ASME NQA-1b–2011

Addenda to ASME NQA-1–2008

Quality Assurance Requirements for Nuclear Facility Applications

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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SUBPART 4.7 (b)

Application Guide on the Comparison of NQA-1–2008, With the NQA-1a–2009 Addenda and the International Atomic Energy Agency (IAEA) Safety Standard GS-R-3, 2006-STI/PUB/1252

100 PURPOSE AND SCOPE

The purposes of this Application Guide are to compare requirements of IAEA GS-R-3 2006-STI/PUB/1252 and NQA-1–2008, Part I with the NQA-1a–2009 Addenda, to identify the similarities and differences, and to identify where actions may be needed to address the differences. The comparisons are illustrated from the following two perspectives:

(a) how IAEA GS-R-3 requirements address NQA-1 requirements

(b) how NQA-1 requirements address IAEA GS-R-3 requirements

Two tables are included providing a detailed line-by-line comparison from each perspective. These same tables are used in IAEA Safety Report "Management Systems Standards: Comparison of IAEA GS-R-3 and NQA-1–2008 Requirements" to ensure a consistent understanding across the global nuclear community. The term NQA-1 will be used hereafter instead of NQA-1–2008, Part I with the NQA-1a–2009 Addenda. The term GS-R-3 will be used instead of (IAEA) Safety Standard GS-R-3, 2006-STI/PUB/1252.

NOTE: Some relevant parts of NQA-1, contained in Parts II through IV, are indicated in the recommendations, as were guidance documents for IAEA GS-R-3.

200 APPLICABILITY

The guidance is intended for all parties involved in the nuclear industry that are currently applying/implementing either NQA-1 or IAEA GS-R-3 requirements and are required to comply with other requirements.

This guide can also be used to achieve compliance with both sets of requirements simultaneously by providing information on the similarities and differences between IAEA GS-R-3 and NQA-1, thus allowing the organization to implement controls for the program differences.

300 BACKGROUND

301 Global Uses of NQA-1 and IAEA GS-R-3

As governments adopt or apply IAEA GS-R-3 requirements through regulations, facility operators and organizations providing nuclear items or products and services around the globe may be compelled to comply with the GS-R-3 management system requirements while maintaining certification or compliance of their activities, items, products, and services to an NQA-1 quality assurance program.

Consequently, many organizations will have to adopt both IAEA GS-R-3 and NQA-1 as the basis of their management system or QA Program. IAEA GS-R-3 requires these requirements to be integrated within one management system. There was therefore a need for guidance to assist organizations to satisfy these requirements.

302 Conceptual Approaches to the Development of NQA-1 and GS-R-3

IAEA GS-R-3 and NQA-1 apply to the lifecycle of nuclear facilities and activities, including siting, design, construction, commissioning, operation, and decommissioning. IAEA GS-R-3 and NQA-1 foster the application of requirements in a manner that is consistent with the relative importance of the item or activity. Both IAEA GS-R-3 and NQA-1 can be invoked by contract, adopted voluntarily, or used as the basis for assessing a management system or quality assurance program.

NQA-1 defines requirements for an organization to establish, implement, and assess a Quality Assurance (QA) Program to achieve nuclear safety. 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.

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

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 safety is not compromised. It fosters

a strong safety culture and improved safety performance in all the activities of the organization.

IAEA GS-R-3 adopts an integrated management system approach to be applied to all work of the organization. IAEA GS-R-3 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 safety culture, human performance, a process approach to the achievement of objectives, and continual improvement of the management system and its processes (http://www-pub.iaea.org/MTCD/publications/download.asp).

400 HOW TO USE THIS GUIDE TO ACHIEVE COMPLIANCE WITH GS-R-3 OR NQA-1

401 Two Perspectives and Two Tables

The requirements of both standards are listed in two tables and have been compared utilizing the 18-criteria format of NQA-1, Part I and the Process Approach of IAEA GS-R-3. Guidance for evaluating existing practices or supplementing each program is summarized below each requirement section. 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 NQA-1 requirements. In these cases, it is necessary to compare the implementing practices with the requirements of NQA-1 to determine compliance. Two examples of the perspectives that must be considered and addressed by the guidance are the following:

(a) a Purchaser considering a Supplier for a nuclear facility that meets one of the programs but also needs to meet the requirements governed by the Purchaser's program

(b) a Supplier wanting to provide items/services to a Purchaser who requires compliance with the program that is not the Supplier's current program

402 How to Use Tables I and II

The first table presents a column of the requirements of NQA-1, Part I on a line-by-line basis for all 18 requirements and each subparagraph of each requirement. Immediately adjacent to the column for the NQA-1 requirement is a second column that contains the corresponding GS-R-3 requirement that specifically addresses the NQA-1 requirement. In cases where GS-R-3 does not specifically meet the NQA-1 requirement, recommendations are provided that describe how best to meet the NQA-1 requirement, within the GS-R-3 program. It should be noted here that the recommendation is for the GS-R-3 user to meet the NQA-1 requirement, as opposed to trying to meet some requirement that may not be considered acceptable.

Likewise, the second table lists all five elements of the GS-R-3 requirements, plus the specific subtier elements of each. In this second table, where a particular NQA-1 requirement meets the specific GS-R-3 requirement, it is so stated. Where there is no corresponding NQA-1 element that meets the GS-R-3 requirement, a recommendation is provided as to how the GS-R-3 requirement should be met.

It should be noted that neither table provides any direction for introductory/informational material from the two documents.

Table I The Extent to Which GS-R-3 Addresses NQA-1 Requirements

Requirement	NQA-1	GS-R-3 and Recommendations
1 Organization		
1-100 General	Key words: responsibilities, organizational structure, functional responsibilities, levels of authority, and lines of communications	GS-R-3 Requirements 2.8, 3.12, and 3.14
1-200 Structure and Responsibility	**201 General** Key words: (a) management expectations (b) quality achieved and maintained by (c) quality achievement is verified by (d) sufficient authority, direct access, organizational freedom, access to work, independence, verification functions	GS-R-3 Requirements 2.1, 2.2, 2.4, 3.12, 3.13, 3.14, 5.7, 5.10, and 6.5 *Recommendations.* GS-R-3 users should address organizational freedom, independence of verification activities, and the following verification functions: (a) identifying quality problems (b) initiating, recommending, or providing solutions to quality problems through designated channels (c) verifying implementation of solutions (d) ensuring that further processing, delivery, installation, or use is controlled until proper disposition of a nonconformance, deficiency, or unsatisfactory condition has occurred
	202 Delegation of Work	
1-300 Interface Control		GS-R-3 Requirements 5.4, 5.5, and 5.10
2 Quality Assurance Program		
2-100 General	Key words: (a) documented planned, implemented, and maintained (c) management assess	GS-R-3 Requirements 2.1, 2.6, 2.7, 3.8, 4.1, 4.2, 4.4, 4.5, and 6 *Recommendations.* 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, required by NQA-1 (see recommendations under 2-200, 2-300, 2-400, and 2-500 for additional details).
2-200 Indoctrination and Training	**201 Indoctrination**	GS-R-3 Requirements 4.3 and 4.4
	202 Training	*Recommendations.* GS-R-3 users should ensure indoctrination to job responsibilities, and authority includes general criteria, technical objectives, requirements of applicable codes and standards, regulatory commitments, company procedures, and quality assurance requirements, required by NQA-1. GS-R-3 users should conduct indoctrination and training commensurate with scope, complexity, importance of the activities, and the education, experience, and proficiency of the person consistent with the grading requirements in GS-R-3 2.6 and 2.7.
2-300 Qualification Requirements	Key words: designate activities that require qualification, written procedures **301 Nondestructive 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 requirement. *Recommendations.* GS-R-3 users should ensure the responsible organization designates those activities that require qualification. The minimum requirements for personnel to verify quality and auditing are specified in paras. 301 through 304 of this Requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.

Table I The Extent to Which GS-R-3 Addresses NQA-1 Requirements (Cont'd)

Requirement	NQA-1	GS-R-3 and Recommendations
2-400 Records of Qualification		No corresponding requirement. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
2-500 Records		GS-R-3 Requirement 5.21. *Recommendations.* GS-R-3 users should ensure records of the implementation for indoctrination and training include one or more of (a) through (c) of this requirement. The GS-R-3 users should establish and maintain records for auditor and lead auditor qualification and requalification and inspection and test personnel qualification and requalification.
3 Design Control		
3-100 General	Key words: defined, controlled	No corresponding specific requirement. *Recommendations.* GS-R-3 Requirements 5.1 to 5.10 address process management in general. GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
3-200 Design Input		No corresponding specific requirement. *Recommendations.* GS-R-3 Requirement 5.4 addresses process inputs. GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
3-300 Design Process	Key words: (a) prescribe and document the design activities (b) design methods (c) final design, commercial grade items, and services	No corresponding specific requirement. *Recommendations.* GS-R-3 Requirement 5.14 addresses control of products. GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of 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 requirement. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
3-500 Design Verification	**501 Methods** **501.1 Design Reviews** **501.2 Alternate Calculations** **501.3 Qualification Tests**	No corresponding specific requirement. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
3-600 Change Control	Key words: (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. *Recommendations.* GS-R-3 Requirement 5.13 addresses changes to documents. GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.

Table I The Extent to Which GS-R-3 Addresses NQA-1 Requirements (Cont'd)

Requirement	NQA-1	GS-R-3 and Recommendations
3-700 Interface Control	Key words: responsibility, procedures, design information	No corresponding specific requirement. *Recommendations.* GS-R-3 Requirement 5.5 addresses the control of interfaces generally. GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
3-800 Software Design Control	**801 Software Design Process** **801.1 Identification of Software Design Requirements** **801.2 Software Design** **801.3 Implementation of the Software Design** **801.4 Software Design Verification** **801.5 Computer Program Testing** **802 Software Configuration Management** **802.1 Configuration Identification** **802.2 Configuration Change Control** **802.3 Configuration Status Control**	No corresponding requirement. *Recommendations.* GS-R-3 Requirements 5.3, 5.9, and 5.10 address process management in general. GS-R-3 users should address these NQA-1 requirements. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
3-900 Documentation and Records	Key words: sources of design inputs	No corresponding specific requirement. *Recommendations.* GS-R-3 Requirements 5.6 through 5.10 address process management generically. These generic requirements address process documentation and records to demonstrate the achievement of process results. GS-R-3 Requirements 5.12 and 5.13 address document control, and Requirements 5.21 and 5.22 address records. GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
4 Procurement Document Control		
4-100 General	Key words: design bases, suppliers, quality assurance programme	GS-R-3 Requirements 5.23 and 5.24 *Recommendations.* GS-R-3 users should ensure design bases are addressed in the documents, if applicable.
4-200 Content of the Procurement Documents	Key words: all tiers of procurement **201 Scope of Work** **202 Technical Requirements** **203 Quality Assurance Program Requirements** **204 Right of Access** **205 Documentation Requirements** **206 Nonconformances** **207 Spare and Replacement Parts**	GS-R-3 Requirements 5.24 and 5.25 *Recommendations.* GS-R-3 users should address these NQA-1 requirements. Procurement documents should include the scope, technical requirements, quality assurance requirements, purchaser right of access, documentation requirements, nonconformance reporting provisions, and spare and replacement parts. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
4-300 Procurement Document Review		No corresponding requirement. *Recommendations.* GS-R-3 users should address this 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 NQA-1 for guidance on implementation of this requirement.

Table I The Extent to Which GS-R-3 Addresses NQA-1 Requirements (Cont'd)

Requirement	NQA-1	GS-R-3 and Recommendations
4-400 Procurement Document Changes		GS-R-3 Requirements 5.13 and 5.14
5 Instructions, Procedures, and Drawings		
5-100 General	Key words: documented, quantitative or qualitative acceptance criteria, detail commensurate with the complexity	GS-R-3 Requirements 2.6 through 2.10, 4.3, 5.6, 5.7, and 5.9
6 Document Control		
6-100 General		GS-R-3 Requirements 5.12 and 5.13
6-200 Document Control		GS-R-3 Requirements 2.8, 2.9, and 5.12
6-300 Document Changes	301 Major Changes 302 Minor Changes	GS-R-3 Requirement 5.13
7 Control of Purchased Items and Services		
7-100 General		GS-R-3 Requirements 5.15, 5.16, 5.23, 5.24, and 6.3
7-200 Supplier Evaluation and Selection		GS-R-3 Requirements 5.23, 5.24, and 6.3 *Recommendations.* GS-R-3 users should address one or more of the following: Supplier's history, Supplier's current quality records, and Supplier's technical and quality capability.
7-300 Bid Evaluation		No corresponding requirement. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
7-400 Control of Supplier-Generated Documents		No corresponding requirement. *Recommendations.* When Supplier documents are received, GS-R-3 Requirements 5.12, 5.21, and 5.24 provide the necessary controls. GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
7-500 Acceptance of Item or Service	501 General Key words: Supplier shall verify 502 Methods of Acceptance 503 Certificate of Conformance 504 Source Verification 505 Receiving Inspection 506 Postinstallation Testing 507 Acceptance of Services Only	GS-R-3 Requirements 5.24 and 5.25 *Recommendations.* GS-R-3 users should address paras. 503 through 507.
7-600 Control of Supplier Nonconformances	Key words: (a) evaluation (b) submittal (c) disposition (d) verification (e) records	GS-R-3 Requirements 5.25 and 6.11 through 6.16 *Recommendations.* GS-R-3 users should address paras. 600(a) through (e).
7-700 Commercial Grade Items and Services	701 General	No corresponding requirement. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.

Table I The Extent to Which GS-R-3 Addresses NQA-1 Requirements (Cont'd)

Requirement	NQA-1	GS-R-3 and Recommendations
7-800 Records		No corresponding requirement. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
8 Identification and Control of Items		
8-100 General	Key words: correct and accepted items	GS-R-3 Requirements 5.18 and 5.19
8-200 Identification Methods	201 Item Identification 202 Physical Identification	No corresponding requirements. *Recommendations.* GS-R-3 users should address these NQA-1 requirements. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
8-300 Specific Requirements	301 Identification and Traceability of Items 302 Limited Life Items 303 Maintaining Identification of Stored Items	No corresponding requirements. *Recommendations.* GS-R-3 users should address these NQA-1 requirements. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
9 Control of Special Processes		
9-100 General	Key words: welding, heat treating, nondestructive examination, qualified personnel, qualified procedures	No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
9-200 Process Control	201 Special Processes 202 Acceptance Criteria 203 Special Requirements	No corresponding requirements. *Recommendations.* GS-R-3 users should address these NQA-1 requirements. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
9-300 Responsibility		No corresponding requirement. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
9-400 Records		No corresponding requirement. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
10 Inspection		
10-100 General		GS-R-3 Requirements 5.7 and 5.15 *Recommendations.* 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.

Table I The Extent to Which GS-R-3 Addresses NQA-1 Requirements (Cont'd)

Requirement	NQA-1	GS-R-3 and Recommendations
10-200 Inspection Requirements		GS-R-3 Requirement 5.7 *Recommendations.* When specifying inspection requirements and acceptance criteria, 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.
10-300 Inspection Hold Points		No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Specified hold points should be indicated in appropriate documents. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
10-400 Inspection Planning	401 Planning 402 Sampling	No corresponding requirements. *Recommendations.* GS-R-3 users should address these NQA-1 requirements. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
10-500 In-Process Inspection		No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
10-600 Final Inspections	601 Resolution of Nonconformances 602 Inspection Requirements 603 Modifications, Repairs, or Replacements 604 Acceptance	No corresponding requirements. *Recommendations.* GS-R-3 users should address these NQA-1 requirements. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
10-700 Inspections During Operations		No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
10-800 Records		No corresponding requirement. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
11 Test Control 11-100 General	Key words: collect data, verify conformance, demonstrate satisfactory performance	GS-R-3 Requirements 5.7 and 5.15 *Recommendations.* 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 requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.

Table I The Extent to Which GS-R-3 Addresses NQA-1 Requirements (Cont'd)

Requirement	NQA-1	GS-R-3 and Recommendations
11-300 Test Procedures (Other Than for Computer Programs)	Key words: test configuration, test objectives, prerequisites	No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
11-400 Computer Program Test Procedures		No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
11-500 Test Result		No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
11-600 Test Records	**601 Test Records** **602 Computer Program Test Records**	No corresponding requirement. *Recommendations.* GS-R-3 users should address these NQA-1 requirements. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
12 Control of Measuring and Test Equipment **12-100 General**		GS-R-3 Requirement 5.15 *Recommendations.* GS-R-3 users should address control, calibration at specific periods, adjustment, and maintenance of tools, gages, instruments, and other measuring and test equipment.
12-200 Selection		GS-R-3 Requirement 5.15
12-300 Calibration and Control	**301 Calibration** **302 Reference Standards** **303 Control** **303.1 Application** **303.2 Corrective Action** **303.3 Handling and Storage** **303.4 Environmental Controls** **303.5 Precalibration Checks** **303.6 Status Indication** **304 Commercial Devices**	No corresponding requirements. *Recommendations.* GS-R-3 users should address these NQA-1 requirements. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
12-400 Records	**401 General** Key words: status, capability **402 Reports and Certificates**	No corresponding requirement. *Recommendations.* GS-R-3 users should address these NQA-1 requirements. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
13 Handling, Storage, and Shipping **13-100 General**		GS-R-3 Requirements 5.9 and 5.20 *Recommendations.* GS-R-3 users should address cleaning and packaging of items.

Table I The Extent to Which GS-R-3 Addresses NQA-1 Requirements (Cont'd)

Requirement	NQA-1	GS-R-3 and Recommendations
13-200 Special Requirements	Key words: equipment, protective environment	No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement, as applicable.
13-300 Procedures		GS-R-3 Requirements 2.6, 5.9, and 5.20.
13-400 Tools and Equipment		No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
13-500 Operators		No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
13-600 Marking or Labeling		No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
14 Inspection, Test, and Operating Status		
14-100 General	Key words: identified, maintained through indicators, authority	GS-R-3 Requirements 5.15 and 5.18 *Recommendations.* GS-R-3 users should address inspection, test, and operating status, required by NQA-1.
15 Control of Nonconforming Items		
15-100 General		GS-R-3 Requirements 6.11 and 6.12 *Recommendations.* GS-R-3 users should address notification to affected organizations.
15-200 Identification		GS-R-3 Requirement 6.12 *Recommendations.* 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		GS-R-3 Requirement 6.12 *Recommendations.* GS-R-3 users should employ other precautions to preclude inadvertent use of a nonconforming item in cases when 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 Reexamination	GS-R-3 Requirements 6.12 and 6.13 *Recommendations.* GS-R-3 users should address paras. 402 and 403.

Table I The Extent to Which GS-R-3 Addresses NQA-1 Requirements (Cont'd)

Requirement	NQA-1	GS-R-3 and Recommendations
16 Corrective Action		
16-100 General	Key words: condition adverse to quality, significant	GS-R-3 Requirements 6.14 and 6.15 *Recommendations.* GS-R-3 users should address verification of completed corrective actions.
17 Quality Assurance Records		
17-100 General		GS-R-3 Requirements 5.6, 5.21, and 5.22 *Recommendations.* GS-R-3 users should address authentication.
17-200 Generation of Records		GS-R-3 Requirements 5.6 and 5.21
17-300 Authentication of Records	Key words: (a) valid (b) electronic	No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
17-400 Classification	**401 Lifetime Records** **402 Nonpermanent Records**	GS-R-S Requirement 5.22 *Recommendations.* GS-R-3 users should address paras. 401 and 402.
17-500 Receipt Control of Records		No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
17-600 Storage	**601 General** Key words: (a) location, minimize risk (b) detrimental activities (c) access (d) damage **602 Facility Types** Key words: (602.1) single, (602.2) dual **603 Temporary Storage**	No corresponding requirements. *Recommendations.* GS-R-3 users should address these NQA-1 requirements. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
17-700 Retention		GS-R-3 Requirement 5.22
17-800 Maintenance of Records	Key words: (a) protected (b) retrievability (c) methods for record changes (d) electronic record media (e) technology changes (f) duplicated	GS-R-3 Requirement 5.22 *Recommendations.* GS-R-3 users should address (b) through (f).
18 Audits		
18-100 General		GS-R-3 Requirements 5.9, 6.3, 6.5, and 6.6.
18-200 Scheduling		No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
18-300 Preparation	**301 Audit Plan** **302 Personnel** **303 Selection of Audit Team**	GS-R-3 Requirement 6.4 *Recommendations.* GS-R-3 users should address paras. 301 and 303.

Table I The Extent to Which GS-R-3 Addresses NQA-1 Requirements (Cont'd)

Requirement	NQA-1	GS-R-3 and Recommendations
18-400 Performance		No corresponding requirements. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
18-500 Reporting		No corresponding requirement. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.
18-600 Response		GS-R-3 Requirements 6.6 and 6.14 *Recommendations.* GS-R-3 users should address evaluation of audit responses by or for the auditing organization.
18-700 Follow-Up Action		GS-R-3 Requirements 5.9 and 6.15
18-800 Records		No corresponding requirement. *Recommendations.* GS-R-3 users should address this NQA-1 requirement. Consult relevant parts of NQA-1 for guidance on implementation of this requirement.

GENERAL NOTE: Key words are included as appropriate to help the reader identify the nature of the requirements. Users should refer to NQA-1 for the full text of the requirements.

Table II The Extent to Which NQA-1 Addresses GS-R-3 Requirements

Requirement	GS-R-3	NQA-1 and Recommendations
2.1–2.10 Management System General Requirement		
2.1	Key words: management system, goals, managing organization, planned and systematic actions	NQA-1 Requirements 1 and 2 *Recommendations.* 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.
2.2	Key words: safety	No corresponding specific requirement, but Part I, Introduction addresses the safe utilization of nuclear energy and nuclear material processing. *Recommendations.* NQA-1 users should address safety to the extent described by GS-R-3 to ensure safety is paramount.
2.3	Key words: management system, identify and integrate, statutory and regulatory requirements, interested parties, IAEA Safety Requirements, relevant codes and standards	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 2.1 through 2.6 and GS-G-3.1 Appendix I for guidance on implementation of this requirement.
2.4	Key words: demonstrate the effective fulfillment	NQA-1 Requirement 2, section 100(c) *Recommendations.* NQA-1 users should address all aspects of management system requirements.
Safety Culture		
2.5	Key words: graded, significance and complexity, hazards, potential impact, consequences	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 2.32 through 2.36 for guidance on implementation of this requirement.
Grading the Application of Management System Requirements		
2.6	Key words: graded, significance and complexity, hazards, potential impact, consequences	NQA-1 Requirement 2, section 100(a) Requirement 5, Part I, Introduction *Recommendations.* NQA-1 users should deploy appropriate resources based on the potential impact associated with the safety, health, environmental, security, and economics on product or activity in the application of the QA program. Also, see Part III, Subpart 2A-2 for additional guidance.

Table II The Extent to Which NQA-1 Addresses GS-R-3 Requirements (Cont'd)

Requirement	GS-R-3	NQA-1 and Recommendations
2.7	Key words: grading of application	NQA-1 Requirement 2, section 100(a) Requirement 5, Part I, Introduction NQA-1 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 requirements that are examples of a graded approach. *Recommendations.* NQA-1 users should address the potential impact associated with the safety, health, environmental, security, and economics on products and activities of each process in the application of the QA program. Also, see Part III, Subpart 2A-2 for additional guidance.
Documentation of the Management System 2.8	Key words: documentation, policy statements, description of management system and structure, description of functional responsibilities, accountabilities, levels of authority and interactions, description of processes, and supporting information	NQA-1 Requirements 1 and 2 Additionally, NQA-1 includes responsibilities specific to processes and activities in other requirements. *Recommendations.* NQA-1 users should address in the documentation of the management system all GS-R-3 requirements, e.g., policy statements, safety, health, environmental, security, and economic.
2.9	Key words: developed documentation of management system, readable, readily identifiable, available	NQA-1 Requirements 1, 2, 6, and 17
2.10	Key words: documentation reflects characteristics of organization, complexities of processes, and interactions	NQA-1 Requirement 2, section 100(a) and Part I, Introduction *Recommendations.* NQA-1 users should address in the documentation of the management system the potential impact associated with the safety, health, environmental, security, and economics on product in the processes. Also, see Part III, Subpart 2A-2 for additional guidance. The organization should identify all processes and their interactions.
3.1–3.14 Management Responsibility **Management Commitment** 3.1	Key words: management, commitment, establishment, implementation, assessment, continual improvement, management system	NQA-1 Requirement 1 addresses commitment to the establishment and implementation of the quality assurance program. Requirement 2, section 100(c), addresses the assessment of the quality assurance program. *Recommendations.* NQA-1 users should address continual improvement, resource allocation, and all other areas of the management system.

Table II The Extent to Which NQA-1 Addresses GS-R-3 Requirements (Cont'd)

Requirement	GS-R-3	NQA-1 and Recommendations
3.2	Key words: senior management, values, behavioral expectations, role models	No corresponding requirement. *Recommendations.* NQA-1, Requirement 1, para. 201(a) addresses "overall management expectations" for the quality assurance program. NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 3.1 through 3.7 for guidance on implementation of this requirement.
3.3	Key words: management, communicate, need to adopt, values	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 3.1 through 3.7 for guidance on implementation of this requirement.
3.4	Key words: management, involvement, individuals, implementation, continual improvement, management system	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 3.1 through 3.7 for guidance on implementation of this requirement.
3.5	Key words: senior management, clear when, how, and by whom; decisions; management system	NQA-1 Requirement 1
Satisfaction of Interested Parties		
3.6	Key words: expectations, interested parties, senior management, activities, interactions, processes, enhancing, satisfaction, ensuring safety	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 3.8 for guidance on implementation of this requirement.
Organizational Policies		
3.7	Key words: senior management, develop, policies	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 3.10 through 3.12 for guidance on implementation of this requirement.
Planning		
3.8	Key words: senior management, establish goals, strategies, plans, objectives	NQA-1 Requirement 2, section 100 addresses aspects of Planning. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 3.13 through 3.16 for guidance on implementation of this requirement.
3.9	Key words: senior management, develop, goals, strategies, plans, objectives, integrated manner, impact on safety, understood, managed	NQA-1 Requirement 2, section 100 addresses aspects of Planning. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 3.13 through 3.16 for guidance on implementation of this requirement.

Table II The Extent to Which NQA-1 Addresses GS-R-3 Requirements (Cont'd)

Requirement	GS-R-3	NQA-1 and Recommendations
3.10	Key words: senior management, measurable objectives, implementing, goals, strategies, plans, appropriate processes	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 3.13 through 3.16 for guidance on implementation of this requirement.
3.11	Key words: senior management, implementation, plans, regularly reviewed, actions are taken, deviations	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1 for guidance on implementation of this requirement.
Responsibility, Authority, and Communication		
3.12	Key words: senior management, responsible, management system, ensure, established, implemented, assessed, continually improved	NQA-1 Requirement 1 *Recommendations.* NQA-1 users should address continual improvement.
3.13	Key words: individual, reporting, senior management, specific responsibility, authority, coordinating, development, implementation, assessment, continual improvement, reporting, performance, influence on safety, need for improvement, resolving, potential conflicts	No corresponding requirement. *Recommendations.* NQA-1 users should ensure an individual (singular) reporting directly to senior management has specific responsibility and authority for and continual improvement of the management system. NQA-1 Requirement 1, para. 201 and Requirement 2, para. 100(c) address assessment attributes for the QA program.
3.14	Key words: overall responsibility, management system, external organization, developing	NQA-1 Requirement 1, para. 202
4.1–4.5 Resource Management **Provision of Resources**		
4.1	Key words: senior management, determine needed resources	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 4.1 through 4.5 for guidance on implementation of this requirement.
4.2	Key words: management of information, knowledge	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 4.1, 4.2, and 4.4 for guidance on implementation of this requirement.
Human Resources		
4.3	Key words: competency requirements, evaluation of effectiveness	NQA-1 Requirement 2
4.4	Key words: safety, consequences, education, training, relationship to objectives	NQA-1 Requirement 2 *Recommendations.* NQA-1 users should provide training that ensures individuals understand the consequences for safety of their activities. 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.

Table II The Extent to Which NQA-1 Addresses GS-R-3 Requirements (Cont'd)

Requirement	GS-R-3	NQA-1 and Recommendations
Infrastructure and the Working Environment		
4.5	Key words: infrastructure and the working environment	NQA-1 Requirement 2
5.1–5.29 Process Implementation Developing Processes		
5.1	Key words: processes (a) planned (b) implemented (c) assessed (d) continually improved	NQA-1 Requirement 2, section 100(a) and Requirement 5, section 100 address the elements of processes. *Recommendations.* NQA-1 users should address the identification of processes needed to achieve the organization's goals and the continual improvement of processes.
5.2	Key words: process (a) sequence (b) interactions	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 5.1 through 5.9 for guidance on implementation of this requirement.
5.3	Key words: process implementation control methods	NQA-1 Requirement 5, section 100
5.4	Key words: process development, requirements, hazards and risks identified, interactions (d) flow (e) output (f) measurement criteria	NQA-1 Requirement 2, section 100(a) and Requirement 5, section 100 address many of the requirements related to processes in GS-R-3 Requirement 5.1. *Recommendations.* NQA-1 users should address the identification of hazards and risks together with any necessary mitigating actions and process measurement. Consult GS-G-3.1, 5.4 for guidance on implementation of this requirement.
5.5	Key words: process interface control, communication, responsibilities	NQA-1 Requirement 1, sections 100 and 300 address functional interfaces. *Recommendations.* NQA-1 users should address interfaces between different individuals or groups involved in a process.
Process Management		
5.6	Key words: designated individual, develop and documenting effective interaction (d) records (e) monitoring reporting performance (f) promoting improvement (g) aligned with goals of the organization	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 5.10 through 5.23 for guidance on implementation of this requirement. The organization should identify a designated individual for each process.
5.7	Key words: inspection, testing, acceptance criteria, responsibilities	NQA-1 Requirement 10
5.8	Key words: (a) evaluated, effectiveness	NQA-1 Requirement 2, section 100(c) *Recommendations.* NQA-1 users should ensure assessment of the adequacy of the QA program includes assessment of the processes.
5.9	Key words: (a) Controlled conditions, approved procedures, results compared, expected values	NQA-1 Requirement 2, section 100(c) and Requirement 5

Table II The Extent to Which NQA-1 Addresses GS-R-3 Requirements (Cont'd)

Requirement	GS-R-3	NQA-1 and Recommendations
5.10	Key words: (a) external organizations identified, retain overall responsibility	NQA-1 Requirement 1, para. 202 and section 300
Generic Management System Process		
5.11	Key words: (a) Generic processes developed	No corresponding requirement. *Recommendations.* NQA-1 users should refer to corresponding requirements and recommendations for GS-R-3 Requirements 5.12 through 5.29.
5.12	Key words: (a) control of documents	NQA-1 Requirement 6
5.13	Key words: (a) changes to documents	NQA-1 Requirement 6, section 300
5.14	Key words: control of products, specifications and requirements, interface identified	NQA-1 Requirements 3, 4, 7, and 8
5.15	Key words: (a) Acceptance inspection testing verification, validation, tools and equipments type, range accuracy	NQA-1 Requirements 8 and 10 through 13, section 400
5.16	Key words: products meet specified requirements, perform in service	NQA-1 Requirements 7, 8, and 10
5.17	Key words: (a) form, verify satisfy requirements	NQA-1 Requirements 7 and 8
5.18	Key words: (a) verification	NQA-1 Requirement 7, section 500, and Requirements 10 and 14
5.19	Key words: (a) products identified (b) traceability (c) unique identification	NQA-1 Requirements 8 and 14
5.20	Key words: (a) stored, maintained, prevent damage, loss, inadvertent use	NQA-1 Requirements 8, section 300, and Requirement 13
5.21	Key words: (a) records controlled (b) readable (c) complete (d) identifiable (e) retrievable	NQA-1 Requirements 6 and 17
5.22	Key words: (a) Retention time	NQA-1 Requirement 17 *Recommendations.* NQA-1 users should ensure records and associated test materials and specimens are consistent with knowledge management.
5.23	Key words: (a) suppliers selected, specified criteria (b) performance evaluated	NQA-1 Requirements 4 and 7, sections 100, 200, and 300
5.24	Key words: (a) purchasing requirements, procurement documents (b) evidence meet requirements	NQA-1 Requirements 4 and 7

Table II The Extent to Which NQA-1 Addresses GS-R-3 Requirements (Cont'd)

Requirement	GS-R-3	NQA-1 and Recommendations
5.25	Key words: (a) resolution of nonconformance	NQA-1 Requirement 4, para. 206 and Requirement 7, sections 600 and 700
5.26	Key words: (a) safety, health, environment, security, quality, and economic goals (b) interested parties	No corresponding requirement. *Recommendations.* NQA-1 users should address requirements for the communication of relevant information on safety, health, environmental, security, quality, and economic goals. Consult GS-G-3.1, 5.52 through 5.55 for guidance on implementation of this requirement.
5.27	Key words: (a) internal communication, various levels	No corresponding requirement. *Recommendations.* NQA-1 users should address requirements for internal communication regarding the implementation and effectiveness of the management system. Consult GS-G-3.1, 5.52 through 5.55 for guidance on implementation of this requirement.
5.28	Key words: (a) evaluated and classified, importance to safety, change justified	No corresponding requirement. *Recommendations.* NQA-1 users should address requirements for the evaluation, classification, and justification of organizational changes. Consult GS-G-3.1, 5.56 through 5.71 for guidance on implementation of this requirement.
5.29	Key words: (a) planned (b) controlled (c) communicated (d) monitored (e) tracked (f) recorded	NQA-1 Requirement 1, section 100 addresses documenting the organization. *Recommendations.* NQA-1 users should address the evaluation, planning, communication, and monitoring of organizational change. Consult GS-G-3.1, 5.56 through 5.71 for guidance on implementation of this requirement.
6.1–6.18 Measurement, Assessment, and Improvement		
Monitoring and Measurement		
6.1	Key words: monitored and measured	NQA-1 Requirement 1, section 200(a) and Requirement 2, section 100(c) for the QA Program *Recommendations.* NQA-1 users should use the results of monitoring activities and management assessment of the adequacy of the QA Program to identify opportunities for improvement.
Self-Assessment		
6.2	Key words: self-assessment	No corresponding requirement. *Recommendations.* NQA-1 users should address the requirement for self-assessment by all levels of management. Consult GS-G-3.1, 6.6 through 6.21 for guidance on implementation of this requirement.
Independent Assessment		
6.3	Key words: evaluate the effectiveness	NQA-1 Requirements 2 and 18 *Recommendations.* NQA-1 users should address the requirements to evaluate safety culture and identify opportunities for improvement.

Table II The Extent to Which NQA-1 Addresses GS-R-3 Requirements (Cont'd)

Requirement	GS-R-3	NQA-1 and Recommendations
6.4	Key words: conducting independent assessments	NQA-1 Requirements 2 and 18
6.5	Key words: independent assessments	NQA-1 Requirement 1, section 200, and Requirement 18
6.6	Key words: senior management necessary actions, record and communicate their decisions	NQA-1 Requirements 16 and 18
Management System Review		
6.7	Key words: management system review	NQA-1 Requirement 2, section 100(c) for QA Program *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 6.45 through 6.49 for guidance on implementation of this requirement.
6.8	Key words: review shall cover assessment outputs, results delivered, nonconformances and corrective and preventive actions, lessons learned, and opportunities for improvement	No corresponding requirement. *Recommendations.* NQA-1 users should ensure that these inputs to management system review are addressed. Consult GS-G-3.1, 6.47 for guidance on implementation of this requirement.
6.9	Key words: weaknesses and obstacles, identified, evaluated, and remedied	No corresponding requirement. *Recommendations.* NQA-1 users should address the requirement to identify, evaluate, and remedy weaknesses and obstacles as part of management system review. Consult GS-G-3.1, 6.49 for guidance on implementation of this requirement.
6.10	Key words: review shall identify	No corresponding requirement. *Recommendations.* 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.
Nonconformances and Corrective and Preventive Actions		
6.11	Key words: causes, nonconformances, determined, remedial actions, prevent recurrence	NQA-1 Requirements 15 and 16 *Recommendations.* NQA-1 users should address the determination of causes of nonconformances for all nonconformances, not just those that are for significant conditions adverse to quality.
6.12	Key words: products, processes, specified requirements, identified, segregated, controlled, recorded, reported, level of management, impact of nonconformances, evaluated, accepted, reworked, corrected, rejected, discarded, destroyed, inadvertent use	NQA-1 Requirement 15
6.13	Key words: concessions, acceptance, product, process, authorization, reworked, corrected, inspection, demonstrate, conformity. requirements, expected results	NQA-1 Requirement 7, section 600, and Requirement 15

Table II The Extent to Which NQA-1 Addresses GS-R-3 Requirements (Cont'd)

Requirement	GS-R-3	NQA-1 and Recommendations
6.14	Key words: corrective actions, eliminating, determined, implemented, preventive actions, causes, potential	NQA-1 Requirement 16 *Recommendations.* NQA-1 users should address the determination and taking of preventive actions to eliminate the causes of potential nonconformances.
6.15	Key words: status, effectiveness, corrective, preventive actions, monitored, reported to management	NQA-1 Requirement 16 *Recommendations.* NQA-1 users should address the requirement to monitor and report on the status and effectiveness of all corrective and preventive actions.
6.16	Key words: potential, detract, performance, identified, feedback, internal and external, technical advances and research, knowledge and experience, best practices	No corresponding requirement. *Recommendations.* NQA-1 users should address the requirement to identify potential nonconformances using feedback from other organizations, both internal and external, through the use of technical advances and research, the sharing of knowledge and experience, and the use of techniques that identify best practices. Consult GS-G-3.1, 6.76 and 6.77 for guidance on implementation of this requirement.
Improvement		
6.17	Key words: opportunities, improvement, identified, actions to improve, processes, selected, planned, and recorded	No corresponding requirement. *Recommendations.* NQA-1 users should address this GS-R-3 requirement. Consult GS-G-3.1, 6.78 through 6.84 for guidance on implementation of this requirement.
6.18	Key words: improvement, plans, adequate resources, actions, improvement, monitored, completion, effectiveness	No corresponding requirement. *Recommendations.* NQA-1 users should address the requirement to provide adequate resources for improvement activities, monitor improvement actions, and check the effectiveness of improvements. Consult GS-G-3.1, 6.78 through 6.84 for guidance on implementation of this requirement.

GENERAL NOTE: Key words are included as appropriate to help the reader identify the nature of the requirements. Users should refer to GS-R-3 for the full text of the requirements,