

Safety Reports Series

No. 70

Management System Standards: Comparison between IAEA GS-R-3 and ASME NQA-1-2008 and NQA-1a-2009 Addenda



IAEA

International Atomic Energy Agency

IAEA SAFETY STANDARDS AND RELATED PUBLICATIONS

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MANAGEMENT SYSTEM STANDARDS:
COMPARISON BETWEEN IAEA GS-R-3
AND ASME NQA-1-2008 AND
NQA-1a-2009 ADDENDA

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SAFETY REPORTS SERIES No. 70

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INTERNATIONAL ATOMIC ENERGY AGENCY
VIENNA, 2012

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Marketing and Sales Unit, Publishing Section
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 Vienna, Austria
fax: +43 1 2600 29302
tel.: +43 1 2600 22417
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FOREWORD

IAEA safety standards reflect an international consensus on what constitutes a high level of safety for protecting people and the environment. They often serve as safety regulatory documents. In practice, to be fully effective the IAEA safety standards need to be complemented by industry standards and must be implemented within an appropriate national regulatory infrastructure. The IAEA produces a wide range of technical publications and reports to help Member States in developing this national infrastructure and the associated standards.

IAEA Safety Standards Series No. GS-R-3, The Management System for Facilities and Activities (IAEA GS-R-3), defines the requirements for establishing, implementing, assessing and continually improving a management system. A management system designed to fulfil these requirements integrates safety, health, environmental, security, quality and economic elements. IAEA GS-R-3, together with its supporting Safety Guides, supersedes Safety Series No. 50-C/SG-Q, Quality Assurance for Safety in Nuclear Power Plants and other Nuclear Installations.

IAEA GS-R-3 requirements are applicable to the management systems of operating organizations, designers and suppliers. Moreover, IAEA GS-R-3 can be used as the basis for the management systems of the relevant regulatory bodies. IAEA GS-R-3 also requires the identification and integration of any requirements formally agreed with interested parties such as regulators, suppliers and customers. These formally agreed requirements can include one or more national and international codes and standards. Quality Assurance Requirements for Nuclear Facility Applications (ASME NQA-1-2008 and NQA-1a-2009 Addenda), developed by the American Society of Mechanical Engineers (ASME), is an example of such a standard. It is the ninth edition of the ASME NQA-1 series of nuclear quality assurance level 1 standards, published as ASME NQA-1-2008, with the 2009 1a Addenda, published as ASME NQA-1a-2009.

ASME NQA-1-2008 and NQA-1a-2009 Addenda (referred to hereinafter simply as ASME NQA-1) is a national consensus standard that specifies requirements for a quality assurance programme. The purpose of the quality assurance programme is to achieve safe, reliable and efficient utilization of nuclear energy and management and processing of radioactive materials.

The present publication compares the requirements of IAEA GS-R-3 and ASME NQA-1 and identifies similarities and differences between them. The objective is to provide information and guidance to assist an organization to meet the requirements of both standards. This report extends the guidance developed by the IAEA on making the transition from quality management systems to (integrated) management systems based on IAEA GS-R-3.

In this publication, ‘should’ statements are used to provide guidance based on expert judgement; they do not stem from a consensus of IAEA Member States. The guidance provided does not relieve the users of their responsibility to comply with the requirements of the standards.

The IAEA wishes to thank the contributors to this Safety Report for their efforts and valuable assistance. The IAEA officers responsible for this publication were J. Majola and J.P. Boogaard of the Division of Nuclear Power.

EDITORIAL NOTE

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1. INTRODUCTION

1.1. BACKGROUND

The IAEA Safety Requirements publication on The Management System for Facilities and Activities, IAEA Safety Standards Series No. GS-R-3 [1] (IAEA GS-R-3), defines the requirements for establishing, implementing, assessing and continually improving a management system for facilities and activities that integrates safety, health, environmental, security, quality and economic elements. The IAEA Safety Guides on the Application of the Management System for Facilities and Activities [2] and on The Management System for Nuclear Installations [3], as well as other IAEA Safety Guides specific to technical areas, provide recommendations on how to fulfil the requirements specified in IAEA GS-R-3.

The management systems of operators or organizations that provide nuclear items or products and services must comply with safety requirements, including those prescribed in IAEA safety standards (e.g. IAEA GS-R-3) that are adopted by Member States. The utility or owner/operator of a nuclear facility or installation has the ultimate responsibility to ensure that the management system implemented provides for an adequate level of safety. IAEA GS-R-3 helps an organization to put in place a management system that fosters a strong safety culture and improves safety performance.

As Member States adopt and apply IAEA GS-R-3 requirements, regulatory bodies, operators or organizations providing nuclear items or products and services may be required to comply with the safety requirements in these IAEA standards while maintaining the certification or compliance of their items, products and services under ASME NQA-1-2008 and the 2009 1a Addenda published as ASME NQA-1a-2009 [4] (hereinafter referred to as ASME NQA-1) or other relevant codes and standards. Consequently, an organization may adopt IAEA GS-R-3 and ASME NQA-1 as the basis of its management system. IAEA GS-R-3 requires these requirements to be integrated within one management system. Therefore, the present guidance was developed to assist organizations to satisfy these requirements.

This publication helps organizations by providing information on the similarities and differences between IAEA GS-R-3 and ASME NQA-1. It complements other IAEA publications¹ that compare the requirements of management system standards.

1.2. OBJECTIVE

The objective of this Safety Report is to compare the requirements of IAEA GS-R-3 with those of ASME NQA-1, to identify the similarities and differences between them and to provide information and guidance to assist an organization to meet the requirements of both standards.

1.3. SCOPE

This publication compares the requirements in the following publications:

- IAEA Safety Standards Series No. GS-R-3, The Management System for Facilities and Activities [1];
- ASME NQA-1, Quality Assurance Requirements for Nuclear Facility Applications [4], Part I.

1.4. USERS

This publication is intended for:

- Regulatory bodies and customers who require, through regulation or contract, the management systems for nuclear facilities and activities to comply with the requirements of IAEA GS-R-3 and ASME NQA-1;
- Operators of nuclear facilities and activities who are either legally obliged, or choose as best practice, to implement the requirements of IAEA GS-R-3 and ASME NQA-1;

¹ These publications include: IAEA Safety Reports Series No. 69 comparison between IAEA GS-R-3 and ISO 9001:2008 [5], and the comparison between IAEA Safety Series No. 50-C/SG-Q (Quality Assurance for Safety in Nuclear Power Plants and other Nuclear Installations [6]) and the ISO standards, reported in IAEA-TECDOC-1182 [7] and Quality Standards: Comparison between IAEA 50-C/SG-Q and ISO 9001:2000, IAEA Safety Reports Series No. 22 [8].

- Suppliers of products or services that are required to be produced in accordance with the requirements of IAEA GS-R-3 and ASME NQA-1.

1.5. STRUCTURE

The present publication is structured as follows: Section 2 provides a general description of the application of, and differences between, the IAEA GS-R-3 and ASME NQA-1 standards. Section 3 describes the extent to which IAEA GS-R-3 addresses ASME NQA-1 requirements and includes a table presenting the two standards and comparing them using the process approach of IAEA GS-R-3. Section 4 describes the extent to which ASME NQA-1 addresses the IAEA GS-R-3 requirements and includes a table presenting the two standards and comparing them using the 18 criteria format of ASME NQA-1 [4], Part I.

Appendix I provides a correlation matrix for IAEA GS-R-3 users showing the correspondence between the requirements in IAEA GS-R-3 and those in ASME NQA-1; Appendix II provides a correlation matrix for ASME NQA-1 users showing the correspondence between the requirements in ASME NQA-1 and those in IAEA GS-R-3.

2. APPLICATION OF IAEA GS-R-3 AND ASME NQA-1 STANDARDS

2.1. OBJECTIVES OF IAEA GS-R-3 AND ASME NQA-1

IAEA GS-R-3 defines requirements for an organization to establish, implement, assess and continually improve a management system that integrates safety, health, environmental, security, quality and economic elements to ensure that safety is not compromised. It reflects an international consensus on what constitutes an effective, integrated, safety focused management system for nuclear facilities and activities. It fosters a strong safety culture and improved safety performance in all the activities of the organization.

ASME NQA-1 defines requirements for an organization to establish, implement and assess a quality assurance (QA) programme to achieve nuclear safety. ASME NQA-1 reflects industry experience and current understanding of QA requirements for the safe, reliable and efficient utilization of nuclear energy and management and processing of radioactive materials.

2.2. SCOPE AND APPROACH

IAEA GS-R-3 and ASME NQA-1 apply to the entire life cycle of nuclear facilities and activities, including siting, design, construction, commissioning, operation and decommissioning. Both standards foster the application of requirements in a manner that is consistent with the relative importance of the item or activity to safety.

IAEA GS-R-3 adopts an integrated management system approach to be applied to all work of the organization. It requires the integration of safety, health, environmental, security, quality and economic elements of the management system to ensure that safety is properly taken into account in all activities. It specifies requirements designed to achieve and enhance safety, while enhancing the satisfaction of interested parties. A management system based on IAEA GS-R-3 includes a process approach to achieve the objectives, and continual improvement of the management system and its processes, in which all safety, quality, environmental, security and economic aspects are integrated to preclude a negative impact on safety. A management system based on IAEA GS-R-3, the objective of which is to achieve and enhance safety, also includes safety culture, grading documentation and human performance. Safety Guides GS-G-3.1 [2] and GS-G-3.5 [3] give detailed guidance on how the requirements of IAEA GS-R-3 can be met.

The ASME NQA-1 approach applies QA requirements to activities that could affect the quality of nuclear material applications and of structures, systems and components of nuclear facilities. Quality assurance requirements are used to develop a QA programme necessary to achieve safe, reliable and efficient utilization of nuclear energy and management and processing of radioactive material.

ASME NQA-1 was originally developed to implement QA requirements for nuclear power plant design and construction in the United States of America. ASME NQA-1 now applies expanded QA requirements to a range of nuclear facilities to address new technologies and safety issues. ASME NQA-1 does not require an integrated management system approach, as is required by IAEA GS-R-3.

2.3. APPLICATION

IAEA GS-R-3 can be used by Member States to set management system requirements for nuclear facilities and activities, to provide assurance that safety can be achieved and enhanced. ASME NQA-1 can be imposed by a regulatory body through regulation or national codes and standards. It can be used by a nuclear facility to meet quality requirements set by a regulatory body. Both IAEA GS-R-3 and ASME NQA-1 can be invoked by contract, adopted voluntarily, or

used as the basis for assessing a management system or a QA programme. These standards require that responsibility for the management system and for work carried out under the management system be retained by the organization. Figure 1 provides an example of how the standards can be applied.

Guidance on evaluating existing practices or supplementing the standard is summarized in the text preceding Table 1 in Section 3 and Table 2 in Section 4. In most cases, the IAEA requirements are stated at a higher, process level and the user must determine the need to develop detailed practices for implementation of the ASME NQA-1 [4] requirements. In these cases, it is necessary to compare existing practices with the requirements of ASME NQA-1 [4] to determine additional requirements for compliance.

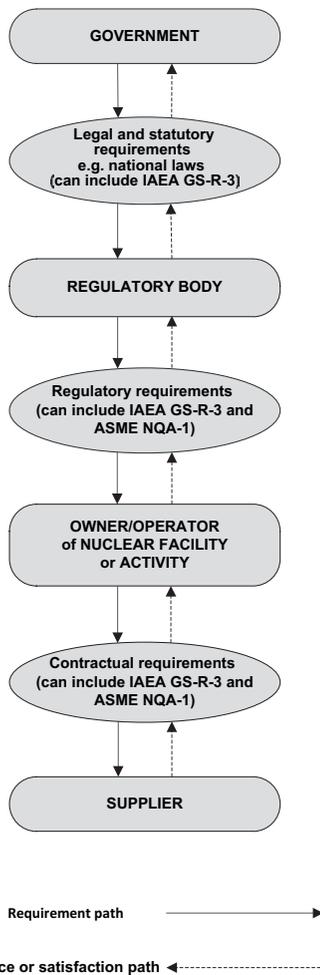


FIG. 1. Application of IAEA GS-R-3 and ASME NQA-1.

3. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS

This section describes the extent to which IAEA GS-R-3 addresses the ASME NQA-1 requirements. It identifies where the requirements are equivalent and provides guidance on how to modify an IAEA GS-R-3 management system to integrate ASME NQA-1 requirements. Table 1 presents the requirements of ASME NQA-1, Part I, on a line-by-line basis, for all 18 requirements, as well as the subparagraphs of each requirement. Immediately adjacent to the ASME NQA-1 requirement, the corresponding IAEA GS-R-3 requirement is presented. In cases where IAEA GS-R-3 does not specifically meet the ASME NQA-1 requirement, guidance is provided on how best to meet the ASME NQA-1 requirement with IAEA GS-R-3 as a basis. Table 1 provides guidance on how the IAEA GS-R-3 user can meet the ASME NQA-1 requirement. The correlation between the requirements in IAEA GS-R-3 and those in ASME NQA-1 is presented in Appendix I.

The following presents those ASME NQA-1 requirements for which there is ‘No corresponding requirement’ in IAEA GS-R-3, as identified in Table 1. The numbering corresponds to the ASME NQA-1 requirement and section.

REQUIREMENT 2: QUALITY ASSURANCE PROGRAMME

2-300 Qualification requirements

ASME NQA-1 requires the organization to designate activities that require qualification. The minimum requirements for personnel to verify quality and to conduct audits are specified in paragraphs 301–305 of this section of the ASME standard.

2-400 Records of qualification

ASME NQA-1 requires the organization to ensure the qualification of inspection, test and lead auditor(s), and to ensure that their certification is in writing according to the requirements specified in this section of the ASME standard.

REQUIREMENT 3: DESIGN CONTROL

ASME NQA-1 requires the organization to implement requirements for design control. IAEA GS-R-3 does not contain specific requirements for design control, but IAEA GS-R-3 Requirements 5.1–5.10 address development, implementation and management of processes in general, and these also apply to processes for design control.

3-800 Software design control

ASME NQA-1 has a specific requirement for software design control; in IAEA GS-R-3, this is implicitly required by the general requirements for process implementation (see paras 5.1–5.10).

REQUIREMENT 4: PROCUREMENT DOCUMENT CONTROL

4-300 Procurement document review

ASME NQA-1 explicitly requires the organization to implement requirements for the review of procurement documents.

REQUIREMENT 7: CONTROL OF PURCHASED ITEMS AND SERVICES

7-300 Bid evaluation

ASME NQA-1 explicitly requires the organization to implement requirements for bid evaluation including determination of the supplier's capability.

7-400 Control of supplier generated documents

ASME NQA-1 explicitly requires the organization to implement requirements for the submission and evaluation of supplier generated documents and changes to ensure that they are accomplished in accordance with the procurement document requirements.

7-700 Commercial grade items and services

ASME NQA-1 requires the organization to implement requirements for the utilization of commercial grade items or services.

7-800 Records

ASME NQA-1 requires the organization to implement requirements for records for the control of purchased items and services. IAEA GS-R-3 specifies the requirements for control of records in general.

REQUIREMENT 8: IDENTIFICATION AND CONTROL OF ITEMS

8-200 Identification methods

ASME NQA-1 requires the organization to implement requirements for the physical identification of items, for how they are to be used to the maximum extent possible and for how they relate to an applicable design or other pertinent specifying document.

8-300 Specific requirements

ASME NQA-1 requires the organization to implement requirements for the control of item identification consistent with the planned duration and conditions of storage.

REQUIREMENT 9: CONTROL OF SPECIAL PROCESSES

ASME NQA-1 requires the organization to implement requirements for the control of special processes.

9-100 Basic

ASME NQA-1 requires the organization to implement requirements for special processes that control or verify the quality of special activities such as welding, heat treatment and non-destructive examination.

9-200 Process control

ASME NQA-1 requires the organization to control the defined special processes by instructions, procedures, drawings, checklists or other appropriate means.

9-300 Responsibility

ASME NQA-1 requires the organization to adhere to the approved procedures and processes when performing special processes.

9-400 Records

ASME NQA-1 requires the organization to implement special processes to maintain records, as appropriate, of the qualified personnel, processes and equipment used in each special process.

REQUIREMENT 10: INSPECTION

10-300 Inspection hold points

ASME NQA-1 requires the organization to implement requirements for mandatory inspection hold points beyond which work shall not proceed.

10-400 Inspection planning

ASME NQA-1 requires the organization to identify characteristics to be inspected, methods of inspection, acceptance criteria and methods of sampling during inspection planning.

10-500 In-process inspection

ASME NQA-1 explicitly requires the organization to implement requirements for the inspection of items under construction or otherwise in process, to verify quality.

10-600 Final inspections

ASME NQA-1 explicitly requires the organization to inspect completed items, re-inspect or retest any modified, repaired or replaced item, approve

acceptance of the item and review the results of inspection and of the resolution of non-conformances.

10-700 Inspections during operations

ASME NQA-1 requires the organization to plan and execute periodic inspections (e.g. in-service inspections) or surveillance of structures, systems or components, to ensure the continued performance of their required functions.

10-800 Records

ASME NQA-1 requires the organization to establish and maintain inspection records, and identifies minimum contents for these records.

REQUIREMENT 11: TEST CONTROL

11-200 Test requirements

ASME NQA-1 requires the organization to establish test requirements and acceptance criteria.

11-300 Test procedures (other than for computer programs)

ASME NQA-1 requires the organization to ensure that test procedures include or reference the test configuration and test objectives.

11-400 Computer program test procedures

ASME NQA-1 requires the organization to ensure that computer program test procedures provide for demonstrating the adherence of the computer program to documented requirements.

11-500 Test result

ASME NQA-1 requires the organization to document, maintain and evaluate test results, using a responsible authority to ensure that test requirements have been satisfied.

11-600 Test records

ASME NQA-1 requires the organization to establish and maintain test records.

REQUIREMENT 12: CONTROL OF MEASURING AND TEST EQUIPMENT

12-300 Calibration and control

ASME NQA-1 requires the organization to calibrate measuring and test equipment using reference standards and control procedures.

12-400 Records

ASME NQA-1 requires the organization to establish and maintain calibration records, including calibration reports and certificates that include the information and data necessary for interpretation of the calibration results and verification of conformance with applicable requirements.

REQUIREMENT 13: HANDLING, STORAGE AND SHIPPING

13-200 Special requirements

ASME NQA-1 requires the organization to specify, provide and verify the existence of special equipment and special protective environments, when required.

13-400 Tools and equipment

ASME NQA-1 requires the organization to use, control, inspect and test special handling tools and equipment.

13-500 Operators

ASME NQA-1 requires the organization to use operators that are experienced and/or trained in the use of special handling and lifting equipment.

13-600 Marking or labelling

ASME NQA-1 requires the organization to use marking or labelling, as necessary, to maintain and preserve the item.

REQUIREMENT 17: QUALITY ASSURANCE RECORDS

17-300 Authentication of records

ASME NQA-1 requires the organization to consider documents as valid records only after they have been authenticated.

17-500 Receipt control of records

ASME NQA-1 requires the organization to designate a person or organization responsible for receiving records and to provide a method for controlling the receipt of records.

17-600 Storage

ASME NQA-1 requires the organization to store records at a predetermined location(s) in a manner that minimizes the risk of loss, damage or destruction.

REQUIREMENT 18: AUDITS

18-200 Scheduling

ASME NQA-1 requires the organization to schedule audits.

18-400 Performance

ASME NQA-1 requires the organization to conduct audits against specified requirements, using the examination of objective evidence to determine effective implementation of the requirements.

18-500 Reporting

ASME NQA-1 requires the organization to ensure that the lead auditor endorses the audit report and issues it to the audited organization. It also specifies the contents of the audit report.

18-800 Records

ASME NQA-1 specifies requirements for audit records.

The extent to which IAEA GS-R-3 addresses ASME NQA-1 requirements is shown in Table 1. For copyright reasons, the text of ASME NQA-1 is not included in this table. Keywords are included, as appropriate, to help the reader identify the nature of the requirements. Users should refer to ASME NQA-1 for the full text of the requirements.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
1	Organization	
1-100	Basic	
	Keywords: Responsibilities, organizational structure, functional responsibilities, levels of authority, lines of communication.	Requirements in paras 2.8, 3.12 and 3.14.
1-200	Structure and responsibility	
	201 General Keywords: (a) Management expectations; (b) Quality achieved and maintained by; (c) Quality achievement verified by (d) Sufficient authority, direct access, organizational freedom, access to work, independence, verification functions.	Requirements in paras 2.1, 2.2, 2.4, 3.12, 3.13, 3.14, 5.7, 5.10 and 6.5. IAEA GS-R-3 users should address organizational freedom, independence of verification activities and the following verification functions: (1) Identifying quality problems; (2) Initiating, recommending or providing solutions to quality problems through designated channels; (3) Verifying implementation of solutions;
	202 Delegation of work	

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
		(4) Ensuring that further processing, delivery, installation or use is controlled until proper disposition of a non-conformance, deficiency or unsatisfactory condition has occurred.
1-300	Interface control	
		Requirements in paras 5.4, 5.5 and 5.10.
2	Quality assurance programme	
2-100	Basic	
	Keywords: (a) Documented planned, implemented, maintained; (c) Management assessment.	Requirements in paras 2.1, 2.6, 2.7, 3.8, 4.1, 4.2, 4.4, 4.5 and 6. IAEA GS-R-3 users should establish the programme at the earliest time consistent with the schedule for accomplishing the activities and provide for special controls, as required by ASME NQA-1 (see notes under 2-200–2-500 for additional details).
2-200	Indoctrination and training	
	201 Indoctrination 202 Training	Requirements in paras 4.3 and 4.4. IAEA GS-R-3 users should ensure that the description and introduction of the job responsibilities and authority includes general criteria, technical objectives, requirements of applicable codes and standards, regulatory commitments, company procedures and quality assurance requirements as required by ASME NQA-1. IAEA GS-R-3 users should conduct an introduction and training commensurate with the scope, complexity and importance of the activities, and with the education, experience and proficiency of the person, consistent with the grading requirements in IAEA GS-R-3 paras 2.6 and 2.7.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
2-300	Qualification requirements	
	Keywords: Designate activities that require qualification, written procedures. 301 Non-destructive examination (NDE) 302 Inspection and test 303 Lead auditor 303.1 Communication skills 303.2 Training 303.3 Audit participation 303.4 Examination 303.5 Maintenance of proficiency 303.6 Requalification 304 Auditors 305 Technical specialists	No corresponding requirements. IAEA GS-R-3 users should ensure that the responsible organization designates those activities that require qualification. The minimum requirements for personnel to verify quality and auditing are specified in paras 301–304 of this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
2-400	Records of qualification	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement.
2-500	Records	
		Requirement in para. 5.21. IAEA GS-R-3 users should ensure that records of the implementation of introduction and training include one or more of (a) through (c) of this ASME NQA-1 requirement.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
		IAEA GS-R-3 users should establish and maintain records of auditor and lead auditor qualification and requalification, and of inspection and test personnel qualification and requalification.
3	Design control	
3-100	Basic	
	Keywords: Defined, controlled.	No corresponding specific requirement. IAEA GS-R-3 paras 5.1–5.10 address process management in general. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
3-200	Design input	
		No corresponding specific requirement. IAEA GS-R-3 para. 5.4 addresses process inputs. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
3-300	Design process	
	Keywords: (a) Prescribe and document the design activities, (b) design methods and (c) final design, commercial grade items and services.	No corresponding specific requirement. IAEA GS-R-3 para. 5.14 addresses control of products. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
3-400	Design analyses	
	401 Use of computer programs 402 Documentation of design analyses	No corresponding specific requirements. IAEA GS-R-3 users should address these ASME NQA-1 requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
3-500	Design verification	
	501 Methods	No corresponding specific requirements.
	501.1 Design reviews	IAEA GS-R-3 users should address these ASME NQA-1 requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.
	501.2 Alternate calculations	
	501.3 Qualification tests	
3-600	Change control	
	Keywords: (a) Changes to design justified, evaluation of effects, approved, approving organization, demonstrated competence, (c) incorrect design. 601 Configuration management of operating facilities	No corresponding specific requirement. IAEA GS-R-3 para. 5.13 addresses changes to documents. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
3-700	Interface control	
	Keywords: Responsibility, procedures, design information.	No corresponding specific requirement. IAEA GS-R-3 para. 5.5 addresses the control of interfaces generally. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
3-800	Software design control	
	801 Software design process	No corresponding requirements.
	801.1 Identification of software design requirements	IAEA GS-R-3 paras 5.3, 5.9 and 5.10 address process management in general. IAEA GS-R-3 users should address these ASME NQA-1 requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.
	801.2 Software design	
	801.3 Implementation of the software design	
	801.4 Software design verification	
	801.5 Computer program testing	

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
	802 Software configuration management 802.1 Configuration identification 802.2 Configuration change control 802.3 Configuration status control	
3-900	Documentation and records	
	Keywords: Sources of design inputs.	No corresponding specific requirement. IAEA GS-R-3 paras 5.6–5.10 address process management generically. These generic requirements address process documentation and records to demonstrate the achievement of process results. IAEA GS-R-3 paras 5.12 and 5.13 address document control, and paras 5.21 and 5.22 address records. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
4	Procurement document control	
4-100	Basic	
	Keywords: Design bases, suppliers, quality assurance programme.	Requirements in paras 5.23 and 5.24. IAEA GS-R-3 users should ensure that design bases are addressed in the documents, if applicable.
4-200	Content of the procurement documents	
	Keywords: All tiers of procurement. 201 Scope of work 202 Technical requirements	Requirements in paras 5.24 and 5.25. IAEA GS-R-3 users should address these ASME NQA-1 requirements. Procurement documents should include the scope, technical requirements, quality assurance

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
	203 Quality assurance programme requirements 204 Right of access 205 Documentation requirements 206 Non-conformances 207 Spare and replacement parts	requirements, purchaser right of access, documentation requirements, non-conformance reporting provisions, and spare and replacement parts. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.
4-300	Procurement document review	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement, including documented changes to procurement documents prior to award, to ensure that documents transmitted to a prospective supplier include the appropriate provisions for ensuring that items or services will meet the specified requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
4-400	Procurement document changes	
		Requirements in paras 5.13 and 5.14.
5	Instructions, procedures and drawings	
5-100	Basic	
	Keywords: Documented, quantitative or qualitative acceptance criteria, detail commensurate with complexity.	Requirements in paras 2.6–2.10, 4.3, 5.6, 5.7 and 5.9.
6	Document control	
6-100	Basic	
		Requirements in paras 5.12 and 5.13.
6-200	Document control	
		Requirements in paras 2.8, 2.9 and 5.12.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
6-300	Document changes	
	301 Major changes	Requirement in para. 5.13.
	302 Minor changes	
7	Control of purchased items and services	
7-100	Basic	
		Requirements in paras 5.15, 5.16, 5.23, 5.24 and 6.3.
7-200	Supplier evaluation and selection	
		Requirements in paras 5.23, 5.24 and 6.3. IAEA GS-R-3 users should address one or more of the following: supplier's history, supplier's current quality records, supplier's technical and quality capability.
7-300	Bid evaluation	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
7-400	Control of supplier generated documents	
		No corresponding requirement. When supplier documents are received, the requirements in IAEA GS-R-3 paras 5.12, 5.21 and 5.24 provide the necessary controls. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
7-500	Acceptance of item or service	
	<p>501 General Keywords: Supplier shall verify.</p> <p>502 Methods of acceptance</p> <p>503 Certificate of conformance</p> <p>504 Source verification</p> <p>505 Receiving inspection</p> <p>506 Post-installation testing</p> <p>507 Acceptance of services only</p>	<p>Requirements in paras 5.24 and 5.25.</p> <p>IAEA GS-R-3 users should address paras 503–507 of ASME NQA-1.</p>
7-600	Control of supplier non-conformances	
	<p>Keywords: (a) evaluation, (b) submittal, (c) disposition, (d) verification, (e) records.</p>	<p>Requirements in paras 5.25 and 6.11–6.16.</p> <p>IAEA GS-R-3 users should address paras 600(a)–(e) of ASME NQA-1.</p>
7-700	Commercial grade items and services	
	<p>701 General</p>	<p>No corresponding requirement.</p> <p>IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.</p>
7-800	Records	
		<p>No corresponding requirement.</p> <p>IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.</p>

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
8	Identification and control of items	
8-100	Basic	
	Keywords: Correct and accepted items.	Requirements in paras 5.18 and 5.19.
8-200	Identification methods	
	201 Item identification	No corresponding requirements.
	202 Physical identification	IAEA GS-R-3 users should address these ASME NQA-1 requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.
8-300	Specific requirements	
	301 Identification and traceability of items	No corresponding requirements.
	302 Limited life items	IAEA GS-R-3 users should address these ASME NQA-1 requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.
	303 Maintaining identification of stored items	
9	Control of special processes	
9-100	Basic	
	Keywords: Welding, heat treating, non-destructive examination, qualified personnel, qualified procedures.	No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
9-200	Process control	
	201 Special processes	No corresponding requirements.
	202 Acceptance criteria	IAEA GS-R-3 users should address these ASME NQA-1 requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.
	203 Special requirements	

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
9-300	Responsibility	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
9-400	Records	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
10	Inspection	
10-100	Basic	
		Requirements in paras 5.7 and 5.15. IAEA GS-R-3 users should ensure that inspection for acceptance is performed by qualified persons other than those who performed or directly supervised the work.
10-200	Inspection requirements	
		Requirement in para 5.7. When specifying inspection requirements and acceptance criteria, IAEA GS-R-3 users should include specified requirements contained in the applicable design documents or other pertinent technical documents approved by the responsible design organization.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
10-300	Inspection hold points	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Specified hold points should be indicated in appropriate documents. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
10-400	Inspection planning	
	401 Planning 402 Sampling	No corresponding requirements. IAEA GS-R-3 users should address these ASME NQA-1 requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.
10-500	In-process inspection	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
10-600	Final inspections	
	601 Resolution of non-conformances 602 Inspection requirements 603 Modifications, repairs or replacements 604 Acceptance	No corresponding requirements. IAEA GS-R-3 users should address these ASME NQA-1 requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
10-700	Inspections during operations	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
10-800	Records	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
11	Test control	
11-100	Basic	
	Keywords: Collect data, verify conformance, demonstrate satisfactory performance.	Requirements in paras 5.7 and 5.15. IAEA GS-R-3 users should specify characteristics to be tested and test methods to be employed. Test results shall be documented and their conformance with test requirements and acceptance criteria shall be evaluated.
11-200	Test requirements	
		No corresponding requirement. IAEA GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
11-300	Test procedures (other than for computer programs)	
	Keywords: Test configuration, test objectives, prerequisites.	No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
11-400	Computer program test procedures	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
11-500	Test result	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
11-600	Test records	
	601 Test records	No corresponding requirements.
	602 Computer program test records	IAEA GS-R-3 users should address these ASME NQA-1 requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.
12	Control of measuring and test equipment	
12-100	Basic	
		Requirement in para. 5.15. IAEA GS-R-3 users should address control, calibration at specific periods, adjustment and maintenance of tools, gauges, instruments, and other measuring and test equipment.
12-200	Selection	
		Requirement in para. 5.15.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
12-300	Calibration and control	
	301 Calibration	No corresponding requirements.
	302 Reference standards	IAEA GS-R-3 users should address these ASME NQA-1 requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.
	303 Control	
	303.1 Application	
	303.2 Corrective action	
	303.3 Handling and storage	
	303.4 Environmental controls	
	303.5 Pre-calibration checks	
	303.6 Status indication	
	304 Commercial devices	
12-400	Records	
	401 General Keywords: Status, capability.	No corresponding requirements.
	402 Reports and certificates	IAEA GS-R-3 users should address these ASME NQA-1 requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.
13	Handling, storage and shipping	
13-100	Basic	
		Requirements in paras 5.9 and 5.20.
		IAEA GS-R-3 users should address cleaning and packaging of items.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
13-200	Special requirements	
	Keywords: Equipment, protective environment.	No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1-1 for guidance on implementation of this requirement, as applicable.
13-300	Procedures	
		Requirements in paras 2.6, 5.9 and 5.20.
13-400	Tools and equipment	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
13-500	Operators	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
13-600	Marking or labelling	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
14	Inspection, test and operating status	
14-100	Basic	
	Keywords: Identified, maintained through indicators, authority.	Requirements in paras 5.15 and 5.18. IAEA GS-R-3 users should address inspection, test and operating status, as required by ASME NQA-1.
15	Control of non-conforming items	
15-100	Basic	
		Requirements in paras 6.11 and 6.12. IAEA GS-R-3 users should address notification of affected organizations.
15-200	Identification	
		Requirement in para. 6.12. IAEA GS-R-3 users should address the use of identification methods not detrimental to the item, on the item, the container or the package.
15-300	Segregation	
		Requirement in para. 6.12. IAEA GS-R-3 users should employ precautions to preclude inadvertent use of a non-conforming item in cases where segregation is impractical or impossible due to physical conditions such as size, weight or access limitations.
15-400	Disposition	
	401 Control 402 Responsibility and authority 403 Personnel 404 Disposition 405 Re-examination	Requirements in paras 6.12 and 6.13. IAEA GS-R-3 users should address paras 402 and 403 of ASME NQA-1.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
16	Corrective action	
16-100	Basic	
	Keywords: Condition adverse to quality, significant.	Requirements in paras 6.14 and 6.15. IAEA GS-R-3 users should address verification of completed corrective actions.
17	Quality assurance records	
17-100	Basic	
		Requirements in paras 5.6, 5.21 and 5.22. IAEA GS-R-3 users should address authentication.
17-200	Generation of records	
		Requirements in paras 5.6 and 5.21.
17-300	Authentication of records	
	Keywords: (a) valid, (b) electronic.	No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.
17-400	Classification	
	401 Lifetime records	Requirement in para. 5.22.
	402 Non-permanent records	IAEA GS-R-3 users should address paras 401 and 402 of ASME NQA-1.
17-500	Receipt control of records	
		No corresponding requirement. IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
17-600	Storage	
	<p>601 General Keywords: (a) location, minimize risk, (b) detrimental activities, (c) access, (d) damage.</p> <p>602 Facility types Keywords: (602.1) single, (602.2) dual.</p> <p>603 Temporary storage</p>	<p>No corresponding requirements.</p> <p>IAEA GS-R-3 users should address these ASME NQA-1 requirements. Consult relevant parts of ASME NQA-1 for guidance on implementation of these requirements.</p>
17-700	Retention	
		Requirement in para. 5.22.
17-800	Maintenance of records	
	Keywords: (a) protected, (b) retrievability, (c) methods for record changes, (d) electronic record media, (e) technology changes, (f) duplicated.	<p>Requirement in para. 5.22.</p> <p>IAEA GS-R-3 users should address (b) through (f) of ASME NQA-1.</p>
18	Audits	
18-100	Basic	
		Requirements in paras 5.9, 6.3, 6.5 and 6.6.
18-200	Scheduling	
		<p>No corresponding requirement.</p> <p>IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.</p>
18-300	Preparation	
	<p>301 Audit plan</p> <p>302 Personnel</p> <p>303 Selection of audit team</p>	<p>Requirement in para. 6.4.</p> <p>IAEA GS-R-3 users should address paras 301 and 303 of ASME NQA-1.</p>

TABLE 1. EXTENT TO WHICH IAEA GS-R-3 ADDRESSES ASME NQA-1 REQUIREMENTS (cont.)

Requirement	ASME NQA-1	Notes to aid users of IAEA GS-R-3
18-400	Performance	
		<p>No corresponding requirement.</p> <p>IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.</p>
18-500	Reporting	
		<p>No corresponding requirement.</p> <p>IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.</p>
18-600	Response	
		<p>Requirements in paras 6.6 and 6.14.</p> <p>IAEA GS-R-3 users should address evaluation of audit responses by or for the auditing organization.</p>
18-700	Follow-up action	
		Requirements in paras 5.9 and 6.15.
18-800	Records	
		<p>No corresponding requirement.</p> <p>IAEA GS-R-3 users should address this ASME NQA-1 requirement. Consult relevant parts of ASME NQA-1 for guidance on implementation of this requirement.</p>

4. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS

This section describes the extent to which ASME NQA-1 addresses the IAEA GS-R-3 requirements. It identifies where the requirements are equivalent and provides guidance on how to modify an ASME NQA-1 QA programme to meet IAEA GS-R-3 requirements. Table 2 lists all five elements of IAEA GS-R-3, as well as the specific requirements of each. In this table, where a particular ASME NQA-1 requirement meets the specific IAEA GS-R-3 requirement, it is so stated. Where no ASME NQA-1 element meets the IAEA GS-R-3 requirement, guidance is provided on how the IAEA GS-R-3 requirement could be met. Where applicable, reference is made to IAEA Safety Guides GS-G-3.1 [2] and GS-G-3.5 [3] for additional guidance on how IAEA GS-R-3 requirements could be met. The correlation between the requirements in ASME NQA-1 and those in IAEA GS-R-3 is presented in Appendix II.

The following presents those IAEA GS-R-3 requirements for which there is ‘No corresponding requirement’ in ASME NQA-1, as identified in Table 2 (see page 37). The numbering in the table corresponds to IAEA GS-R-3.

4.1. MANAGEMENT SYSTEM

IAEA GS-R-3, para. 2.3, requires the following requirements to be identified and integrated into the management system:

- The statutory and regulatory requirements of the Member State;
- Any requirements formally agreed with interested parties (also known as ‘stakeholders’);
- All other relevant IAEA Safety Requirements publications, such as those on emergency preparedness and response and on safety assessment;
- Requirements from other relevant codes and standards adopted for use by the organization.

4.1.1. Safety culture

IAEA GS-R-3, para. 2.5, requires the management system to promote and support a strong safety culture. Specific requirements relate to: a common understanding of the key aspects of safety; support to individuals and teams in carrying out tasks safely; reinforcing a learning and questioning attitude; and continual improvement of the safety culture.

4.1.2. Management commitment

IAEA GS-R-3, para. 3.2, requires senior management to develop individual values, institutional values and behavioural expectations for the organization to support the implementation of the management system and act as role models in the promulgation of these values and expectations.

IAEA GS-R-3, para. 3.3, requires management at all levels to communicate to individuals the need to adopt these individual values, institutional values and behavioural expectations that have been developed by senior management as well as the need to comply with the requirements of the management system.

IAEA GS-R-3, para. 3.4, requires management at all levels to foster the involvement of all individuals in the implementation and continual improvement of the management system.

4.1.3. Satisfaction of interested parties

IAEA GS-R-3, para. 3.6, requires senior management to consider the expectations of interested parties in the activities and interactions in the processes of the management system. The aim is to enhance the satisfaction of the interested parties without compromising safety.

4.1.4. Organizational policies

IAEA GS-R-3, para. 3.7, requires senior management to develop policies that are appropriate for the activities and facilities of the organization.

4.1.5. Planning

IAEA GS-R-3, para. 3.10, requires senior management to ensure that measurable objectives are established through appropriate processes at various levels of the organization for implementing the organization's goals, strategies and plans.

IAEA GS-R-3, para. 3.11, requires senior management to ensure that the implementation of the organization's goals, strategies and plans is regularly reviewed against the measurable objectives and that actions are taken to address deviations from the implementation plans, where necessary.

4.1.6. Responsibility, authority and communication

IAEA GS-R-3, para. 3.13, requires an individual reporting directly to senior management to have specific responsibility and authority for: coordinating the

development and implementation of the management system, and its assessment and continual improvement; reporting on the performance of the management system, including its influence on safety and safety culture, and any need for improvement; and resolving any potential conflicts between requirements and within the processes of the management system.

4.1.7. Provision of resources

IAEA GS-R-3, para. 4.1, requires senior management to determine the necessary resources, and to provide those resources to carry out the activities of the organization and to establish, implement, assess and continually improve the management system.

IAEA GS-R-3, para. 4.2, requires that the information and knowledge of the organization be managed as resources.

4.1.8. Developing processes

IAEA GS-R-3, para. 5.2, requires the determination of the sequence and interactions of the processes of the management system needed to achieve the goals, to provide the means to meet all requirements and to deliver the products of the organization.

4.1.9. Process management

IAEA GS-R-3, para. 5.6, requires that an individual be designated for each process. This individual, normally referred to as the process owner, has the authority and responsibility to manage the process. The process owner has the specific authority and responsibility to: develop and document the process and to maintain the necessary supporting documentation; ensure that there is effective interaction between interfacing processes; ensure that process documentation is consistent with any existing documents; ensure that the records required to demonstrate that the process results have been achieved are specified in the process documentation; monitor and report on the performance of the process; promote improvement in the process; and ensure that the process, including any subsequent changes to it, is aligned with the goals, strategies, plans and objectives of the organization.

4.1.10. Generic management system processes

IAEA GS-R-3, para. 5.11, requires the development of generic processes in the management system that include communication and managing organizational change.

4.1.11. Communication

IAEA GS-R-3, para. 5.26, requires that information relevant to safety, health, environmental, security, quality and economic goals be communicated to individuals in the organization and, where necessary, to other interested parties.

IAEA GS-R-3, para. 5.27, requires internal communication between the various levels and functions of the organization concerning the implementation and effectiveness of the management system.

4.1.12. Managing organizational change

IAEA GS-R-3, para. 5.28, requires that organizational changes be evaluated and classified according to their importance to safety and their justification.

4.1.13. Self-assessment

IAEA GS-R-3, para. 6.2, requires senior management and management at all other levels in the organization to carry out self-assessments to evaluate the performance of work and the improvement of the safety culture.

4.1.14. Management system review

IAEA GS-R-3, para. 6.8, requires that the management system review cover, but not be limited to: outputs from all forms of assessment; results delivered and objectives achieved by the organization and its processes; non-conformances and corrective and preventive actions; lessons learned from other organizations; and opportunities for improvement.

IAEA GS-R-3, para. 6.9, requires that weaknesses and obstacles be identified, evaluated and remedied in a timely manner.

IAEA GS-R-3, para. 6.10, requires that the management system review identify whether there is a need to make changes to, or improvements in, policies, goals, strategies, plans, objectives and processes.

4.1.15. Non-conformances and corrective and preventive actions

IAEA GS-R-3, para. 6.16, requires that potential non-conformances that could detract from the organization’s performance be identified using: feedback from other organizations, both internal and external; technical advances and research; the sharing of knowledge and experience; and techniques that identify best practices.

4.1.16. Improvement

IAEA GS-R-3, para. 6.17, requires that opportunities for improvement of the management system be identified and actions to improve the processes be selected, planned and recorded.

IAEA GS-R-3, para. 6.18, requires that plans to improve the management system include the provision of adequate resources. It also requires that improvement actions be monitored through to their completion and that the effectiveness of the improvements be checked.

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
2.1–2.10	Management system	
General requirement		
2.1	<p>A management system shall be established, implemented, assessed and continually improved. It shall be aligned with the goals of the organization and shall contribute to their achievement. The main aim of the management system shall be to achieve and enhance safety by:</p> <ul style="list-style-type: none"> – Bringing together in a coherent manner all the requirements for managing the organization; – Describing the planned and systematic actions necessary to provide adequate confidence that all these requirements are satisfied; – Ensuring that health, environmental, security, quality and economic requirements are not considered separately from safety requirements, to help preclude their possible negative impact on safety. 	<p>Requirements 1 and 2.</p> <p>ASME NQA-1 users should ensure that health, safety, environmental, security and economic requirements will be implemented as part of continual improvement of the management system.</p>

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
2.2	Safety shall be paramount within the management system, overriding all other demands.	No corresponding specific requirement, but Part I, Introduction, addresses the safe utilization of nuclear energy and nuclear material processing. ASME NQA-1 users should address safety to the extent described by IAEA GS-R-3 to ensure that safety is paramount.
2.3	The management system shall identify and integrate with the requirements contained within IAEA GSR-R-3: – The statutory and regulatory requirements of the Member State; – Any requirements formally agreed with interested parties (also known as ‘stakeholders’); – All other relevant IAEA Safety Requirements publications, such as those on emergency preparedness and response and safety assessment; – Requirements from other relevant codes and standards adopted for use by the organization.	No corresponding requirement. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-G-3.1, paras 2.1–2.6 and appendix I, for guidance on implementation of this requirement.
2.4	The organization shall be able to demonstrate the effective fulfilment of its management system requirements.	Requirement 2, Section 100 (c). ASME NQA-1 users should address all aspects of management system requirements.
Safety culture		
2.5	The management system shall be used to promote and support a strong safety culture by: – Ensuring a common understanding of the key aspects of safety culture within the organization; – Providing the means by which the organization supports individuals and teams in carrying out their tasks safely and successfully, taking into account the interaction between individuals, technology and the organization;	No corresponding requirement. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-R-3, paras 2.32–2.36, for guidance on implementation of this requirement.

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
2.5 (cont.)	<ul style="list-style-type: none"> – Reinforcing a learning and questioning attitude at all levels of the organization; – Providing the means by which the organization continually seeks to develop and improve its safety culture. 	
Grading the application of management system requirements		
2.6	<p>The application of management system requirements shall be graded so as to deploy appropriate resources, on the basis of the consideration of:</p> <ul style="list-style-type: none"> – The significance and complexity of each product or activity; – The hazards and the magnitude of the potential impact (risks) associated with the safety, health, environmental, security, quality and economic elements of each product or activity; – The possible consequences if a product fails or an activity is carried out incorrectly. 	<p>Requirement 2, Section 100 (a), Requirement 5, Part I, Introduction.</p> <p>ASME NQA-1 users should deploy appropriate resources based on the potential impact associated with the safety, health, environmental, security and economic aspects of the product or activity in the application of the QA programme. See also Part III, Subpart 2A-2, for additional guidance.</p>
2.7	<p>Grading of the application of management system requirements shall be applied to the products and activities of each process.</p>	<p>Requirement 2, Section 100 (a), Requirement 5, Part I, Introduction.</p> <p>Requirement 3, Section 500 (d), Requirement 3, para. 801.4 (b), Requirement 4, para. 203, Requirement 6, Section 300, Requirement 7, para. 501, and Requirement 7, para. 504 are examples of a graded approach.</p> <p>ASME NQA-1 users should address the potential impact associated with the safety, health, environmental, security and economic aspects of the products and activities of each process in the application of the QA programme. See also Part III, Subpart 2A-2, for additional guidance</p>

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
Documentation of the management system		
2.8	<p>The documentation of the management system shall include the following:</p> <ul style="list-style-type: none"> – The policy statements of the organization; – A description of the management system; – A description of the structure of the organization; – A description of the functional responsibilities, accountabilities, levels of authority and interactions of those managing, performing and assessing work; – A description of the processes and supporting information that explain how work is to be prepared, reviewed, carried out, recorded, assessed and improved. 	<p>Requirements 1 and 2.</p> <p>Other NQA-1 requirements include responsibilities specific to processes and activities.</p> <p>ASME NQA-1 users should address, in the documentation of the management system, all IAEA GS-R-3 requirements, i.e. policy statements, and safety, health, environmental, security and economic elements.</p>
2.9	<p>The documentation of the management system shall be developed to be understandable to those who use it. Documents shall be readable, readily identifiable and available at the point of use.</p>	<p>Requirements 1, 2, 6 and 17.</p>
2.10	<p>The documentation of the management system shall reflect:</p> <ul style="list-style-type: none"> – The characteristics of the organization and its activities; – The complexities of processes and their interactions. 	<p>Requirement 2, Section 100 (a) and Part I, Introduction.</p> <p>ASME NQA-1 users should address, in the documentation of the management system, the potential impact associated with the safety, health, environmental, security and economic aspects on products in the processes. See also Part III, Subpart 2A-2, for additional guidance.</p> <p>The organization should identify all processes and their interactions.</p>

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
3.1–3.14		
Management responsibility		
Management commitment		
3.1	Management at all levels shall demonstrate its commitment to the establishment, implementation, assessment and continual improvement of the management system and shall allocate adequate resources to carry out these activities.	<p>Requirement 1 addresses commitment to the establishment and implementation of the QA programme.</p> <p>Requirement 2, Section 100 (c), addresses the assessment of the QA programme.</p> <p>ASME NQA-1 users should address continual improvement, resource allocation and all other areas of the management system.</p>
3.2	Senior management shall develop individual values, institutional values and behavioural expectations for the organization to support the implementation of the management system and shall act as role models in the promulgation of these values and expectations.	<p>No corresponding requirement.</p> <p>Requirement 1, para. 201 (a) addresses ‘overall management expectations’ for the QA programme. NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-R-3, paras 3.1–3.7, for guidance on implementation of this ASME NQA-1 requirement.</p>
3.3	Management at all levels shall communicate to individuals the need to adopt these individual values, institutional values and behavioural expectations as well as to comply with the requirements of the management system.	<p>No corresponding requirement.</p> <p>ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-R-3, paras 3.1–3.7, for guidance on implementation of this requirement.</p>

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
3.4	Management at all levels shall foster the involvement of all individuals in the implementation and continual improvement of the management system.	No corresponding requirement. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-R-3, paras 3.1–3.7, for guidance on implementation of this requirement.
3.5	Senior management shall ensure that it is clear when, how and by whom decisions are to be made within the management system.	Requirement 1.
Satisfaction of interested parties		
3.6	The expectations of interested parties shall be considered by senior management in the activities and interactions in the processes of the management system, with the aim of enhancing the satisfaction of interested parties while at the same time ensuring that safety is not compromised.	No corresponding requirement. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-R-3, para. 3.8, for guidance on implementation of this requirement.
Organizational policies		
3.7	Senior management shall develop the policies of the organization. The policies shall be appropriate to the activities and facilities of the organization.	No corresponding requirement. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-R-3, paras 3.10–3.12, for guidance on implementation of this requirement.
Planning		
3.8	Senior management shall establish goals, strategies, plans and objectives that are consistent with the policies of the organization.	Requirement 2, Section 100, addresses aspects of planning. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-R-3, paras 3.13–3.16, for guidance on implementation of this requirement.

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
3.9	Senior management shall develop the goals, strategies, plans and objectives of the organization in an integrated manner so that their collective impact on safety is understood and managed.	Requirement 2, Section 100, addresses aspects of planning. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-G-3.1, paras 3.13–3.16, for guidance on implementation of this requirement.
3.10	Senior management shall ensure that measurable objectives for implementing the goals, strategies and plans are established through appropriate processes at various levels in the organization.	No corresponding requirement. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-G-3.1, paras 3.13–3.16, for guidance on implementation of this requirement.
3.11	Senior management shall ensure that the implementation of the plans is regularly reviewed against these objectives and that actions are taken to address deviations from the plans where necessary.	No corresponding requirement. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-R-3 for guidance on implementation of this requirement.
Responsibility, authority and communication		
3.12	Senior management shall be ultimately responsible for the management system and shall ensure that it is established, implemented, assessed and continually improved.	Requirement 1. ASME NQA-1 users should address continual improvement.
3.13	An individual reporting directly to senior management shall have specific responsibility and authority for: – Coordinating the development and implementation of the management system, and its assessment and continual improvement;	No corresponding requirement. ASME NQA-1 users should ensure that an individual reporting directly to senior management has the specific responsibility and authority for

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
3.13 (cont.)	<ul style="list-style-type: none"> – Reporting on the performance of the management system, including its influence on safety and safety culture, and any need for improvement; – Resolving any potential conflicts between requirements and within the processes of the management system. 	coordinating the development and implementation of the management system and its assessment and continual improvement. Requirement 1, para. 201, and Requirement 2, para. 100 (c), address assessment attributes for the QA programme.
3.14	The organization shall retain overall responsibility for the management system when an external organization is involved in the work of developing all or part of the management system.	Requirement 1, para. 202.
4.1–4.5		
Resource management		
Provision of resources		
4.1	Senior management shall determine and provide the resources necessary to carry out the activities of the organization and to establish, implement, assess and continually improve the management system. Note: ‘Resources’ includes individuals, infrastructure, the working environment, information and knowledge, and suppliers, as well as material and financial resources.	No corresponding requirement. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-G-3.1, paras 4.1–4.5, for guidance on implementation of this requirement.
4.2	The information and knowledge of the organization shall be managed as a resource.	No corresponding requirement. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-G-3.1, paras 4.1, 4.2 and 4.4, for guidance on implementation of this requirement.
Human resources		
4.3	Senior management shall determine the competence requirements for individuals at all levels and shall provide training or take other actions to achieve the required level of competence. An evaluation of the effectiveness of the actions taken shall be conducted. Suitable proficiency shall be achieved and maintained.	Requirement 2.

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
4.4	Senior management shall ensure that individuals are competent to perform their assigned work and that they understand the consequences for safety of their activities. Individuals shall have received appropriate education and training, and shall have acquired suitable skills, knowledge and experience to ensure their competence. Training shall ensure that individuals are aware of the relevance and importance of their activities and of how their activities contribute to safety in the achievement of the organization’s objectives.	Requirement 2. ASME NQA-1 users should provide training which ensures that individuals understand the consequences for safety of their activities. ASME NQA-1 users should provide training to ensure that individuals are aware of the relevance and importance of their activities and of how their activities contribute to safety in the achievement of the organization’s objectives.
Infrastructure and the working environment		
4.5	Senior management shall determine, provide, maintain and re-evaluate the infrastructure and the working environment necessary for work to be carried out in a safe manner and for requirements to be met.	Requirement 2.
5.1–5.29	Process implementation	
Developing processes		
5.1	The processes of the management system that are needed to achieve the goals, provide the means to meet all requirements and deliver the products of the organization shall be identified, and their development shall be planned, implemented, assessed and continually improved.	Requirement 2, Section 100 (a), and Requirement 5, Section 100, address the elements of processes. ASME NQA-1 users should address the identification of processes needed to achieve the organization’s goals and the continual improvement of processes.
5.2	The sequence and interactions of the processes shall be determined.	No corresponding requirement. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-R-3, paras 5.1–5.9, for guidance on implementation of this requirement.

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
5.3	The methods necessary to ensure the effectiveness of both the implementation and the control of the processes shall be determined and implemented.	Requirement 5, Section 100.
5.4	<p>The development of each process shall ensure that the following are achieved:</p> <ul style="list-style-type: none"> – Process requirements, such as applicable regulatory, statutory, legal, safety, health, environmental, security, quality and economic requirements, are specified and addressed. – Hazards and risks are identified, together with any necessary mitigatory actions. – Interactions with interfacing processes are identified. – Process inputs are identified. – The process flow is described. – Process outputs (products) are identified. – Process measurement criteria are established. 	<p>Requirement 2, Section 100 (a), and Requirement 5, Section 100, address many of the requirements related to processes in IAEA GS-R-3 para. 5.1.</p> <p>ASME NQA-1 users should address the identification of hazards and risks together with any necessary mitigating actions and process measurement. Consult IAEA GS-R-3, para. 5.4, for guidance on implementation of this requirement.</p>
5.5	The activities of and interfaces between different individuals or groups involved in a single process shall be planned, controlled and managed in a manner that ensures effective communication and the clear assignment of responsibilities.	<p>Requirement 1, in Sections 100 and 300, addresses functional interfaces.</p> <p>ASME NQA-1 users should address interfaces between different individuals or groups involved in a single process.</p>
Process management		
5.6	<p>For each process a designated individual shall be given the authority and responsibility for:</p> <ul style="list-style-type: none"> – Developing and documenting the process and maintaining the necessary supporting documentation; – Ensuring that there is effective interaction between interfacing processes; – Ensuring that process documentation is consistent with any existing documents; 	<p>No corresponding requirement.</p> <p>ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-R-3, paras 5.10–5.23, for guidance on implementation of this requirement.</p>

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
5.6 (cont.)	<ul style="list-style-type: none"> – Ensuring that the records required to demonstrate that the process results have been achieved are specified in the process documentation; – Monitoring and reporting on the performance of the process; – Promoting improvement in the process; – Ensuring that the process, including any subsequent changes to it, is aligned with the goals, strategies, plans and objectives of the organization. 	The organization should identify a designated individual for each process.
5.7	For each process, any activities for inspection, testing, verification and validation, their acceptance criteria and the responsibilities for carrying out these activities shall be specified. For each process, it shall be specified if and when these activities are to be performed by designated individuals or groups other than those who originally performed the work.	Requirement 10.
5.8	Each process shall be evaluated to ensure that it remains effective.	Requirement 2, Section 100 (c). ASME NQA-1 users should ensure that assessment of the adequacy of the QA programme includes assessment of the processes.
5.9	The work performed in each process shall be carried out under controlled conditions, by using approved current procedures, instructions, drawings or other appropriate means that are periodically reviewed to ensure their adequacy and effectiveness. Results shall be compared with expected values.	Requirement 2, Section 100 (c), and Requirement 5.
5.10	The control of processes contracted to external organizations shall be identified within the management system. The organization shall retain overall responsibility when contracting any processes.	Requirement 1, para. 202 and Section 300.

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
Generic management system process		
5.11	The following generic processes shall be developed in the management system.	No corresponding requirement. ASME NQA-1 users should refer to corresponding requirements and notes for IAEA GS-R-3 paras 5.12–5.29.
Control of documents		
5.12	Documents shall be controlled. All individuals involved in preparing, revising, reviewing or approving documents shall be specifically assigned this work, shall be competent to carry it out and shall be given access to appropriate information on which to base their input or decisions. It shall be ensured that document users are aware of and use appropriate and correct documents.	Requirement 6.
5.13	Changes to documents shall be reviewed and recorded and shall be subject to the same level of approval as the documents themselves.	Requirement 6, Section 300.
Control of products		
5.14	Specifications and requirements for products, including any subsequent changes, shall be in accordance with established standards and shall incorporate applicable requirements. Products that interface or interact with each other shall be identified and controlled.	Requirements 3, 4, 7 and 8.
5.15	Activities for inspection, testing, verification and validation shall be completed before the acceptance, implementation or operational use of products. The tools and equipment used for these activities shall be of the proper range, type, accuracy and precision.	Requirements 8, 10, 11 and 12, and Requirement 13, Section 400.
5.16	The organization shall confirm that products meet the specified requirements and shall ensure that products perform satisfactorily in service.	Requirements 7, 8 and 10.

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
5.17	Products shall be provided in such a form that it can be verified that they satisfy the requirements.	Requirements 7 and 8.
5.18	Controls shall be used to ensure that products do not bypass the required verification activities.	Requirement 7, Section 500, and Requirements 10 and 14.
5.19	Products shall be identified to ensure their proper use. Where traceability is a requirement, the organization shall control and record the unique identification of the product.	Requirements 8 and 14.
5.20	Products shall be handled, transported, stored, maintained and operated as specified, to prevent their damage, loss, deterioration or inadvertent use.	Requirements 8, Section 300, and Requirement 13.
Control of records		
5.21	Records shall be specified in the process documentation and shall be controlled. All records shall be readable, complete, identifiable and easily retrievable.	Requirements 6 and 17.
5.22	Retention times of records and associated test materials and specimens shall be established to be consistent with the statutory requirements and knowledge management obligations of the organization. The media used for records shall be such as to ensure that the records are readable for the duration of the retention times specified for each record.	Requirement 17. ASME NQA-1 users should ensure that records and associated test materials and specimens are consistent with knowledge management.
Purchasing		
5.23	Suppliers of products shall be selected on the basis of specified criteria, and their performance shall be evaluated.	Requirement 4 and Requirement 7, Sections 100, 200 and 300.
5.24	Purchasing requirements shall be developed and specified in procurement documents. Evidence that products meet these requirements shall be available to the organization before the product is used.	Requirements 4 and 7.
5.25	Requirements for the reporting and resolution of non-conformances shall be specified in procurement documents.	Requirement 4, para. 206, and Requirement 7, Sections 600 and 700.

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
Communication		
5.26	Information relevant to safety, health, environmental, security, quality and economic goals shall be communicated to individuals in the organization and, where necessary, to other interested parties.	No corresponding requirement. ASME NQA-1 users should address requirements for the communication of relevant information on safety, health, environmental, security, quality and economic goals. Consult IAEA GS-R-3, paras 5.52–5.55, for guidance on implementation of this requirement.
5.27	Internal communication concerning the implementation and effectiveness of the management system shall take place between the various levels and functions of the organization.	No corresponding requirement. ASME NQA-1 users should address requirements for internal communication regarding the implementation and effectiveness of the management system. Consult IAEA GS-R-3, paras 5.52–5.55, for guidance on implementation of this requirement.
Managing organizational change		
5.28	Organizational changes shall be evaluated and classified according to their importance to safety, and each change shall be justified.	No corresponding requirement. ASME NQA-1 users should address requirements for the evaluation, classification and justification of organizational changes. Consult IAEA GS-R-3, paras 5.56–5.71, for guidance on implementation of this requirement.

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
5.29	The implementation of such changes shall be planned, controlled, communicated, monitored, tracked and recorded to ensure that safety is not compromised.	<p>Requirement 1, Section 100, addresses documenting the organizational structure, levels of authority and lines of communication for the existing organization.</p> <p>ASME NQA-1 users should address the evaluation, planning, communication and monitoring of organizational change. Consult IAEA GS-R-3, paras 5.56–5.71, for guidance on implementation of this requirement.</p>
6.1–6.18 Measurement, assessment and improvement		
Monitoring and measurement		
6.1	The effectiveness of the management system shall be monitored and measured to confirm the ability of the processes to achieve the intended results and to identify opportunities for improvement.	<p>Requirement 1, Section 201 (d), and Requirement 2, Section 100 (c), for review and effective implementation of the QA programme.</p> <p>ASME NQA-1 users should use the results of monitoring activities and management assessment of the adequacy of the QA programme to identify opportunities for improvement.</p>
Self-assessment		
6.2	Senior management and management at all other levels of the organization shall carry out self-assessment to evaluate the performance of work and the improvement of the safety culture.	<p>No corresponding requirement.</p> <p>ASME NQA-1 users should address the requirement for self-assessment by all levels of management. Consult IAEA GS-G-3.1, paras 6.6–6.21 [2], for guidance on implementation of this requirement.</p>

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
Independent assessment		
6.3	Independent assessments shall be conducted regularly on behalf of senior management: <ul style="list-style-type: none"> – To evaluate the effectiveness of processes in meeting and fulfilling goals, strategies, plans and objectives; – To determine the adequacy of work performance and leadership; – To evaluate the organization’s safety culture; – To monitor product quality; – To identify opportunities for improvement. 	Requirements 2 and 18. ASME NQA-1 users should address the requirements to evaluate safety culture and to identify opportunities for improvement.
6.4	An organizational unit shall be established with the responsibility for conducting independent assessments. This unit shall have sufficient authority to discharge its responsibilities.	Requirements 2 and 18.
6.5	Individuals conducting independent assessments shall not assess their own work.	Requirement 1, Section 200, and Requirement 18.
6.6	Senior management shall evaluate the results of the independent assessments, shall take any necessary actions, and shall record and communicate their decisions and the reasons for them.	Requirements 16 and 18.
Management system review		
6.7	A management system review shall be conducted at planned intervals to ensure the continuing suitability and effectiveness of the management system and its ability to enable the objectives set for the organization to be accomplished.	Requirement 2, Section 100 (c), for assessment of the adequacy and effective implementation of the QA programme. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-G-3.1, paras 6.45–6.49 [2], for guidance on implementation of this requirement.

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
6.8	<p>The review shall cover but shall not be limited to:</p> <ul style="list-style-type: none"> – Outputs from all forms of assessment; – Results delivered and objectives achieved by the organization and its processes; – Non-conformances, and corrective and preventive actions; – Lessons learned from other organizations; – Opportunities for improvement. 	<p>No corresponding requirement.</p> <p>ASME NQA-1 users should ensure that these inputs to management system review are addressed. Consult IAEA GS-G-3.1, para. 6.47 [2], for guidance on implementation of this requirement.</p>
6.9	<p>Weaknesses and obstacles shall be identified, evaluated and remedied in a timely manner.</p>	<p>No corresponding requirement.</p> <p>ASME NQA-1 users should address the requirement to identify, evaluate and remedy weaknesses and obstacles as part of management system review. Consult IAEA GS-R-3, para. 6.49, for guidance on implementation of this requirement.</p>
6.10	<p>The review shall identify whether there is a need to make changes to or improvements in policies, goals, strategies, plans, objectives and processes.</p>	<p>No corresponding requirement.</p> <p>ASME NQA-1 users should address the requirement to identify necessary changes or improvements in policies, goals, strategies, plans, objectives and processes as part of management system review.</p>
Non-conformances and corrective and preventive actions		
6.11	<p>The causes of non-conformances shall be determined, and remedial actions shall be taken to prevent their recurrence.</p>	<p>Requirements 15 and 16.</p> <p>ASME NQA-1 users should address the determination of causes of non-conformances for all non-conformances, not just those that are for significant conditions adverse to quality.</p>

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
6.12	<p>Products and processes that do not conform to the specified requirements shall be identified, segregated, controlled, recorded and reported to an appropriate level of management within the organization. The impact of non-conformances shall be evaluated and non-conforming products or processes shall be either:</p> <ul style="list-style-type: none"> – Accepted; – Reworked or corrected within a specified time period; – Rejected and discarded or destroyed to prevent their inadvertent use. 	Requirement 15.
6.13	<p>Concessions granted to allow acceptance of a non-conforming product or process shall be subject to authorization. When non-conforming products or processes are reworked or corrected, they shall be subject to inspection to demonstrate their conformity with requirements or expected results.</p>	Requirement 7, Section 600, and Requirement 15.
6.14	<p>Corrective actions for eliminating non-conformances shall be determined and implemented. Preventive actions to eliminate the causes of potential non-conformances shall be determined and taken.</p>	<p>Requirement 16.</p> <p>ASME NQA-1 users should address the determination and taking of preventive actions to eliminate the causes of potential non-conformances.</p>
6.15	<p>The status and effectiveness of all corrective and preventive actions shall be monitored and reported to management at an appropriate level of the organization.</p>	<p>Requirement 16.</p> <p>ASME NQA-1 users should address the requirement to monitor and report on the status and effectiveness of all corrective and preventive actions.</p>

TABLE 2. EXTENT TO WHICH ASME NQA-1 ADDRESSES IAEA GS-R-3 REQUIREMENTS (cont.)

IAEA-GS-R-3 para. No.	IAEA GS-R-3 requirement	Notes to aid users of ASME NQA-1
6.16	Potential non-conformances that could detract from the organization’s performance shall be identified. This shall be done: by using feedback from other organizations, both internal and external; through the use of technical advances and research; through the sharing of knowledge and experience; and through the use of techniques that identify best practices.	No corresponding requirement. ASME NQA-1 users should address the requirement to identify potential non-conformances by using feedback from other organizations, both internal and external; through the use of technical advances and research; through the sharing of knowledge and experience; and through the use of techniques that identify best practices. Consult IAEA GS-G-3.1, paras 6.76–6.77 [2], for guidance on implementation of this requirement.
Improvement		
6.17	Opportunities for the improvement of the management system shall be identified and actions to improve the processes shall be selected, planned and recorded.	No corresponding requirement. ASME NQA-1 users should address this IAEA GS-R-3 requirement. Consult IAEA GS-G-3.1, paras 6.78–6.84 [2], for guidance on implementation of this requirement.
6.18	Improvement plans shall include plans for the provision of adequate resources. Actions for improvement shall be monitored through to their completion and the effectiveness of the improvement shall be checked.	No corresponding requirement. ASME NQA-1 users should address the requirement to provide adequate resources for improvement activities, to monitor improvement actions and to check the effectiveness of improvements. Consult IAEA GS-G-3.1, paras 6.78–6.84 [2], for guidance on implementation of this requirement.

APPENDIX I: CORRELATION BETWEEN THE REQUIREMENTS OF IAEA GS-R-3 AND THOSE OF ASME NQA-1

Correlation matrix for IAEA GS-R-3 users		ASME NQA-1																																																										
		1 Organization		2 Quality Assurance Program				3 Design Control		4 Procurement Document Control		5	6 Document Control		7 Control of Purchased Items and Services				8 Identification and Control of Items	9	10 Inspection		11 Test Control	12 Control of Measuring and Test Equipment		13 Handling, Storage, Shipping		14	15 Control of Nonconforming Items			16			17 Quality Assurance Records			18 Audits																						
		1-100 Basic	1-200 Structure and Responsibility	1-300 Interface Control	2-100 Basic	2-200 Indocination and Training	2-300 Qualification Requirements	2-400 Records of Qualification	2-500 Records	3-100 to 3-700	3-800 Software Design Control	3-900 Documentation and Records	4-100 Basic	4-200 Content of the Procurement Documents	4-300 Procurement Document Review	4-400 Procurement Document Changes	5-100 Basic	6-100 Basic	6-200 Document Control	6-300 Document Changes	7-100 Basic	7-200 Supplier Evaluation and Selection	7-300 Bid Evaluation	7-400 Control of Supplier-Generated Documents	7-500 Acceptance of Item or Service	7-600 Control of Supplier Nonconformances	7-700 and 7-800	8-100 Basic	8-200 and 8-300	9 Control of Special Processes 9-100 to 9-400	10-100 Basic	10-200 Inspection Requirements	10-300 to 10-800	11-100 Basic	11-200 to 11-600	12-100 Basic	12-200 Selection	12-300 and 12-400	13-100 Basic	13-200 Special Requirements	13-300 Procedures	13-400 to 13-600	14 Inspection, Test and Operating Status 14-100 Basic	15-100 Basic	15-200 Identification	15-300 Segregation	15-400 Disposition	16 Corrective Action 16-100 Basic	17-100 Basic	17-200 Generation of Records	17-300 Authentication of Records	17-400 Classification	17-500 to 17-600	17-700 Retention	17-800 Maintenance of Records	18-100 Basic	18-200 Scheduling	18-300 Preparation	18-400 and 18-500	18-600 Response
IAEA GS-R-3	2. Management System	General requirements (2.1-2.4)																																																										
		Safety Culture (2.5)																																																										
		Grading the application of management system (2.6-2.7)																																																										
		Documentation of the management system (2.8-2.10)																																																										
	3. Management Responsibility	Management commitment (3.1-3.5)																																																										
		Satisfaction of interested parties (3.6)																																																										
		Organizational policies (3.7)																																																										
		Planning (3.8-3.11)																																																										
	4. Resource Management	Responsibility and authority for the management system (3.12-3.14)																																																										
		Provision of resources (4.1-4.2)																																																										
		Human resources (4.3-4.4)																																																										
	5. Process Implementation	Infrastructure and the working environment (4.5)																																																										
		Developing processes (5.1-5.5)																																																										
		Process management (5.6-5.10)																																																										
	6. Measurement, Assessment and Improvement	Generic management system processes (5.11-5.29)																																																										
		Monitoring and measurement (6.1)																																																										
		Self-assessment (6.2)																																																										
		Independent assessment (6.3-6.6)																																																										
		Management system review (6.7-6.10)																																																										
		Non-conformances and corrective and preventive actions (6.11-6.16)																																																										
Improvement (6.17-6.18)																																																												

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CONTRIBUTORS TO DRAFTING AND REVIEW

Agarwal, D.	Department of Energy, United States of America
Beher, M.	AREVA NP GmbH, Germany
Boogaard, J.P.	International Atomic Energy Agency
Clark, C.R.	International Atomic Energy Agency
Dahlgren Persson, K.	International Atomic Energy Agency
Danielson, B.G.	Department of Energy, United States of America
Dua, S.	Atomic Energy of Canada Ltd, Canada
Dusic, M.	International Atomic Energy Agency
Feige, G.	International Atomic Energy Agency
Hille, M.	AREVA NP GmbH, Germany
Kerhoas, A.	International Atomic Energy Agency
Majola, J.	International Atomic Energy Agency
Marden, C.	Energy Solutions, United States of America
Pribac, F.	Krško Nuclear Power Plant, Slovenia
Sabate Farnos, R.	Westinghouse Technology Services, Spain
Sowder, K.	US-ITER Organization, United States of America
Vincze, P.	International Atomic Energy Agency
Watson, A.G.	Consultant, United Kingdom

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