspection, Test, and Operating Status	3
15 Control of Nonconforming Items	4
16 Corrective Action	4
17 Quality Assurance Records	4
18 Audits	4
III SUPPLEMENTS.....	5
S-1 Terms and Definitions	5
1S-1 Supplementary Requirements for Organization	8
2S-1 Supplementary Requirements for the Qualification of Inspection and Test Personnel	9
2S-2 Supplementary Requirements for the Qualification of Nondestructive Examination Personnel	11
2S-3 Supplementary Requirements for the Qualification of Quality Assurance Program Audit Personnel	12

2S-4	Supplementary Requirements for Personnel Indoctrination and Training	15
3S-1	Supplementary Requirements for Design Control	16
4S-1	Supplementary Requirements for Procurement Document Control	20
6S-1	Supplementary Requirements for Document Control	22
7S-1	Supplementary Requirements for Control of Purchased Items and Services	23
8S-1	Supplementary Requirements for Identification and Control of Items	27
9S-1	Supplementary Requirements for Control of Processes	28
10S-1	Supplementary Requirements for Inspection	29
11S-1	Supplementary Requirements for Test Control	31
11S-2	Supplementary Requirements for Computer Program Testing	32
12S-1	Supplementary Requirements for Control of Measuring and Test Equipment	34
13S-1	Supplementary Requirements for Handling, Storage, and Shipping	35
15S-1	Supplementary Requirements for the Control of Nonconforming Items	36
17S-1	Supplementary Requirements for Quality Assurance Records	37
18S-1	Supplementary Requirements for Audits	41

IV	APPENDICES	43
1A-1	Nonmandatory Guidance on Organization	43
2A-1	Nonmandatory Guidance on the Qualifications of Inspection and Test Personnel	44
2A-2	Nonmandatory Guidance on Quality Assurance Programs	46
2A-3	Nonmandatory Guidance on the Education and Experience of Lead Auditors	48
3A-1	Nonmandatory Guidance on Design Control	50
4A-1	Nonmandatory Guidance on Procurement Document Control	56
7A-1	Nonmandatory Guidance for Control of Purchased Items and Services	61
17A-1	Nonmandatory Guidance on Quality Assurance Records	64
18A-1	Nonmandatory Guidance on Audits	67

FIGURES

2A-3.1	Sample Form for Record of Lead Auditor Qualification	49
4A-1.1	Logic Chart for Determining Appropriate Quality Requirements	59

analysis without individual verification of the program for each application provided:

(1) the computer program has been verified to show that it produces correct solutions for the encoded mathematical model within defined limits for each parameter employed; and

(2) the encoded mathematical model has been shown to produce a valid solution to the physical problem associated with the particular application.

Computer programs shall be controlled to assure that changes are documented and approved by authorized personnel. Where changes to previously verified computer programs are made, verification shall be required for the change, including evaluation of the effects of these changes on (1) and (2) above.

(b) Documentation of design analyses shall include (1) through (6) below:

(1) definition of the objective of the analyses;

(2) definition of design inputs and their sources;

(3) results of literature searches or other applicable background data;

(4) identification of assumptions and indication of those that must be verified as the design proceeds;

(5) identification of any computer calculation, including computer type, computer program (e.g., name), revision identification, inputs, outputs, evidence of or reference to computer program verification, and the bases (or reference thereto) supporting application of the computer program to the specific physical problem;

(6) review and approval.

4 DESIGN VERIFICATION

Design control measures shall be applied to verify the adequacy of design, such as by one or more of the following: the performance of design reviews, the use of alternate calculations, or the performance of qualification tests. Verification of computer programs shall include appropriate testing. The responsible design organization shall identify and document the particular design verification method(s) used. The results of design verification shall be clearly documented with the identification of the verifier clearly indicated. Design verification shall be performed by any competent individual(s) or group(s) other than those who performed the original design but who may be from the same organization. This verification may be performed by the originator's supervisor, provided the supervisor did not specify a singular design approach or rule out certain design considerations and did not establish the design inputs used in the design or, pro-

vided the supervisor is the only individual in the organization competent to perform the verification. cursory supervisory reviews do not satisfy the intent of this Standard.

Verification shall be performed in a timely manner. Design verification, for the level of design activity accomplished, shall be performed prior to release for procurement, manufacture, construction, or release to another organization for use in other design activities except in those cases where this timing cannot be met, such as when insufficient data exist. In those cases, the unverified portion of the design shall be identified and controlled. In all cases the design verification shall be completed prior to relying upon the component, system, structure, or computer program to perform its function.

4.1 Extent of Design Verification

The extent of the design verification required is a function of the importance to safety, the complexity of the design, the degree of standardization, the state of the art, and the similarity with previously proven designs. Where the design has been subjected to a verification process in accordance with this Standard, the verification process need not be duplicated for identical designs. However, the applicability of standardized or previously proven designs, with respect to meeting pertinent design inputs, shall be verified for each application. Known problems affecting the standard or previously proven designs and their effects on other features shall be considered. The original design and associated verification measures shall be adequately documented and referenced in the files of subsequent application of the design.

Where changes to previously verified designs have been made, design verification shall be required for the changes, including evaluation of the effects of those changes on the overall design and on any design analyses upon which the design is based that are affected by the change to previously verified design.

4.2 Methods

Acceptable verification methods include, but are not limited to, any one or a combination of the following: design reviews, alternate calculations, and qualification testing.

4.2.1 Design Reviews. These are critical reviews to provide assurance that the final design is correct and satisfactory. Where applicable, (a) through (f) below shall be addressed.

- (a) Were the design inputs correctly selected?
- (b) Are assumptions necessary to perform the design activity adequately described and reasonable? Where necessary, are the assumptions identified for subsequent reverifications when the detailed design activities are completed?
- (c) Was an appropriate design method used?
- (d) Were the design inputs correctly incorporated into the design?
- (e) Is the design output reasonable compared to design inputs?
- (f) Are the necessary design input and verification requirements for interfacing organizations specified in the design documents or in supporting procedures or instructions?

4.2.2 Alternate Calculations. These are calculations or analyses that are made with alternate methods to verify correctness of the original calculations or analyses. The appropriateness of assumptions, input data used, and the computer program or other calculation method used shall also be reviewed.

4.2.3 Qualification Tests. Where design adequacy is to be verified by qualification tests, the tests shall be identified. The test configuration shall be clearly defined and documented. Testing shall demonstrate adequacy of performance under conditions that simulate the most adverse design conditions. Operating modes and environmental conditions in which the item must perform satisfactorily shall be considered in determining the most adverse conditions. Where the test is intended to verify only specific design features, the other features of the design shall be verified by other means. Test results shall be documented and evaluated by the responsible design organization to assure that test requirements have been met.

If qualification testing indicates that modifications to the item are necessary to obtain acceptable performance, the modification shall be documented and the item modified and retested or otherwise verified to assure satisfactory performance. When tests are being performed on models or mockups, scaling laws shall be established and verified. The results of model test work shall be subject to error analysis, where applicable, prior to use in final design work.

1a-89 5 CHANGE CONTROL

Changes to final designs, field changes, modifications to operating facilities, and nonconforming items dispositioned use-as-is or repair shall be justified and subject to design control measures commensurate

with those applied to the original design. These measures shall include assurance that the design analyses for the structure, system, or component are still valid. Changes shall be approved by the same affected groups or organizations which reviewed and approved the original design documents; except where an organization which originally was responsible for approving a particular design document is no longer responsible, then the Owner or his designee shall designate a new responsible organization which could be the Owner's engineering organization. The designated organization shall have demonstrated competence in the specific design area of interest and have an adequate understanding of the requirements and intent of the original design.

When a design change is approved other than by revision to the affected design documents, measures shall be established to incorporate the change into these documents, where such incorporation is appropriate.

Where a significant design change is necessary because of an incorrect design, the design process and verification procedure shall be reviewed and modified as necessary.

6 INTERFACE CONTROL

Design interfaces shall be identified and controlled and the design efforts shall be coordinated among the participating organizations. Interface controls shall include the assignment of responsibility and the establishment of procedures among participating design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces.

Design information transmitted across interfaces shall be documented and controlled. Transmittals shall identify the status of the design information or document provided and, where necessary, identify incomplete items which require further evaluation, review, or approval. Where it is necessary to initially transmit design information orally or by other informal means, the transmittal shall be confirmed promptly by a controlled document.

7 DOCUMENTATION AND RECORDS

Design documentation and records, which provide evidence that the design and design verification processes were performed in accordance with the requirements of this Standard, shall be collected, stored, and maintained in accordance with documented procedures.

RECORD OF LEAD AUDITOR QUALIFICATION		Name	Date
EMPLOYER:			
QUALIFICATION POINT REQUIREMENTS			CREDITS
Education – University/Degree Date		4 Credits Max.	_____
1. Undergraduate Level 2. Graduate Level			
Experience – Company/Dates		9 Credits Max.	_____
Technical (0-5 credits) and Nuclear Industry (0-1 credit), or Quality Assurance (0-2 credits), or Auditing (0-4 credits)			
Professional Accomplishment – Certificate/Date		2 Credits Max.	_____
1. P.E. 2. Society			
Management – Justification/Evaluator/Date		2 Credits Max.	_____
Explain:			
Evaluated by: (Name and Title)		_____	Date
Total Credits:			_____
AUDIT COMMUNICATION SKILLS			
Evaluated by: (Name and Title)		_____	Date
AUDIT TRAINING COURSES			
Course Title or Topic:			Date
1.			
2.			
AUDIT PARTICIPATION			
	Location	Audit	Date
1.			
2.			
3.			
4.			
5.			
EXAMINATION:		PASSED:	DATE:
AUDITOR QUALIFICATION CERTIFIED BY: (Signature and Title)			Date Certified
ANNUAL EVALUATION (Signature and Date)			

FIG. 2A-3.1 SAMPLE FORM FOR RECORD OF LEAD AUDITOR QUALIFICATION

APPENDIX 3A-1 NONMANDATORY GUIDANCE ON DESIGN CONTROL

1a-89

1 GENERAL

This Appendix provides nonmandatory guidance on design control as specified in Basic Requirement 3 and Supplement 3S-1.

Some factors to be considered in establishing the design control measures may include (a) through (f) below:

- (a) nature of the organization, such as the facility owner(s), major equipment designer(s) or facility designer, and the design interfaces among them;
- (b) importance of design activity to safety;
- (c) state of the art such as experimental, developmental, or standard design;
- (d) nature of design activity, such as conceptual, preliminary, detailed design, field engineering, or modifications to operating facilities;
- (e) nature of interaction between design, operation, and construction activities;
- (f) the effect of design change implementation on the safe operation of the facility.

2 DESIGN INPUT

Design inputs include many characteristics and functions of an item or system. These inputs vary depending on the application; however, the nuclear industry has found it desirable to consider at least the following listed inputs as they apply to specific items or systems:

- (1) basic functions of each structure, system, and component;
- (2) performance requirements such as capacity, rating, and system output;
- (3) codes and standards, regulatory requirements and commitments or responses to Federal, State, and Local Regulations. For example, these may include, but not be limited to:
 - (a) Safety Analysis Report
 - (b) NRC's Safety Evaluation Report and supplements thereto

- (c) Environmental Report
- (d) NRC's environmental statement and supplements thereto
- (e) Technical Specifications
- (f) Regulatory Guides
- (g) Code of Federal Regulations
- (h) NRC bulletins, circulars, notices, and generic letters
 - (i) commitments in correspondence with NRC
- (4) design conditions such as pressure, temperature, flow, fluid chemistry, and voltage;
- (5) loads such as seismic, wind, thermal, and dynamic; the cumulative effect of design changes on the analytical design basis, e.g., the addition of a load to an existing wall or the addition of an instrument to a cabinet.
- (6) environmental conditions anticipated during storage, construction, operation, and accident conditions, such as pressure, temperature, humidity, corrosiveness, site elevation, wind direction, exposure to weather, flooding, nuclear radiation, electromagnetic radiation, and duration of exposure; qualification test requirements; shelf or service life limitations.
- (7) interface requirements including definition of the functional and physical interfaces involving structures, systems, and components:
 - (a) the effect on existing plant equipment capability, such as DC battery loads, AC bus capacity, available stored water inventory, service instrument air capacity, water systems capability (intake, service, and component cooling water), and HVAC capability;
 - (b) the effect of cumulative tolerances in the design;
 - (c) the effect on design and safety analyses to ensure the analytical bases remain valid;
 - (d) the compatibility with unimplemented design changes to specify any required sequence for implementation;
 - (e) compatibility with Technical Specification requirements.
- (8) material requirements including such items as compatibility, electrical insulation properties, protective coating, and corrosion resistance;

(9) mechanical requirements such as vibration, stress, shock, and reaction forces;

(10) structural requirements covering such items as equipment foundations and pipe supports;

(11) hydraulic requirements such as pump net positive suction heads (NPSH), allowable pressure drops, and allowable fluid velocities;

(12) chemistry requirements including provisions for system flushing, batch sampling and in-line sampling. Power plant water chemistry treatment for primary systems, steam generator, and plant limitations on water chemistry.

(13) electrical requirements such as source of power, load profile voltage, electrical insulation, motor requirements, physical and electrical separation of circuits and equipment; the effect of cable routing or rerouting on the cable tray system (loading, seismic capability, and capacity limitations);

(14) layout and arrangement requirements;

(15) operational requirements under various conditions, such as startup, normal operation, shutdown, maintenance, abnormal or emergency operation, special or infrequent operation including installation of design changes, and the effect of system interaction;

(16) instrumentation and control requirements including indicating instruments, controls, and alarms required for operation, testing, and maintenance. Other requirements such as the type of instrument, installed spares, range of measurement, and location of indication are included.

(17) security requirements to include access and administrative control requirements and system design requirements including redundancy, power supplies, support system requirements, emergency operational modes, and personnel accountability;

(18) redundancy, diversity, and separation requirements of structures, systems, and components;

(19) failure effects requirements of structures, systems, and components including a definition of those events and accidents which they must be designed to withstand;

(20) test requirements including pre-operational and subsequent periodic tests and the conditions under which they will be performed;

(21) accessibility, maintenance, repair, and preservice and inservice inspection requirements for the facility including the conditions under which these will be performed;

(22) personnel requirements and limitations including the qualification and number of personnel available for operation, maintenance, testing and inspection, and radiation exposures to the public and facility personnel;

(23) transportability requirements such as size and shipping weight, limitation, and I.C.C. regulations;

(24) fire protection or resistance requirements:

(a) safe shutdown analyses, the introduction of safe shutdown equipment into fire areas;

(b) routing of piping and electrical cables and the necessity for cable fireproofing and/or fire stops;

(c) fire detection and fire suppression capability;

(d) fire barrier capability including fire door installation;

(e) fire dampers;

(f) access to fire fighting and emergency equipment;

(g) use of non-combustible materials;

(h) introducing combustible materials into safe shutdown areas by design or during installation or operation;

(i) smoke and toxic gas generation.

(25) handling, storage, cleaning, and shipping requirements;

(26) other requirements to prevent undue risk to the health and safety of the public;

(27) materials, processes, parts, and equipment suitable for application;

(28) safety requirements for preventing personnel injury including such items as radiation safety, minimizing radiation exposure to personnel, criticality safety, restricting the use of dangerous materials, escape provisions from enclosures, and grounding of electrical systems;

(29) quality and quality assurance requirements;

(30) reliability requirements of structures, systems, and components including their interactions, which may impair functions important to safety;

(31) interface requirements between equipment and operation and maintenance personnel;

(32) requirements for criticality control and accountability of nuclear materials;

(33) load path requirements for installation, removal, and repair of equipment and replacement of major components.

3 DESIGN PROCESS

The design activities may be prescribed in job specifications, work instructions, planning sheets, procedure manuals, test procedures, or any other typed or written form that provides adequate control and permits reviewing, checking, or verifying the results of the activity.

(a) Subjects normally covered by procedures for

the preparation and control of drawings include the following:

- (1) drafting room standards
- (2) standardized symbols
- (3) identification system
- (4) indication of status
- (5) checking methods
- (6) review and approval requirements
- (7) issuance and distribution control
- (8) storage and control of originals or master

copies

- (9) revisions
- (10) as-built drawings

(b) Subjects normally covered by procedures for the preparation and control of specifications and other design documents include the following:

- (1) format requirements
- (2) identification system
- (3) review and approval requirements
- (4) issuance and distribution
- (5) revisions
- (6) indication of status
- (7) storage and control of originals or master

copies

(c) Design documents should include information which may subsequently be needed to support facility operations such as:

- (1) control room operations
- (2) maintenance
- (3) spare and replacement parts
- (4) environmental qualification of equipment
- (5) outage planning and scheduling
- (6) safety evaluations
- (7) facility modifications
- (8) personnel training and qualification

4 DESIGN VERIFICATION

Design verification for some designs or specific design features may be achieved by suitable qualification testing of a prototype or initial production unit. Qualification testing may be used in combination with other verification methods. For example, it may be most effective to verify that an instrumentation cabinet is designed to withstand the maximum earthquake-caused vibratory motions by actually subjecting the cabinet and its associated components to shaker tests which correspond to these vibratory motions. The shaker tests will not, however, verify that the circuitry is designed correctly or that the component in the cabinet will perform its intended function. Other tests or verification means are required to confirm that remaining design functions are ade-

quately performed by the instrumentation and that those components perform the intended functions for the varying conditions to which they are subjected.

5 CHANGE CONTROL

Design documents should be maintained current to ensure their availability to support facility design, construction, and operation. However, design changes may be approved without revision to the affected document(s). When this occurs, procedures should be established to ensure that a determination of the final design or as-built condition can be made, consistent with the user's needs. Since not all affected documents require revision, procedures should identify those design documents which are subject to revision. Measures may include, but are not limited to, imposing a time limit for updating the affected document(s), limiting the number of design changes allowed to accumulate prior to revising the affected document, or providing for a process that continually updates the affected document(s).

During the operational phase, attention should be given to system modifications, mechanical and electrical temporary alterations and instrument setpoint changes to ensure that design changes are processed in accordance with design control requirements. Proposed modifications, alterations, and changes may overlap and may not be installed in the sequence that they were designed; therefore, it is incumbent upon the design organization and plant/facility owner to control approved (but not installed) design changes to ensure that changes do not conflict with each other. Where modifications, alterations, or changes must be installed in a particular sequence, the sequence should be specified. Partial installation of design changes should be approved by the design organization. Controls should ensure that documents that are required to support operation reflect the as-built condition of the facility. Temporary and permanent repair work and parts replacement should be reviewed to determine if these activities constitute design changes.

6 INTERFACE CONTROL

During the construction and operational phases, attention should be given to defining and controlling the design interfaces between organizations participating in design changes/modifications and to defining the responsibility for the overall control of the design. The responsibility for the design of the facility

should be divided in a way which is suited to the individual capabilities of the participating organizations and the status of construction or operations. Participating organizations may include:

- (a) owner's design organization
- (b) construction engineering group
- (c) operating organization
- (d) architect engineer
- (e) reactor manufacturer (NSSS)
- (f) equipment design
- (g) other design contractor

The documentation of the assignment of design responsibilities may be accomplished in procedures, internal or external correspondence, contracts or other suitable documents.

7 DOCUMENTATION AND RECORDS

The documentation and records for a facility should include provisions for as-built documentation. These provisions should address what documents are re-

quired, the depth of information required for the as-built documentation and the internal or other measure for updating and the identification of those documents which are to become lifetime or nonpermanent records. As-built documents may include documents such as the following:

- (a) drawings required for facility operation;
- (b) modification packages
- (c) manufacturer operation and maintenance instructions;
- (d) manufacturer vendor manuals;
- (e) manufacturer technical bulletins;
- (f) equipment and instrumentation listings;
- (g) environmental qualification listings;
- (h) spare and replacement parts listings.

The status of the approved design should be readily available to the participating design organization(s). In addition, for the operation phase, the as-built configuration and the status of modifications being implemented should be readily available to the operating organization.

1a-89

FIGS. 3A-1.1-3A-1.3

DELETED

APPENDIX 4A-1 NONMANDATORY GUIDANCE ON PROCUREMENT DOCUMENT CONTROL

1 GENERAL

This Appendix provides nonmandatory guidance on controlling quality assurance requirements in procurement documents as specified in Basic Requirement 4 and Supplement 4S-1.

2 PROCUREMENT DOCUMENT REVIEW

The review of procurement documents should be performed as early in the document preparation as practical. Technical and quality assurance reviews should normally be performed on the procurement documents prior to issuance for bid.

3 TYPICAL SCOPE OF PROCUREMENT EFFORT

The complexity of a nuclear facility dictates the need for a multitude of tasks that should be performed during various phases of design, construction, testing, and operations. One of the major tasks is the procurement of items and services. Each major phase involves a procurement effort that should be responsive to the special needs of that phase and that should provide items and services which meet code, regulatory, and special requirements. Examples of the items and services procured during these phases are given in paras. 3.1 and 3.2 below.

3.1 Design, Construction, and Testing Phases

- (a) Design and engineering services;
- (b) Site investigations, such as those required to determine the engineering requirements for the structure (i.e., soil investigation, environmental studies, both field work and laboratory effort);
- (c) Long-lead items such as the nuclear steam supply, process equipment, including major equipment fabrication and test, and high level waste storage tanks;

- (d) Construction of the main structure of the facility, including structural steel erection and concrete production and placement;

- (e) Specific site erection and installation tasks, such as piping, mechanical and electrical equipment;

- (f) Services for nondestructive examination and required laboratory tests;

- (g) Hardware, such as valves, piping, tanks, and miscellaneous hardware;

- (h) Software, such as development of facility operating procedures, technical manuals, and computer codes;

- (i) Services of various consultants to assist in setting up management systems (i.e., quality assurance program and operator training);

- (j) Pre-operational and start-up tests;

- (k) Baseline inspection equipment or services.

3.2 Operational Phase

- (a) Fuel, equipment, and services for power plant fueling operations; special fuel grapples and cask yokes at reprocessing plants, fuel components, and subassemblies at fuel fabrication plants; chemicals used in fuel processing and reprocessing cycles; special packaging for nuclear materials, radioactive products, and radioactive by-products;

- (b) Inservice inspection equipment or services;

- (c) Items and services for facility maintenance, modifications, or changes;

- (d) Special services such as environmental monitoring, radioactive waste disposal, and facility decontamination.

The examples given in para. 3.1 and (a) through (d) above are not meant to be all inclusive but only indicative of the wide variety of procurements for the above phases. Similarly, it should be realized that the phases and types of procurements listed above are not distinct in scope and timing and that there may be considerable overlapping depending upon the needs of a particular situation.

ASME NQA-1-1989 EDITION QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR NUCLEAR FACILITIES

INTERPRETATIONS

Replies to Technical Inquiries
November 1, 1988, through November 30, 1989

FOREWORD

General Information

This publication includes all of the written replies issued between the indicated dates by the Secretarial Staff, speaking for the ASME Committee on Nuclear Quality Assurance, to inquiries concerning interpretations of technical aspects of ASME NQA-1 Quality Assurance Program Requirements for Nuclear Facilities.

These replies are taken verbatim from the original letters except for a few typographical corrections and some minor editorial corrections made for the purpose of improved clarity. In some instances, a review of the interpretation revealed a need for corrections of a technical nature; in these cases a corrected interpretation follows immediately after the original reply.

These interpretations were prepared in accordance with the accredited ASME procedures. ASME procedures provide for reconsideration of these interpretations when or if additional information is available which the inquirer believes might affect the interpretation. Further, persons aggrieved by this 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.

An interpretation applies either to the latest published Edition and Addenda at the time it is issued, or to the Edition and Addenda stated in the interpretation itself. Subsequent revisions to the rules may have superseded the reply.

For detailed instructions on the preparation of technical inquiries, refer to the Preparation of Technical Inquiries to the Nuclear Quality Assurance Committee (p. v of ASME NQA-1).

Subject and Numerical Indexes

Subject and numerical indexes have been prepared to assist the user in locating interpretations by subject matter or location in this Standard. These indexes cover interpretations issued as a separate section to the 1a-81 Addenda through the 1a-1989 Addenda, and will be updated with each separate section included with the Addenda to ASME NQA-1.

File: QA88-009

Subject: ANSI/ASME NQA-1-1986 Edition, 17S-1, Para. 2.7; Classification of Records — Surveillance Reports

Date Issued: May 18, 1989

Question: In accordance with ANSI/ASME NQA-1, 17S-1, para. 2.7 are Surveillance Reports documenting surveillance activities at a supplier's facility considered lifetime records?

Reply: If the Surveillance Reports do not contain data meeting the criteria of ANSI/ASME NQA-1, 17S-1, para. 2.7.1, the reports do not have to be maintained as lifetime records.

File: QA87-004

Subject: ANSI/ASME NQA-1-1986 Edition, and later Addenda through 1c-1988, Supplement 2S-2; Nondestructive Examination Personnel — SNT-TC-1A

Date Issued: November 21, 1989

Question: If an individual has been certified as a Level III to SNT-TC-1A-1975 Edition and has maintained that certification, does the Level III individual have to be retested to SNT-TC-1A-1980 to comply with ANSI/ASME NQA-1-1986?

Reply: No, if evidence of continuing satisfactory performance is available. Re-examination or continued satisfactory performance are both stated as acceptable methods of recertification in SNT-TC-1A-1975 and 1980.

File: QA89-002

Subject: ANSI/ASME N45.2.6-1978 and ANSI/ASME NQA-1-1986 Edition with Addenda through 1c-1988, 2S-1; Qualification of Inspection and Test Personnel — Applicability

Date Issued: November 21, 1989

Question (1): Does ANSI/ASME N45.2.6 and ANSI/ASME NQA-1 require certification for all personnel performing tests to verify conformance?

Reply (1): Yes, unless application of the standards are otherwise modified by regulatory commitments.

Question (2): Does ANSI/ASME N45.2.6 and ANSI/ASME NQA-1 apply to all personnel performing tests, regardless of departmental origin (i.e., I&C, Operations, etc.)?

Reply (2): Yes, unless application of the standards are otherwise modified by regulatory commitments.

Question (3): Does certification to ANSI/ASME N45.2.6 or ANSI/ASME NQA-1 supercede certifications by other agencies/societies (i.e, EPRI, ASNT, etc.)?

Reply (3): No.

File: QA89-003

Subject: ANSI/ASME NQA-1-1986 Edition, and later Addenda through 1c-1988, S-1; 4S-1, Para. 2; 7S-1, Paras. 3.1 and 10; Commercial Grade Services — Subtier Suppliers

Date Issued: November 21, 1989

Question (1): Does ANSI/ASME NQA-1, 7S-1 require that suppliers of commercial grade calibration services for safety-related measuring and testing equipment be evaluated in accordance with para. 3.1?

Reply (1): ANSI/ASME NQA-1 defines commercial grade items in Supplement S-1 and addresses purchasing commercial grade items in Supplement 7S-1, para. 10 but commercial grade services are not defined.

However, ANSI/ASME NQA-1 does include requirements for the control of purchased services as defined by ANSI/ASME NQA-1, Supplement S-1, including supplier selection, bid evaluation, supplier performance evaluation, acceptance of services, and verification of conformance. See Supplement 7S-1 for specific requirements.

Question (2): Do the requirements of ANSI/ASME NQA-1, 7S-1, para. 3.1 for evaluation of suppliers of services apply through succeeding levels of subtier suppliers?

Reply (2): Yes, procurement documents issued at all tiers of procurement shall include provisions deemed necessary by the purchaser at each tier. See ANSI/ASME NQA-1, 4S-1, para. 2.

File: QA89-006

Subject: ANSI/ASME NQA-1986 Edition, and later Addenda through 1c-1988, S-1, 4S-1, and 7S-1; Commercial Grade Items

Date Issued: November 21, 1989

Question (1): In accordance with ANSI/ASME NQA-1, if we meet the requirements of 7S-1, para. 10, is this an acceptable alternate to all the other requirements of 4S-1 and 7S-1?

Reply (1): Yes.

Question (2): In accordance with ANSI/ASME NQA-1, 7S-1, para. 10, is it permissible to procure an item as commercial grade when the manufacturer does not have a written quality assurance program?

Reply (2): Yes.

Question (3): In accordance with ANSI/ASME NQA-1, S-1, if a manufacturer does not assign a catalog number or part number to an item but publishes a product description and it meets all the other criteria of a commercial grade item, can that item be procured as a commercial grade item?

Reply (3): Yes.

File: QA89-007

Subject: ANSI/ASME NQA-1-1986 Edition with Addenda through 1c-1989, Supplements S-1 and 11S-2; Computer Systems — Applicability

Date Issued: November 21, 1989

Question (1): Does ANSI/ASME NQA-1, Supplement 11S-2 apply to computer systems defined in Supplement S-1, Footnote 2?

Reply (1): Yes, when and to the extent specified by the organization invoking this Standard. See Supplement 11S-2, Section 1.

Question (2): Does ANSI/ASME NQA-1, Supplement 11S-2 apply to computer systems where no decisions affecting quality are made?

Reply (2): Yes, if the computer system is used as described in Supplement S-1, Footnote 2.

NUMERICAL INDEX

Location	File	Addenda	Location	File	Addenda
Introduction					
...	QA82-8	1a-83	3S-1, 3.1	QA80-12	1b-81
				QA85-010	1a-86
				QA86-012	1a-86
Basic Requirements			3S-1, 4	QA80-12	1b-81
...	QA87-002	1b-87		QA81-10	1c-82
BR-2	QA85-012	1a-86		QA85-009	1a-86
	QA85-016	1a-86		QA86-012	1a-86
	QA86-002	1a-86	3S-1, 4.2.1	QA84-007	1b-84
BR-3	QA82-8	1a-83	3S-1, 4.2.3	QA81-10	1c-82
BR-5	QA88-004	1c-88	3S-1, 5	QA88-004	1c-88
BR-6	QA81-7	1b-81	3S-1, 7	QA86-017	1b-87
	QA85-004	1a-86	4S-1	QA82-3	1a-83
BR-13	QA84-017	1c-85		QA89-006	1a-89
BR-14	QA85-014	1a-86	4S-1, 2	QA89-003	1a-89
			4S-1, 2.7	QA85-015	1a-86
			4S-1, 3	QA81-9	1c-82
Supplements			6S-1	QA85-004	1a-86
...	QA87-002	1b-87		QA88-004	1c-88
S-1	QA80-013	1b-81	7S-1	QA80-13	1b-81
	QA84-002	1b-84		QA82-3	1a-83
	QA86-008	1a-86		QA87-007	1c-88
	QA89-003	1a-89		QA89-006	1a-89
	QA89-006	1a-89	7S-1, 3.1	QA80-2	1b-81
	QA89-007	1a-89		QA86-014	1b-87
1S-1, 2.1	QA88-007	1c-88		QA86-015	1b-87
2S-1	QA89-002	1a-89		QA87-008	1c-88
2S-1, 2.5	QA84-015	1c-85		QA88-001	1c-88
	QA87-011	1c-88		QA89-003	1a-89
2S-1, 2.8	QA84-005	1b-84	7S-1, 8	QA82-4	1a-83
2S-2	QA86-018	1b-87	7S-1, 8.3	QA86-014	1b-87
	QA88-007	1c-88		QA86-015	1b-87
	QA87-004	1a-89	7S-1, 10	QA89-003	1a-89
2S-2, 2.1	QA86-004	1a-86	10S-1, 2.1	QA88-007	1c-88
2S-3	QA81-4	1b-81	11S-2	QA89-007	1a-89
	QA82-8	1a-83	13S-1	QA84-017	1c-85
	QA83-009	1b-84	13S-1, 3.3	QA86-011	1b-87
2S-3, 2.1	QA85-018	1a-86	17S-1	QA83-008	1b-84
	QA87-007	1c-88		QA85-007	1a-86
2S-3, 3	QA83-014	1b-84		QA86-008	1a-86
	QA86-009	1a-86		QA86-017	1b-87
2S-3, 3.4	QA84-012	1c-85	17S-1, 2.1	QA83-008	1b-84
2S-3, 4.1	QA87-009	1c-88	17S-1, 2.2	QA82-11	1a-83
2S-3, 5.2	QA84-012	1c-85	17S-1, 2.3	QA82-11	1a-83
	QA86-009	1a-86		QA85-013	1a-86
	QA87-007	1c-88		QA85-017	1a-86
3S-1	QA84-014	1c-85	17S-1, 2.4	QA83-1	1a-83
3S-1, 2	QA82-2	1c-82	17S-1, 2.7	QA81-7	1b-81
3S-1, 3	QA82-2	1c-82	17S-1, 2.7.1	QA83-3	1a-83

<u>Location</u>	<u>File</u>	<u>Addenda</u>	<u>Location</u>	<u>File</u>	<u>Addenda</u>
Supplements (Cont'd)			18S-1, 3.3	QA83-014	1b-84
17S-1, 2.7.2	QA84-001	1b-84	18S-1, 5	QA83-014	1b-84
17S-1, 3.2	QA86-006	1a-86	18S-1, 8	QA86-006	1a-86
	QA83-1	1a-83			
	QA84-006	1b-84			
	QA84-012*	1b-84			
17S-1, 4	QA86-007	1a-86	Appendices		
17S-1, 4.1	QA83-004	1b-84	2A-1, 3	QA86-003	1a-86
	QA84-006	1b-84	2A-1, 3.3.3	QA84-016	1c-85
	QA84-012*	1b-84	2A-3, 2	QA83-006	1b-84
	QA85-017	1a-86	2A-3, 2.3	QA84-008	1b-84
17S-1, 4.4	QA83-011	1b-84		QA87-006	1c-88
	QA85-003	1c-85	3A-1, 2	QA80-12	1b-81
	QA87-001	1b-87	3A-1, 4	QA80-12	1b-81
	QA87-003	1b-87	3A-1, 6	QA81-10	1c-82
17S-1, 4.4.1	QA85-005	1c-85	4A-1	QA82-3	1a-83
17S-1, 4.4.3	QA87-005	1c-88	7A-1	QA82-3	1a-83
17S-1, 5.6	QA83-004	1b-84		QA82-4	1a-83
17S-1, 6	QA81-4	1b-81	7A-1, 2	QA80-2	1b-81
18S-1, 3.2	QA83-009	1b-84	17A-1	QA84-012*	1b-84
				QA86-017	1b-87

SUBJECT INDEX

<u>Subject</u>	<u>File</u>	<u>Addenda</u>
Audits/Surveys — Items or Services (<i>See also</i> Internal Audits)		
calibration services	QA82-4	1a-83
need for — supplier selection	QA88-001	1c-88
performed by	QA83-014	1b-84
qualification of a supplier	QA80-2	1b-81
subtier suppliers	QA82-3	1a-83
Auditors (<i>See</i> Qualification of)		
Basic Requirements and Supplements		
relationship between	QA87-002	1b-87
Certificate of Conformance		
authentication	QA80-13	1b-81
composed of	QA84-002	1b-84
Commercial Grade		
items — quality assurance program	QA89-006	1a-89
items — requirements	QA89-006	1a-89
services — calibration	QA89-003	1a-89
Computer		
system — applicability	QA89-007	1a-89
Design Control		
applies to	QA82-8	1a-83
documentation	QA86-017	1b-87
documentation — design analyses	QA85-010	1a-86
	QA86-012	1a-86
final design — changes to	QA82-2	1c-82
plant modification — review of	QA88-004	1c-88
review and approval	QA86-012	1a-86
review and checking	QA80-12	1b-81
	QA85-009	1a-86
Design Verification		
	QA81-10	1c-82
	QA85-009	1a-86
	QA86-012	1a-86
documentation — design review	QA84-007	1b-84
documentation — planning	QA84-014	1c-85
procedures	QA84-014	1c-85
reviewer	QA80-12	1b-81
Document Control (<i>See also</i> Design Control and Design Verification)		
Documentation)	QA81-7	1b-81
document vs. record	QA82-11	1a-83
	QA85-004	1a-86

<u>Subject</u>	<u>File</u>	<u>Addenda</u>
Document Control (Cont'd)		
documents in a package	QA87-005	1c-88
storage of documents	QA87-005	1c-88
validation	QA82-11	1a-83
	QA83-008	1b-84
Handling, Storage, and Shipping		
radioactive materials	QA84-017	1c-85
special handling tools and equipment	QA86-011	1b-87
Inspection, Test, and Operating Status		
control of stamps	QA85-014	1a-86
Inspection and Test Personnel (See Qualification of)		
Internal Audits		
quality assurance department	QA81-4	1b-81
	QA83-009	1b-84
Lead Auditors		
certification of competency	QA83-014	1b-84
	QA83-006	1b-84
	QA84-008	1b-84
	QA87-006	1c-88
examination — development and administration of	QA84-012	1c-85
examination — development of	QA87-007	1c-88
examination — objective evidence	QA86-009	1a-86
maintenance of proficiency	QA87-009	1c-88
responsible auditing organization	QA87-007	1c-88
training	QA86-009	1a-86
Nondestructive Examination Personnel		
different edition of SNT-TC-1A	QA87-004	1a-89
independence	QA88-007	1c-88
recertification of — retested	QA87-004	1a-89
recertification of — use of ASNT policy	QA86-018	1b-87
use of SNT-TC-1A	QA86-004	1a-86
Procurement Control		
document review	QA81-9	1c-82
purchased items — material	QA80-2	1b-81
	QA82-3	1a-83
purchased service — calibration	QA82-4	1a-83
	QA86-015	1b-87
	QA86-014	1b-87
Qualification of Auditors		
experience	QA82-8	1a-83
	QA85-018	1a-86
internal audits	QA81-4	1b-81
	QA83-009	1b-84
Qualification of Lead Auditors (See Lead Auditors)		
Qualification of Inspection and Test Personnel		
applicability	QA89-002	1a-89
determination of initial capability	QA84-015	1c-85
	QA87-011	1c-88
education	QA84-016	1c-85
experience	QA86-003	1a-86
physical requirements	QA84-005	1b-84

<u>Subject</u>	<u>File</u>	<u>Addenda</u>
Qualification of Nondestructive Examination Personnel (See Nondestructive Examination Personnel)		
Quality Assurance Program		
applicability	QA82-8	1a-83
	QA85-016	1a-86
assessment of	QA85-012	1a-86
	QA86-002	1a-86
implementation of	QA86-002	1a-86
Quality Assurance Records		
applicability	QA83-004	1b-84
	QA83-008	1b-84
audit records	QA86-006	1a-86
Quality Assurance Records		
classification	QA81-7	1b-81
	QA83-3	1a-83
	QA84-001	1b-84
	QA86-008	1a-86
	QA88-008	1a-89
computer software program	QA83-3	1a-83
design records	QA86-017	1b-87
document vs. record	QA82-11	1a-83
	QA85-004	1a-86
documents in a package	QA87-005	1c-88
indexing/checklist	QA83-1	1a-83
	QA84-006	1b-84
	QA84-012*	1b-84
microfilmed copies	QA85-013	1a-86
procedures	QA83-1	1a-83
	QA82-11	1a-83
	QA85-007	1a-86
	QA85-017	1a-86
	QA86-007	1a-86
time frame for submittal of	QA84-012*	1b-84
	QA85-007	1a-86
	QA85-017	1a-86
turnover/transfer	QA83-1	1a-83
	QA83-004	1b-84
Records (See Quality Assurance Records)		
Records Storage Facility		
dual storage facility	QA85-005	1c-85
	QA85-007	1a-86
fire protection	QA83-011	1b-84
	QA85-003	1c-85
	QA87-001	1b-87
	QA87-003	1b-87
in-process records	QA83-011	1b-84
location of	QA85-005	1c-85
	QA86-007	1a-86
safekeeping of	QA86-007	1a-86
Spare and Replacement Parts		
procurement	QA85-015	1a-86

<u>Subject</u>	<u>File</u>	<u>Addenda</u>
Supplier Selection		
services only – calibration.....	QA86-014	1b-87
	QA86-015	1b-87
	QA89-003	1a-89
sharing of information.....	QA87-008	1c-88
source evaluation.....	QA80-2	1b-81
	QA88-001	1c-88
subtier supplier.....	QA89-003	1a-89
Surveys (See Audits/Surveys)		
Use of NQA-1.....	QA79-8	1a-80
	QA82-8	1a-83

NQA-1 — Cases

(This Case is not part of ASME NQA-1-1989 Edition or its Addenda.)

A Case is the official method of handling a reply to an inquiry when study indicates that the Standard wording needs clarification, or when the reply modifies the existing requirements of the Standard, or grants permission to use alternative methods.

ASME has agreed to publish Cases issued by the Nuclear Quality Assurance Committee concerning NQA-1 as part of the update service to NQA-1. The text of proposed new and revised Cases and reaffirmations of current Cases appear in *Mechanical Engineering* for public review. A notice also appears in *Mechanical Engineering* when new and revised Cases are approved. New and revised Cases, as well as announcements of reaffirmed Cases and annulments, then appear in the next update. Cases currently in effect at the time of publication of a new Edition of the Standard are included with it as a supplement.

The Case included in this supplement is as follows:

<i>Page</i>	<i>Case</i>	<i>Change</i>
C-1	1	Added

*This case shall expire on September 18, 1992,
unless previously annulled or reaffirmed.*

CASE 1
September 18, 1989

**CASE
FOR NUCLEAR QUALITY ASSURANCE — NQA-1**

**Case 1 — Records Storage Facility —
Use of NFPA 232, ANSI/ASME NQA-1-1979
with the 1c-1981 Addenda, and later Editions
and Addenda through the 1b-1987 Addenda,
Supplement 17S-1, Para. 4.4.2**

Inquiry: When constructing or maintain-
ing a single records storage facility in accor-
dance with ANSI/ASME NQA-1, Supplement
17S-1, para. 4.4.2, may NFPA 232-1980 or
1986 be used instead of NFPA 232-1975?

Reply: It is the opinion of the Committee
that NFPA 232-1980 or 1986 may be used in-
stead of NFPA 232-1975 when constructing or
maintaining a single records storage facility to
Supplement 17S-1, para. 4.4.2.

