



Standard Guide for Establishing a Quality Assurance Program for Uranium Conversion Facilities¹

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1. Scope

1.1 This guide provides guidance and recommended practices for establishing a comprehensive quality assurance program for uranium conversion facilities.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate health and safety practices and determine the applicability of regulatory limitations prior to use.*

1.3 The basic elements of a quality assurance program appear in the following order:

FUNCTION	SECTION
Organization	5
Quality Assurance Program	6
Design Control	7
Instructions, Procedures & Drawings	8
Document Control	9
Procurement	10
Identification and Traceability	11
Processes	12
Inspection	13
Control of Measuring and Test Equipment	14
Handling, Storage and Shipping	15
Inspection, Test and Operating Status	16
Control of Nonconforming Items	17
Corrective Actions	18
Quality Assurance Records	19
Audits	20

2. Referenced Documents

2.1 *ANSI Standard:*²

ANSI/ASME NQA-1 Quality Assurance Program Requirements for Nuclear Facility Applications

3. Terminology

3.1 *Definitions:*

¹ This guide is under the jurisdiction of ASTM Committee C26 on Nuclear Fuel Cycle and is the direct responsibility of Subcommittee C26.08 on Quality Assurance, Statistical Applications, and Reference Materials.

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² Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

3.1.1 *operation*—the terms *operation*, *operations*, and *operation activities* are used interchangeably to describe collectively all activities and functions executed by the conversion facility.

3.1.2 *special process*—a process, the results of which are highly dependent on the control of the process or the skill of the operators, or both, and in which the specified quality cannot be readily determined by inspection or test of the product.

3.1.3 *uranium conversion facility*—a chemical processing plant whose primary function is to convert uranium ore concentrates or uranium oxide to purified uranium hexafluoride.

4. Significance and Use

4.1 Quality assurance provides a planned and systematic approach for establishing practices to meet requirements of safe facility operation and product quality.

4.2 In the operation of a uranium conversion facility there are many requirements established by regulatory bodies, codes, customers, and the facility itself. These requirements are identified by facility management and acted upon by various facility groups. Implementation of the practices described in this guide are intended to assist with compliance with these requirements.

4.3 In the operation of a uranium conversion facility there is a potential for both chemical and radiological exposure to employees, the public, and the environment. This potential is reduced by implementation of the practices described in this guide. The development of this guide, as part of sound management practice, provides a means for ensuring consistency between facilities, and documentation and formalization of existing practices.

4.4 To establish a quality assurance program for a uranium conversion facility, the practices in use should be evaluated against the recommended practices of this guide. Existing practices may then be modified or new practices implemented to correct any identified deficiencies. This approach highlights the fact that the basic foundation of a quality assurance program is already present.

4.5 ANSI/ASME NQA-1 is a quality assurance standard that is being applied broadly across the nuclear industry.

TABLE 1 NQA-1 Basic Requirements Related to Principles of Conversion Facility Quality Assurance
NQA-1 BASIC REQUIREMENTS

Elements of Conversion Facility Quality Assurance	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Organization	X																	
Quality Assurance Program		X																
Design Control			X															
Document Control				X		X												
Instructions, Procedures & Drawings					X													
Procurement							X											
Identification and Traceability								X										
Processes									X									
Inspection										X	X							
Control of Measuring and Test Equipment												X						
Handling, Storage, and Shipping													X					
Inspection, Test and Operating Status														X				
Control of Non-conforming Items															X			
Corrective Actions																X		
Quality Assurance Records																	X	
Audits																		X

NQA-1 was used as guidance in the development of the program elements of this guide.

4.6 The program functions detailed in this guide should be selected based on the particular needs and applications at the facility. Those activities or programs to be included in a uranium conversion facility should be defined in that program.

5. Organization

5.1 *Summary*—The organizational structure of a facility is the basis from which authority, functional responsibility, lines of communication and interfaces are derived. Since, in every case, facilities are composed of smaller organizations of various functions, it is necessary to define the organizational structure and the controls and responsibilities delegated to each component.

5.2 Recommendations:

5.2.1 *Organizational Structure*—All facilities have an internal organizational structure. The organizational structure should be defined and documented. This is necessary to define relationships between groups and to assign responsibilities for the accomplishment of required activities. Without a defined organizational structure, the efficiency and quality of output of the organization will be adversely affected. The most common method of documenting the organizational structure is via the organization chart.

5.2.2 *Functional Responsibilities*—Each position detailed on the organization chart should be defined. This can be done via a position description or other method. The job description should include the functional responsibilities and relationship to the organization.

5.2.3 *Levels of Authority*—Included with functional responsibilities should be the authority level of the position. This authority should include decision making and approval of actions necessary to carry out the assigned functional responsibility. The delegation of authority should also be addressed. This may be necessary in order to most efficiently or effectively accomplish the assigned responsibilities.

5.2.4 *Communication*—Lines of communication for formal interaction between groups should be defined. This is especially important when more than one group is responsible for

the completion or performance of an activity. Interfaces, both internal and external to the facility, may be defined through position descriptions. Specific interfaces may be detailed in the quality assurance program in order to clarify or emphasize the proper protocol. It should be stressed that the quality assurance personnel be formally given, via appropriate lines of communication, the organizational freedom and access to management to effectively perform quality assurance functions.

6. Quality Assurance Program

6.1 *Summary*—A quality assurance program should be established, documented and implemented. The program should consist of suitable policies, programs, and written procedures that provide for the planning and accomplishment of activities affecting quality under controlled conditions. The program should provide for training, as necessary, of personnel to ensure that adequate proficiency is achieved and maintained. The quality assurance program should provide for routine assessment of policies, programs, and procedures to ensure their continued effectiveness, to ensure compliance, and to identify opportunities for improvements.

6.2 Recommendations:

6.2.1 The uranium conversion facility should document the quality assurance program in sufficient detail to demonstrate that the recommendations of this guide have been met. This is usually provided by means of a quality assurance manual, which is approved and signed by senior facility management.

6.2.2 The quality assurance function should be staffed by personnel who are independent of the organizations responsible for performing quality related functions.

6.2.3 Personnel involved in quality assurance activities should have training or experience commensurate with the scope of the activities. This training and experience should be documented.

6.2.4 Quality assurance activities may utilize other personnel in order to obtain the necessary knowledge or expertise to properly perform the function in question. The quality assurance organization should maintain ultimate responsibility for the results of the actions of the other persons.