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IDENTIFICATION AND RANKING OF NUCLEAR PLANT STRUCTURES, SYSTEMS, AND COMPONENTS, AND GRADED QUALITY ASSURANCE GUIDELINES--DRAFT

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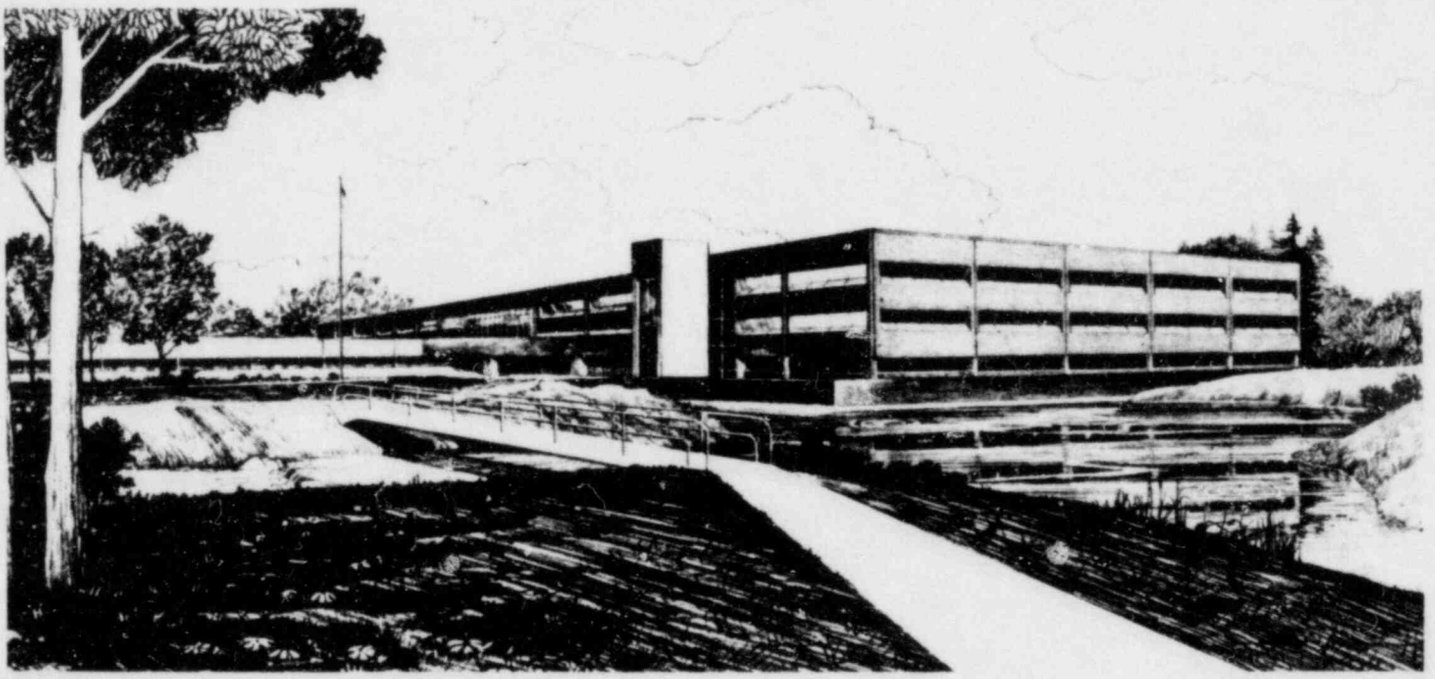

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ABSTRACT

Two sets of lists are presented. One list places nuclear plant structures, systems, and components into one of three graded quality assurance levels (QALs), based on the item's importance to safety. Separate lists for pressurized water, boiling water, and gas cooled reactors are provided. The other list provides the specific quality assurance guidelines appropriate for each of the three QALs.

FIN No. A6479

Identification and Ranking of Plant Structures,
Systems, and Components and
Graded Quality Assurance Requirements

SUMMARY

The purpose of the task was to identify nuclear plant items important to safety, to rank the items into three categories in accordance with their importance to safety, and to develop graded quality assurance guidelines applicable to each category for both the construction and operational phases. The results of the program will be used to develop regulatory guidance for use by the Nuclear Regulatory Commission staff and industry in implementing the proposed rule.

The results of the task are included with QA guidelines and the plant item lists, divided by plant type.

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IDENTIFICATION AND RANKING OF NUCLEAR PLANT STRUCTURES, SYSTEMS, AND COMPONENTS, AND GRADED QUALITY ASSURANCE GUIDELINES--DRAFT

INTRODUCTION

A revision to Part 10, Code of Federal Regulations (CFR) has been proposed that identifies the quality assurance (QA) program required to satisfy General Design Criterion 1 of 10 CFR 50, Appendix A for nuclear plants as the QA program required by 10 CFR 50, Appendix B. Currently, Appendix B applies only to safety-related structures, systems, and components, i.e., those items that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. With the adoption of the proposed revision to the regulations, the applicability of the Appendix B QA program will be expanded to include all structures, systems, and components important to safety, i.e., those items that provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public.

The purpose of the task was to identify nuclear plant items important to safety, to rank the items into three categories in accordance with their importance to safety, and to develop graded quality assurance guidelines applicable to each category for both the construction and operational phases. The results of the program will be used to develop regulatory guidance for use by the Nuclear Regulatory Commission (NRC) staff and industry in implementing the proposed rule.

The results of the task are presented with QA guidelines first, followed by plant item lists, divided by plant type.

DEVELOPMENT OF GRADED QUALITY ASSURANCE GUIDELINES

Objective

The objective of this portion of the task was to establish a system of graded QA program guidelines commensurate with the relative importance to safety for three categories of commercial nuclear power plant structures, systems, and components. This system is intended to apply to both the design/construction and operational phases.

Background

The equipment categories encompassed by the task were generally defined as follows:

Quality Assurance Level I

Plant items that in past licensing reviews have been characterized as "safety related." These items are generally identified in Regulatory Guide 1.29.

Quality Assurance Level II

Plant items that have a lesser role regarding safety than do QA Level I items, but nevertheless could affect safety in a direct or substantive manner by failure, thereby initiating a transient, or by serving as a potential backup to a QA Level I item.

Quality Assurance Level III

Remaining plant items that have a smaller effect on safety than do QA Level II items.

Several ground rules were established by the NRC to be used as guidance in accomplishing the task. These were:

1. Sections 17.1 and 17.2, Acceptance Criteria of the Standard Review Plan, NUREG-0800, have already identified the QA requirements for QA Level I items and no further effort or definition would be required in this area.

2. The following were to be used for baseline documents:

   A. 10 CFR 50 Appendix B quality assurance criteria

   B. Sections 17.1 and 17.2 of NUREG-0800

   C. All applicable regulatory guides and endorsed standards

   D. ANS 51.1 and 52.1 on the safety classification of nuclear power plant components under development by the Ad Hoc Committee on Importance to Safety

   E. Codes and Standards, 10 CFR 50.55a.

3. The quality assurance guidelines for each level will serve as the minimum for the next higher level and maximum for items in that level. With reasonable justification, users will be permitted to depart from the maximum for a level in establishing guidelines for a specific item (i.e., a graded approach may be used to determine specific guidelines consistent with an items importance to safety) through considerations of the factors such as those identified in ANSI/ASME NQA-1, Appendix 4A-1, Section 5.0.

4. Use existing techniques, to the maximum extent possible, developed by other organizations involved in nuclear plant design and construction.

Development

With the above ground rules, specific objectives were developed to further guide the performance of this task. The approach taken would have to result in a quality assurance program structure that would

1. Maximize user flexibility

2. Maintain consistency with existing regulations

3. Be practical in application

4. Be cost effective

5. Provide a graded QA program with three categories of guidance.

Telephone interviews were held with knowledgeable quality assurance personnel in the nuclear industry to obtain information on graded approaches in use by their firms and also to determine if the specific objectives above would be acceptable, on the whole, to those interviewed. The consensus was in general agreement with those objectives.

There were two recurring items in these interviews that affected the direction of the detailed development of the task. The term "graded approach" has different meanings to different individuals, ranging from a highly detailed checklist type approach for every task that is done, to an approach where experienced and qualified individuals use sound engineering and management judgment applying only the necessary controls from the endorsed quality assurance standard for the particular circumstance at hand. In the former case, interviewees were quite unanimous that checklist QA approaches specific to items or categories of equipment would pose a real danger by removing or minimizing the individual assessment process that must take place. The message was clear: develop an approach that would result in a program that was not toward the checklist end of the spectrum. The other recurring theme was that many organizations already use a graded approach as described by the opposite end of the spectrum

(individual assessment) whether they recognized it as such or not. Therefore, this additional guidance was factored into the detailed development of the task.

In order to meet the above objectives and guidance, the approach was developed along the philosophy visually depicted in Figure 1 where the need for QA rigor decreases with lessening importance to safety and industry latitude increases. QA program rigor at the top of QAL I would remain highly proscriptive and decrease to a minimum at the bottom of QAL III.

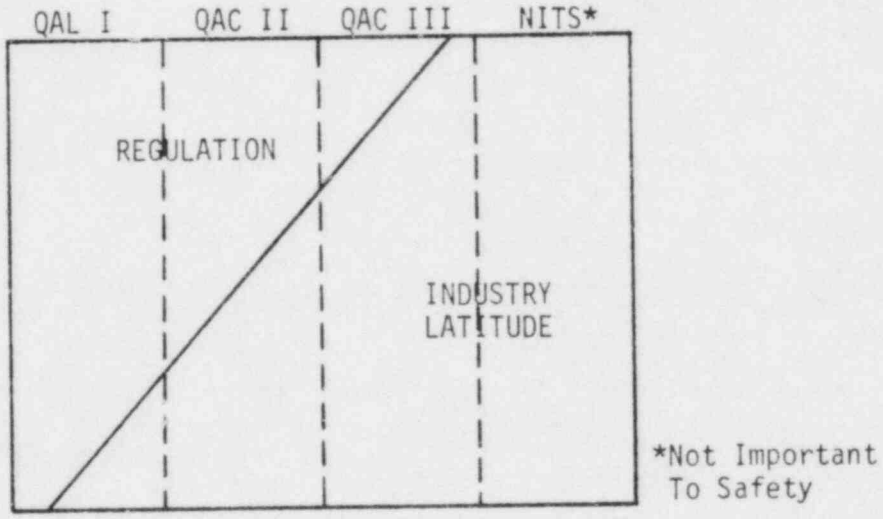

Figure 1. QA program rigor.

Research was also conducted on the various approaches taken by other organizations that have investigated the graded approach problem. Most notable among these were the Canadian Standards Association Z-299 Series documents, the International Atomic Energy Agency Paper IAEA-SM-253/SM, similar work being conducted by the Tennessee Valley Authority, and work done by the ASME NQA-1 Committee on a draft report titled QA Requirements for Nuclear Safety Related Equipment. The listing of QA program documents and studies researched for information and further guidance is contained in Table 1. This table is a supplement to the documents contained in Table 2, which relates directly to the final approach taken.

TABLE 1. DOCUMENTS USED IN LITERATURE SEARCH

ANS 51.1, Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants

ANS 52.1, Nuclear Safety Criteria for the Design of Stationary Boiling Water Reactor Plants

ANSI/ASME NQA-1 1979, Quality Assurance Program Requirements for Nuclear Power Plants

MIL-I-45208A, Inspection System Requirements

MIL-Q-9858A, Quality Program Requirements

MIL-C-45662A, Calibration System Requirements

ASME Boiler and Pressure Vessel Code 1980 Edition, Summer 82 Addenda, Sections I, III, IV, and VIII

RDT F2-2, Quality Assurance Program Requirements, 1973

RDT F2-4T, Quality Verification Program Requirements, 1974

IAEA-SM-253/101, The Selective Application of Quality Assurance Activities to Nuclear Plant Items and Services, May 1981, (C. W. Anderson, Chief, Quality Assurance, Clinch River Breeder Reactor Plant Project, Project Management Corporation, Oak Ridge, TN)

QA Requirements for Nuclear Safety Related Equipment, prepared by the Design and Procurement Sub-Committee Task Group on Quality Assurance by Classification, 1980.

TVA Construction Specification N3G-881, Identification of Structures, Systems, and Components Covered by the Watts Bar Nuclear Plant Quality Assurance (QA) Program, Preliminary Copy, June 16, 1982

Report by NRC QA Review Team on Quality Assurance (QA) Practices for NRC's Confirmatory Research Programs, Rev. 2, October 25, 1979, (G. L. Bennett, Chief, Research Support Branch, Division of Reactor Safety Research)

Canadian Standards Association:

Z299.1 - 1978, Quality Assurance Program Requirements

Z299.2 - 1979, Quality Control Program Requirements

Z299.3 - 1979, Quality Verification Program Requirements

Z299.4 - 1979, Inspection Program Requirements

TABLE 2. DOCUMENTS USED FOR STRUCTURING GUIDELINES

10 CFR Part 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants.

10 CFR Part 50, 50.55a, Codes and Standards

NUREG 0800, Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants, Chapter 17, Rev. 2, July 1981.

Regulatory Guides

1.8, Rev. 1-R, Personnel Selection and Training

1.26, Rev. 3, Quality Group Classification and Standards for Water, Steam, and Radioactive Waste Containing Components of Nuclear Power Plants.

1.28, Rev. 2, Quality Assurance Program Requirements (Design and Construction).

1.29, Rev. 3, Seismic Design Classification.

1.30, Rev. -, Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment.

1.33, Rev. 2, Quality Assurance Program Requirements (Operation).

1.37, Rev. -, Quality Assurance Requirements for Cleaning for Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants.

1.38, Rev. 2, Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants.

1.39, Rev. 2, Housekeeping Requirements for Water-Cooled Nuclear Power Plants.

1.54, Rev. -, Quality Assurance Requirements for Protective Coatings Applied to Water Cooled Nuclear Power Plants.

1.58, Rev. 1, Qualification of Nuclear Power Plant Inspection, Examination, and Testing Personnel.

1.64, Rev. 2, Quality Assurance Requirements for the Design of Nuclear Power Plants.

1.88, Rev. 2, Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records.

TABLE 2. (continued)

1.94, Rev. 1, Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants.

1.116, Rev. O-R, Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems.

1.123, Rev. 1, Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants.

1.144, Rev. 1, Auditing of Quality Assurance Programs for Nuclear Power Plants.

1.146, Rev. -, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants.

ANSI N45.2 Series

N45.2-1977, Quality Assurance Program Requirements for Nuclear Facilities.

N45.2.1-1980, Cleaning of Fluid Systems and Associated Components for Nuclear Power Plants.

N45.2-1978, Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants.

N45.2.3-1973, Housekeeping During the Construction Phase of Nuclear Power Plants.

N45.2.4-1980 (IEEE 336), Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations.

N45.2.5-1978, Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete, Structural Steel, Soils, and Foundations During the Construction Phase of Nuclear Power Plants.

N45.2.6-1978, Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants.

N45.2.8-1975, Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants.

N45.2.9-1974, Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants.

TABLE 2. (continued)

N45.2.11-1974, Quality Assurance Requirements for the Design of Nuclear Power Plants.

N45.2.12-1977, Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants.

N45.2.13-1976, Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants.

N45.2.23-1978, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants.

ANSI N101.4-1972, Quality Assurance for Protective Coatings Applied to Nuclear Facilities.

ANS 3.1--Draft, October 1980, Selection, Qualification, and Training of Personnel for Nuclear Power Plants.

ANS 3.2--Draft 8, April 1981, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants.

Final Approach

The final approach selected is based on a program structure that has all the elements of 10 CFR 50, Appendix B, the Standard Review Plan Sections 17.1 and 17.2, Regulatory Guide positions, and endorsed ANSI standards applying to the maximum for QAL I. At the other extreme, the minimum guidelines for QAL III are structured basically around an inspection and test program. Between the two extremes lies a graduated program that is structured to the maximum extent practical to the document hierarchy shown in Table 3. Some deviations were necessary from this logic due to overlap from one standard to another. In developing the detailed structure presented in the QA Program Guidelines Listings, only programmatic QA elements were extracted from the referenced documents.

Programmatic QA requirements are those that impose a system/organization control, e.g. "activities affecting quality shall be accomplished under suitably controlled conditions" (from 10 CFR 50 Appendix B, Criteria III) but don't address the "technical" details of how this is to be accomplished. It is expected that the user will apply appropriate "mechanics," or technical requirements, to assure the programmatic requirements will be met.

In many cases, redundancies between standards were noted. Some were identical on a word-for-word basis while others were stated in different terms but were evaluated to be addressing the same element. Where these conditions existed, the redundancies were eliminated and only a single reference made in the listing.

With this approach, the objectives stated earlier can be met:

> The necessary flexibility is maintained within each category. Sufficient latitude is retained to allow a variety of methods to meet the programmatic requirements and also allow tailoring of those requirements to meet specific circumstances.

The overall QA program structure for items important to safety still reflects those QA programmatic elements that are in use in the industry. Therefore, the structure is consistent with existing regulations and should have a high degree of understanding by industry. QAL III minimum level, while not reflecting an extensive 18-criteria program, does in fact, remain consistent with higher level guidelines but to a lesser degree.

Three grades of QA guidelines have been provided with a maximum and a minimum established for each category.

The approach is also practical. This objective is met partially by the fact that the first two objectives (flexibility and consistency) were met and partially by the fact that new or different requirements are not being imposed. Because guidelines for the program structure are extracted from currently existing regulations, minimal impact to existing systems currently in place in the nuclear industry should occur.

As stated previously, the detail of the program structure is presented in the QA Program Guidelines Listing. The Xs under the columns for quality assurance level indicate whether the element should be considered for application to items within that level. In interpreting the tables, the reader is urged to keep in mind that the minimum guidelines for one level serve as the maximum guidelines for the next lower level and that the maximum would normally apply to a level unless suitable justification is documented for deviation. This documentation need only be retained by the owner/applicant. The reader should also be aware that while these guidelines have been broken down into three levels, users may develop programs utilizing more levels. Also, individual parts of components, systems, or structures may be placed into a lower QAL as determined by the user's judgement.

For commercial "off-the-shelf" items, application of all QA controls consistent with nuclear industry practice is not always possible or practicable. In these instances, special verification requirements need to

TABLE 3 GRADED QA REQUIREMENTS CRITERIA

QAL I Maximum: 10CFR50, Appendix B, Regulatory Guides* 1.8, 1.26, 1.28, 1.29, 1.30, 1.33, 1.37, 1.38, 1.39, 1.58, 1.64, 1.74, 1.88, 1.94, 1.116, 1.123, 1.144, 1.146 and all endorsed ANSI and ANSI N45.2 series standards.

QAL I Minimum:
QAL II Maximum: 10CFR50, Appendix B, and Regulatory Guides* 1.8, 1.28, 1.30, 1.33, 1.38, 1.39, 1.58, 1.64, 1.88, 1.94, 1.116, 1.123, 1.144 and 1.146. These Regulatory Guides endorse:

ANSI N45.2, Quality Assurance Program Requirements for Nuclear Facilities

ANSI N45.2.2, Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants

ANSI N45.2.3, Housekeeping During the Construction Phase of Nuclear Power Plants

ANSI N45.2.4 (IEEE 336), Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations

ANSI N45.2.5, Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants

ANSI N45.2.6, Qualifications of Inspection, Examination, and Testing Personnel for the Construction Phase of Nuclear Power Plants

ANSI N45.2.8, Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants

ANSI N45.2.9, Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants

ANSI N45.2.11, Quality Assurance Requirements for the Design of Nuclear Power Plants

ANSI N45.2.12, Requirements for Auditing of Quality Assurance Programs for Nuclear Plants

ANSI N45.2.13, Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants

ANSI N45.2.23, Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants

TABLE 3. (continued)

ANSI/ANS 3.1, Selection, Qualification and Training of Personnel for Nuclear Power Plants

ANSI/ANS 3.2, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants

QAC II Minimum QAC III Maximum:	10CFR50, Appendix B, ANSI/ANS 3.1, RG 1.8 and 1.33 ANSI/ANS 3.2, and ANSI N45.2.6, RG 1.58.
QAC III Minimum:	Criteria 5, 10, 11, 12, 15, and 17 of 10CFR50, Appendix B:

Criteria 5, Instructions, Procedures, and Drawings

Criteria 10, Inspection

Criteria 11, Test Control

Criteria 12, Control of Measuring and Test Equipment

Criteria 15, Nonconforming Materials, Parts, and Components

Criteria 17, Quality Assurance Records

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* Quality assurance programmatic requirements only.

be invoked so that overall acceptability can be established, e.g., if design cannot be verified by in-process reviews or analytical studies, appropriate alternates could be the performance of a suitable testing program or obtaining operational performance data that would demonstrate adequacy for intended use.

Usage Guidelines

1) Minimum guidelines for I and II are identical to the maximum for II and III, respectively. Guidelines for I maximum and III minimum define the matrix extremities.

2) For a given QAL, the maximum applies unless the applicant can establish reasonable justification for departing from them. If departure from the maximum guidance occurs, actual guidelines should not go below the minimum guidance given for that QAL. Grading of the guidelines within a given QAL, where appropriate, can be accomplished by examining the guideline for parameters that allow for some form of gradation, e.g. frequency, how often is this performed (audit once per year). The following list contains areas for consideration when reviewing the guidelines for possible reductions in rigor.

   a. Frequency or duration of activity

   b. Need for certification, qualification, or training

   c. Degree of organizational independence required

   d. Level of management involvement desired

   e. Need for preventive measures--design verification, audits, supplier surveys

   f. Need for identification, status, and/or traceability

   g. Review and approval requirements

   h. Documentation needs for program, corrective action, procurement, design, discrepancies, tests, inspections, and work planning

   i. Need for appraisals--source, receipt, in-process.

3) The applicant should maximize use of existing flexibility within the SRP (or other documents) via the "as necessary," "as required" verbage it contains to justify grading of QA requirements.

4) Unless otherwise noted in the reference column (Ref.), entries are from the SRP.

5) Individual parts of a component system, or structure may be placed in a lower QAL than the component, system or structure as determined by the user.

6) Grading of specific hardware within a given QAL recognizing that some parts will be a lower level than the system level can be accomplished by examination of the following parameters as they apply to the system, structure, or component in question:

   a. Importance to safety (consequences of failure/malfunction) of the plant

   b. Margin of safety designed into item

   c. Time available for corrective action before failing/failed item starts affecting the safety of the plant

   d. Item availability

   e. Item cost

   f. Item uniqueness

   g. Item complexity

   h. Ease of damage

   i. Previous experience with the item: operational, maintenance, procurement

j. Time required to obtain a replacement

k. Manufacturer's experience/expertise

l. Sold source

m. Previous problems developing similar items

n. Is item first-of-a-kind

o. Need for process controls or special equipment/skills/environment

p. Can functional test replace in-process inspections

q. Industry's experience with the item

r. Degree of item's standardization

s. Schedule constraints

t. Item's redundancy in system(s)

u. Common mode failures

v. Code stamped item (does it have third party inspection)

w. Need for vendor document submittals

x. Need for first article inspection.

Note: Some changes to the wording of the SRP have been made for the sake of clarity. These changes are all identified with an asterisk (*) and explanatory notes added where necessary.

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
The Organization (17.1.1) elements responsible for the QA program are acceptable if:					
1A1. The responsibility for the overall program is retained and exercised by the applicant.		X	X	X	
1A2. The applicant has identified and described major delegation of work involved in establishing and implementing the QA program or any part thereof to other organizations.		X	X	X	
1A3. When major portions of the applicant's program are delegated:					
a. Applicant describes how responsibility is exercised for the overall program.		X	X	X	
The extent of management oversight should be addressed including the location, qualifications, and criteria for determining the number of personnel performing these functions.		X	X		
b. Applicant evaluates the performance (frequency and method stated - once per year although longer cycle acceptable with other evaluations of individual elements) of work by the delegated organization.		X	X	X	
c. Qualified individual(s) or organizational element(s) are identified within the applicant's organization as responsible for the quality of the delegated work prior to initiation of activities.		X	X	X	
1A4. Clear management controls and effective lines of communication exist for QA activities among the applicant and the principal contractors to assure direction of the QA program.		X	X	X	
1A5. Organization charts clearly identify all the "onsite" and "offsite" organizational elements which function under the cognizance of the QA program (such as design, engineering, procurement, manufacturing, construction, inspection, test, instrumentation and control, nuclear engineering, etc.), the lines of responsibility, and a description of the criteria (for determining the size) of the QA organization including the inspection staff.		X	X	X	

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
1A6.	The applicant (and principal contractors) establishes the QA responsibilities of each of the organizational elements noted on the organization charts.		X	X	X	
1B1.	The applicant (and principal contractors) identifies a management position that retains overall authority and responsibility for the QA program (normally, this position is the QA Manager) and this position has the following characteristics:		X	X	X	
	a. Is at the same or higher organization level as the highest line manager directly responsible for performing activities affecting quality (such as engineering, procurement, construction, and operation) and is sufficiently independent from cost and schedule.		X	X	X	
	b. Has effective communication channels with other senior management positions.		X	X	X	
	c. Has responsibility for approval of QA Manual(s).		X	X	X	
	d. Has no other duties or responsibilities unrelated to QA that would prevent his full attention to QA matters.		X	X	X	
1B2.	Verification of conformance to established requirements (except for designs, ref. 3E2) is accomplished by individuals or groups within the QA organization who do not have direct responsibility for performing the work being verified or by individuals or groups trained and qualified in QA concepts and practices and independent of the organization responsible for performing the task.		X	X	X*	
1B3.	Persons and organizations performing QA functions have direct access to management levels which will assure the ability to:		X	X	X	
	a. Identify quality problems.		X	X	X	
	b. Initiate, recommend, or provide solutions through designated channels.		X	X	X	
	c. Verify implementation of solutions.		X	X	X	

* Delete "...within the QA organization..." for II min./III max.

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
	Those persons and organizations with the above authority are identified and a description of how those actions are carried out is provided.		X	X	X	
1B4.	a. Designated QA personnel, sufficiently free from direct pressures for cost/schedule, have the responsibility delineated in writing to stop unsatisfactory work and control further processing, delivery, or installation of nonconforming material.		X			
	b. The organizational positions with stop work authority are identified.		X	X	X	
1B5.	Provisions are established for the resolution of disputes involving quality, arising from a difference of opinion between QA personnel and other department (engineering, procurement, manufacturing, etc.) personnel.		X	X		
1B6.	Designated QA individuals are involved in day-to-day plant activities important to safety (i.e., the QA organization routinely attends and participates in daily plant work schedule and status meetings to assure they are kept abreast of day-to-day work assignments throughout the plant and that there is adequate QA coverage relative to procedural and inspection controls, acceptance criteria, and QA staffing and qualification of personnel to carry out QA assignments).		X	X	X*	
1C1.	Policies regarding the implementation of the QA program are documented and made mandatory. These policies are established at the Corporate President or Vice President level.		X	X	X	
1C2.	Position description (see 1B1) assures that the individual directly responsible for the definition, direction, and effectiveness of the overall QA program has sufficient authority to effectively implement responsibilities. This position is to be sufficiently free from cost and schedule responsibilities. Qualification requirements for this individual are established in a position description which includes the following prerequisites:		X	X	X	
	a. Management experience through assignments to responsible positions.		X	X	X	

* Delete "...QA..." and "...the QA organization..." for II min./III max.

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
	b. Knowledge of QA regulations, policies, practices, and standards.		X	X	X	
	c. Experience working in QA or related activity in reactor design, construction, or operation or in a similar high technological industry.		X	X	X	
	The qualifications of the QA Manager should be at least equivalent to those described in "Selection and Training of Nuclear Power Plant Personnel," is endorsed by the regulatory positions in Regulatory Guide 1.8.		X	X	X	
	4.4 PROFESSIONAL-TECHNICAL					
	The on-site professional-technical groups leaders shall possess the following qualifications in the indicated disciplines. A single individual may be qualified and perform in more than one discipline.	ANS 3.1	X	X	X	
	4.4.5 QUALITY ASSURANCE					
	a. EDUCATION: Bachelor Degree in Engineering or related science.	ANS 3.1	X	X	X	
C.2	When the phrase "bachelor's degree or equivalent" is used, the qualifications considered as minimum acceptable substitutes for a bachelor's degree are a high school diploma or its equivalent and one of the following:	R.G. 1.8	X	X	X	
	a. Four years of formal schooling in science or engineering;					
	b. Four years of applied experience at a nuclear facility in the area for which qualification is sought;					
	c. Four years of operational or technical experience or training in nuclear power; or					
	d. Any combination of the above totaling four years.					

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
	b. EXPERIENCE: At the time of initial core loading or appointment to the active position, the responsible person shall have four (4) years experience in the field of quality assurance, or equivalent number of years of nuclear plant experience in a supervisory position preferably at an operating nuclear plant or a combination of the two. At least one (1) year of this four years experience shall be nuclear power plant experience in the implementation of the quality assurance program.		X	X	X	
	c. TRAINING: As required by 5.3.2 and 5.4.		X	X	X	
1C3.	The person at the construction site responsible for directing and managing the site QA program is identified by position and has appropriate organizational position, responsibilities, and authority to exercise proper control over the QA program. This individual is free from non-QA duties and can thus give full attention to assuring that the QA program at the plant site is being effectively implemented.		X	X	X	
3.3	The persons or organizations responsible for verifying that the administrative controls and quality assurance program are implemented or of assuring that an activity has been correctly performed may report functionally to an offsite organization, or this responsibility can be divided between organizations reporting onsite and offsite. If this responsibility is divided, the organization reporting offsite shall perform independent audits to verify program compliance, whereas the organization reporting shall perform surveillance, inspection, and review activities for the purpose of process control, product acceptance, and to verify that various activities conform to specified requirements, i.e., the quality control function.	ANS 3.2	X	X	X	
3.4.2	Requirements for the Onsite Operating Organization					
	The onsite operating organization shall include, as a minimum one or more individuals knowledgeable in the	ANS 3.2	X	X	X	

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	following fields: nuclear power plant operation; nuclear power plant mechanical systems; nuclear engineering; heat transfer, fluid flow and thermodynamics; chemistry and radiochemistry; radiation protection; and quality assurance. Initial incumbents or replacements for members of the onsite operating organization shall have appropriate experience, training and retraining to assure that necessary competence is maintained in accordance with the provisions of American National Standard for Selection and Training of Nuclear Power Plant Personnel, ANS 3.1.					
	Personnel whose qualifications are not addressed in ANS 3.1 and who are performing inspection, examination, and testing activities during the operations phase of the plant, including preoperational and start-up testing, shall be qualified in accordance with the requirements of American National Standard Quality Assurance Program Requirements for Nuclear Power Plants, NQA-1, except that cited experience shall be limited to actual experience in carrying out the types of inspection, examination, or testing activity being performed.		X	X	X	
	The owner organization shall designate those positions in the onsite operating organization which shall be filled by personnel holding NRC operator and senior operator licenses. Requirements for the minimum number of personnel holding such licenses who shall be present at the plant under various operating conditions and situations shall also be specified.		X	X	X	
3.4.3	Technical Support for the On-Duty Operating Staff					
	The owner organization shall establish provisions for assuring that the shift organization includes, or has available for consultation persons with professional level expertise in technical areas that are related to the safe operation of the plant. The technical areas include, as a minimum, thermodynamics/fluid flow, reactor engineering, systems engineering, transient and accident analysis, radiation protection, and chemistry	ANS 3.2	X	X	X	

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	radiochemistry. These personnel shall be available (at the station or on call and capable of responding to the plant within 2 hours) for the purpose of providing technical advice to the shift supervisor on a 24-hour-a-day basis. They may be part of the plant organization or they may be part of the offsite technical support for the plant staff, except that an individual appropriately qualified in the first four areas listed above shall be onsite and capable of responding to the control room within 10 minutes after the start of an emergency.					
3.5	Indoctrination and Training					
	Provisions shall be made for indoctrination and training of those personnel in the owner organization performing activities affecting quality to assure that suitable proficiency is achieved and maintained. Such personnel also shall be provided training concerning the administrative controls and quality assurance program which, as a minimum, shall include the following areas: overall company policies, procedures, or instructions which establish the program; procedures or instructions which implement the program related to the specific job-related activity.	ANS 3.2	X	X	X	

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The Organization (SRP Section 17.2.1) elements responsible for the QA Program are acceptable if:					
* 1. The criteria in 17.1.1 are satisfied except for:		X	X	X	
a. Item 1A4. (delete for this part)		X	X	X	
b. The organizational elements within the parenthesis in item 1A5 be expanded to include operations and maintenance.		X	X	X	
c. The requirements that principal contractors describe QA responsibilities be deleted in Item 1A6.		X	X	X	
d. The requirements that a QA position be identified for principal contractors as described in Item 1B1, be deleted.		X	X	X	
e. "The person at the construction site responsible for directing and managing the site QA program..." described in Item IC3, be changed to "The person...responsible for...the onsite QA Program," and continue on with remaining sentence starting with "has appropriate organizational...."		X	X	X	
Activities related to Quality Assurance Program (17.1.2) are acceptable if:					
2A1. The scope of the QA program includes:					
a. A commitment that activities affecting structures, systems, and components important to safety will be subject to the applicable controls of the QA program.		X	X	X	
The structures, systems, components, and related consumables covered by the QA program are identified (QA list) in Section 3.2.1 of the SAR.		Not addressed--included in the equipment listings			
b. A commitment that the preoperational test program will be conducted in accordance with the QA program and a description of how the QA program will be applied.		X	X	X	
c. A commitment that the development, control, and use of computer code programs will be conducted in accordance with the QA program and a description of how the QA program will be applied.		X	X	X	

* Editorial change.

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	d. The identification of fire protection in SRP Section 9.5.1 as a system covered by the QA program or identification of the QA controls for fire protection. These controls are reviewed and accepted using the guidelines contained in BTP ASB 9.5-1 and 10 CFR Part 50 Appendix B as appropriate.		Not addressed as equipment listings include fire protection			
	e. A commitment that special equipment, environmental conditions, skills, or processes will be provided as necessary.		X	X	X	
2A2.	A brief summary of the company's corporate QA policies is given.		X	X	X	
2B1.	a. Provisions are established to assure that quality-affecting procedures required to implement the QA program are consistent with QA program commitments and corporate policies and are properly documented, controlled, and made mandatory through a policy statement or equivalent document signed by the responsible official.		X	X	X	
	b. The QA organization reviews and documents concurrence with these quality-related procedures.		X	X	X	
	c. The organizational group or individual having responsibility for the policy statement should be identified.		X	X	X	
	d. The quality affecting procedural controls of the principal contractors should be provided for the applicant's review with documented agreement of acceptance prior to initiation of activities affected by the program.		X	X	X	
2B2.	Provisions are included for notifying NRC of changes (1) for review and acceptance in the accepted description of the QA program as presented or referenced in the SAR or SSAR prior to implementation, and (2) in organizational elements within 30 days after announcement. Note - editorial changes or personnel reassignments of a non-substantive nature do not require NRC notification).		X	X	X	
2B3.	The applicant (and the principal contractors) commits to comply with the regulatory position in the appropriate issue of the Regulatory Guides listed in Subsection VI;		X	X		
	to comply with 10 CFR Part 50, 50.55a;		X			

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		to conduct activities under 10 CFR Part 50, 50.55(e) in accordance with the QA program;		X			
		and to comply with 10 CFR Part 50 Appendix A, General Design Criteria 1.		X	X	X	X
		For systems, components, and structures covered by the ASME Code Section III (Classes 1, 2 and 3), the quality assurance code requirements should be supplemented by the specific guidance addressed in the regulatory positions of the applicable Regulatory Guides. The commitment identifies the Regulatory Guides and ANSI standard by number, title, and revision or date. Any alternatives or exceptions are clearly identified and supporting information presented in the docket. QA Regulatory Guides should be addressed which have an implementation date prior to the submittal or docket date of the QA program description.		X			
		Although primary responsiblity for Regulatory Guides 1.26 and 1.29 is assigned to ASB (SRP Sections 3.2.1 and 3.2.2), their use as acceptance criteria in this SRP section is necessary to assure that adequate quality assurance requirements are specified for systems, components, and structures addressed by those guides.		Not a QA programmatic requirement--info only			
		The QA organization and the necessary technical organizations participate early in the QA program definition stage to determine and identify the extent QA controls are to be applied to specific structures, systems, and components. This effort involves applying a defined graded approach to certain structures, systems, and components in accordance with their importance to safety and affects such disciplines as design, procurement, document control, inspection tests, special processes, records, audits, and others described in 10 CFR Part 50, Appendix B.		X	X	X	X*
**	2B4.	QA procedures reflect that Regulatory Guides listed in subsection VI,		X			
		General Design Criterion 1 of Appendix A to 10 CFR Part 50,		X	X	X	X
		10 CFR Part 50, 50.55a, and each criterion of 10 CFR Part 50, Appendix B will be met by documented procedures. In addition, activities conducted under 10 CFR Part 50, 50.55(e) shall conform to the requirement of the QA program.		X			
	2B5.	A description is provided that emphasizes how the docketed QA program description, particularly the 10 CFR Part 50 regulations and Regulatory Guides listed in subsection VI, will be properly carried out.		X			

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* Delete "...The QA organization and..." for III min.

** Editorial changes.

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2C1. A description is provided of how management (above or outside the QA organization) regularly assesses the scope, status, adequacy, and compliance of the QA program to 10 CFR Part 50, Appendix B. These measures should include:		X	X	X	
a. Frequent contact with program status through reports, meetings, and/or audits.		X	X		
b. Performance of an annual assessment preplanned and documented. Corrective action is identified and tracked.		X	X		
2C2. Quality-related activities (such as design, procurement, and site investigation) initiated prior to formal NRC acceptance of the QA program are controlled under a QA program in accordance with this SRP and, accordingly, with the requirements of 10 CFR Part 50, Appendix B. Approved procedures and a sufficient number of trained personnel should be available to implement the applicable portion of the QA program prior to the initiation of the activity.		X	X	X	
2C3. A summary description is provided on how responsibilities and control of quality-related activities are transferred from the principal contractors to the applicant during the phaseout of design and construction and during preoperational testing and plant turnover.		X	X	X	
2D. Indoctrination, training, and qualification programs are established such that:		X	X	X	
a. Personnel responsible for performing quality-affecting activities are instructed as to the purpose, scope, and implementation of the quality-related manuals, instructions, and procedures.		X	X	X	
b. Personnel verifying activities affecting quality are trained and qualified in the principles, techniques, and requirements of the activity being performed.		X	X	X	
c. For formal training and qualification programs, documentation includes the objective, content of the program, attendees, and date of attendance.		X	X	X	

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	d. Proficiency tests are given to those personnel performing and verifying activities affecting quality, and acceptance criteria are developed to determine if individuals are properly trained and qualified.		X	X	X
	e. Certificate of qualifications clearly delineates (a) the specific functions personnel are qualified to perform and (b) the criteria used to qualify personnel in each function.		X	X	X
	f. Proficiency of personnel performing and verifying activities affecting quality is maintained by retraining, reexamining, and/or recertifying as determined by management or program commitment.		X	X	X
*	g. The training program provisions listed above satisfy the regulatory position in Regulatory Guide 1.58.		SRP review note		
*	The Quality Assurance Program (SRP Section 17.2.2) is acceptable if:				
*	1. The criteria in 17.1.2 are satisfied except for:		X	X	X
	a. The requirement for the principal contractors to provide a commitment to comply with the regulations and regulatory positions in the Regulatory Guides addressed in Item 2B3.		X	X	X
	2. Provisions are established for assuring the QA program for operations is implemented at least 90 days prior to fuel loading.		X	X	X
	3. Confirmation is provided to commit to continued implementation of the PSAR QA program for the remaining design and construction activities and the preoperational test program or an acceptable alternative is provided.		X	X	X
	Activities related to Design Control (17.1.3) are acceptable if:				
	3A. The scope of the design control program includes design activities associated with the preparation and review of design documents including the correct translation of applicable regulatory requirements and design bases into design, procurement and procedural documents. Included in the scope are such activities as field design engineering; physics, seismic, stress, thermal, hydraulic,		X	X	X

* Editorial changes.

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		radiation, and the SAR accident analyses; associated computer programs; compatibility of materials; accessibility for inservice inspection, maintenance, and repair; and quality standards.					
	3B.	Organizational responsibilities are described for preparing, reviewing, approving, and verifying design documents such as system descriptions, design input and criteria, design drawings, design analyses, computer programs, specifications, and procedures.		X	X	X	
	3C1.	Errors and deficiencies in approved design documents, including design methods (such as computer codes), that could adversely affect structures, systems, and components [important to safety] are documented and action is taken to assure that all errors and deficiencies are corrected.		X	X	X	
	3C2.	Deviations from specified quality standards are identified and procedures are established to ensure their control.		X	X	X	
	3D.	Internal and external design interface controls, procedures, and lines of communication among participating design organizations and across technical disciplines are established and described in the review, approval, release, distribution, and revision of documents involving design interfaces to assure structures, systems, and components are compatible geometrically, functionally, and with processes and environment.		X	X	X	
*	3E1.	Procedures are established requiring a documented check to verify the dimensional accuracy and completeness of design drawing and specifications.		X	X	X	
*	3E2.	Procedures are established requiring that design drawings and specifications be reviewed by the QA organization to assure that the documents are prepared, reviewed, and approved in accordance with company procedures and that the documents contain the necessary quality assurance requirements such as inspection and test requirements, acceptance requirements, and the extent of documenting inspection and test results.		X	X	X	

* Editorial changes.

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*	3E3.	Guidelines or criteria are established for determining the method of design verification (design review, alternate calculations, or test).		X	X	X	
*	3E4.	Procedures are established for design verification activities which assure the following:		X	X	X	
		a. The verifier is qualified and is not directly responsible for the design (i.e., neither the performer or his immediate supervisor). In exceptional circumstances, the designer's immediate supervisor can perform the verification provided:		X	X		
		(1) The supervisor is the only technically qualified individual.		X	X		
		(2) The need is individually documented and approved in advance by the supervisor's management.		X	X		
		(3) QA audits cover frequency and effectiveness of use of supervisors as design verifiers to guard against abuse.		X	X		
		b. Design verification, if other than by qualification testing of a prototype or lead production unit, is completed prior to release for procurement, manufacturing, construction or to another organization for use in other design activities. In those cases where this timing cannot be met, the design verification may be deferred, providing that the justification for this action is documented and the unverified portion of the design output document and all design output documents, based on the unverified data, are appropriately identified and controlled. Construction site activities associated with a design or design change should not proceed without verification past the point where the installation would become irreversible (i.e., require extensive demolition and rework). In all cases, the design verification should be complete prior to fuel load for a plant under construction, or in the case of an operating plant, prior to relying upon the component, system, or structure to perform its function.		X	X	X	

* Editorial changes.

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	c. Procedural control is established for design documents that reflect the commitments of the SAR; this control differentiates between documents that receive formal design verification by interdisciplinary or multi-organizational teams and those which can be reviewed by a single individual (a signature and date is acceptable documentation for personnel certification). Design documents subject to procedural control include, but are not limited to, specifications, calculations, computer programs, system descriptions, SAR when used as a design document, and drawings including flow diagrams, piping and instrument diagrams, control logic diagrams, electrical single line diagrams, structural systems for major facilities, site arrangements, and equipment locations. Specialized reviews should be used when uniqueness or special design considerations warrant.		X	X	X	
	d. The responsibilities of the verifier, the areas and features to be verified, the pertinent considerations to be verified, and the extent of documentation are identified in procedures.		X	X	X	
*	3E5. (was 3E3) The following provisions are included if the verification method is only by test:		X	X	X	
	a. Procedures provide criteria that specify when verification should be by test.		X	X	X	
	b. Prototype, component or feature testing is performed as early as possible prior to installation of plant equipment, or prior to the point when the installation would become irreversible.		X	X	X	
	c. Verification by test is performed under conditions that simulate the most adverse design conditions as determined by analysis.		X	X	X	
*	3E6. (was 3E4) Procedures are established to assure that verified computer codes are certified for use and that their use is specified.		X	X	X	
	3F1. Design and specification changes, including fields changes, are subject to the same design controls that were applicable to the original design.		X	X	X	

* Editorial changes to SRP--there were two paragraphs 3E3 and 3E4.

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*	3F2.	The design control provisions satisfy the criteria of Regulatory Guide 1.64.		SRP review note			
*		5.2.7.2 Modifications					
		Design activities associated with modifications of structures, systems, and components important to safety shall be accomplished in accordance with NQA-1. In addition, written safety evaluations shall be prepared in accordance with 10 CFR 50.59, and these safety evaluations shall be reviewed as discussed in Section 4.3.4.	ANS 3.2	X	X	X	
		4.3.4 Subjects Requiring Independent Review					
		The following subjects shall be reviewed by the independent review body:	ANS 3.2	X	X	X	
*		(1) Written safety evaluations of changes in the facility as described in the Safety Analysis Report, changes in procedures as described in the Safety Analysis Report and tests or experiments not described in the Safety Analysis Report which are completed without prior NRC approval under the provisions of 10 CFR 50.59(a)(1). This review is to verify that such changes, tests or experiments did not involve a change in the technical specifications or an unreviewed safety question as defined in 10 CFR 50.59(a)(2).		X	X	X	
*		(2) Proposed changes in procedures, proposed changes in the facility, or proposed tests or experiments, any of which involves a change in the technical specifications or an unreviewed safety question as defined in 10 CFR 50.59(c). Matters of this kind shall be referred to the independent review body by the onsite operating organization (see 4.4) following its review, or by other functional organizational units within the owner organization, prior to implementation.		X	X	X	
		(3) Changes in the technical specifications or license amendments relating to nuclear safety prior to submittal to the Commission for approval and prior to implementation.		X	X	X	

* Editorial changes.

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(4) Violations, deviations and reportable events which require reporting to the NRC in writing.		X	X	X	
Review of events covered under this subsection shall include the results of any investigations made and the recommendations resulting from such investigations to prevent or reduce the probability of recurrence of the event.		X	X	X	
(5) Any other matter involving safe operation of the nuclear power plant which an independent reviewer deems appropriate for consideration, or which is referred to the independent reviewers by the onsite operating organization or by other functional organizational units within the owner organization.		X	X	X	
Activities related to Design Control (SRP Section 17.2.3) are acceptable if:					
* 1. The criteria in 17.1.3 are satisfied.		X	X	X	
2. Measures are provided to assure that responsible plant personnel are made aware of design changes/modifications which may affect the performance of their duties.		X	X	X	
Activities related to Procurement Document Control (17.1.4) are acceptable if:					
4A1. Procedures are established for the review of procurement documents to determine that quality requirements are correctly stated, inspectable, and controllable; there are adequate acceptance and rejection criteria; and procurement documents have been prepared, reviewed, and approved in accordance with QA program requirements. To the extent necessary, procurement documents should require contractors and subcontractors to provide an acceptable quality assurance program. The review and documented concurrence of the adequacy of quality requirements stated in procurement documents is performed by independent personnel trained and qualified in QA practices and concepts.		X	X	X	
5.2.13.1 Where changes are made to procurement documents, they shall be subject to the same degree of control as was used in the preparation of the original documents.	ANS 3.2	X	X	X	

* Editorial changes.

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	4A2.	Procedures are established to assure that procurement documents identify applicable regulatory, technical, administrative, and reporting requirements; drawings; specifications; codes and industrial standards; test and inspection requirements; and special process instructions that must be complied with by suppliers.		X	X	X	
		5.2.13.1					
		(3) Source Inspection and Audit. Provisions for access to the supplier's facilities and records for source inspection and audit when the need for such inspection or audit has been determined.	ANS 3.2	X	X	X	
		(4) Documentation Requirements. Records to be prepared, maintained, submitted or made available for review or approval, such as drawings, specifications, procedures, procurement documents, inspection and test records, personnel and procedure qualifications, and material, chemical, and physical test results. Instruction on record retention and disposition shall be provided.		X	X	X	
		(5) Lower Tier Procurement. Provisions for extending applicable requirements to lower tier subcontractors and suppliers, including purchaser's access to facilities and records.		X	X	X	
*	4B1.	Organizational responsibilities are established for (1) procurement planning; (2) the preparation, review, approval, and control of procurement documents; (3) supplier selection; (4) bid evaluations; and (5) review and concurrence of supplier QA programs prior to initiation of activities affected by the program. The involvement of the QA organization is described.		X	X	X	
*	4B2.	The procurement document control provisions listed above satisfy the regulatory position in Regulatory Guide 1.123.		SRP review note			
Activities related to Procurement Document Control (17.2.4) are acceptable if:							
*	1.	The criteria in 17.1.4 are satisfied.		X	X	X	

* Editorial changes.

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Activities related to Instructions, Procedures, and Drawings (17.1.5) are acceptable if:							
*	5A.	Organizational responsibilities are established for assuring that activities affecting quality are (1) prescribed by documented instructions, procedures, and drawings and (2) accomplished through implementation of these documents.		X	X	X	
*	5.3	The administrative controls and quality assurance program shall be carried out throughout plant life in accordance with written procedures. Activities affecting safety at nuclear power plants shall be established by written procedures at a type appropriate to the circumstances and shall be accomplished in accordance with these instructions and procedures.	ANS 3.2	X	X	X	
	5B.	Procedures are established to assure that instructions, procedures, and drawings include quantitative (such as dimensions, tolerances, and operating limits) and qualitative (such as workmanship samples) acceptance criteria for determining that important activities have been satisfactorily accomplished.		X	X	X	X
		3.3 Procedures and Instructions. Procedures shall be prepared and documented as determined by the planning in Paragraph 3.2 of ANSI 45.2.4/IEEE 336. These procedures and instructions may be in the form of manuals or drawings. These documents shall be kept current by controlled revisions to assure that installation, inspections and tests are performed in accordance with the latest approved design and manufacturers' instructions. The documents shall include or reference:	ANSI N45.2.4 (IEEE 336)	X	X	X	
		(1) Installation specifications					
		(2) Inspection and test objectives					
		(3) Precautions to avoid equipment or system damage during installation, testing or inspection					
		(4) Inspection and test equipment required					

* Editorial changes.

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(5) Sequence of tests					
(6) Sequential actions to be followed					
(7) Frequency of inspection or test					
(8) Prerequisites					
(9) Approval requirements					
(10) Suitable-form for reporting data					
(11) Provision for identification of test equipment and date of next required recalibration (where required) for interpretation of test results					
(12) Inspection and test acceptance limits					
(13) References					
(14) Other pertinent items					
The above items shall be used as a check list and shall be marked as required or not appropriate when preparing procedures or instructions.					
Activities related to Instructions, Procedures, and Drawings (17.2.5) are acceptable if:					
* 1. The criteria in 17.1.5 are satisfied.		X	X	X	
Activities related to Document Control (17.1.6) are acceptable if:					
* 6A1. The scope of the document control program is established, and the types of controlled documents are identified. As a minimum, controlled documents include:		X	X	X	

* Editorial changes.

		GUIDELINE	Ref.	I Max II Min	I Min II Max III Min	II Min III Max
		a. Design documents (e.g., calculations, drawings, specifications, analyses) including documents related to computer codes.				
		b. Procurement documents.				
		c. Instructions and procedures for such activities as fabrication, construction, modification, installation, test, and inspection.				
		d. As-built documents.				
		e. Quality assurance and quality control manuals and quality-affecting procedures.				
		f. Topical reports.				
		g. SAR.				
		h. Nonconformance reports.				
*	6A2.	Procedures for the review, approval, and issuance of documents and changes thereto are established to assure technical adequacy and inclusion of appropriate quality requirements prior to implementation.		X	X	X
		The QA organization, or an individual other than the person who generated the document but qualified in quality assurance, reviews and concurs with these documents with regard to QA-related aspects.		X	X	
	6A3.	Procedures are established to assure that changes to documents are reviewed and approved by the same organization that performed the initial review and approval or by other qualified responsible organizations delegated by the applicant.		X	X	X
		7.2 The reviewing organizations shall have access to pertinent background data information upon which to base their approval. However, minor changes to design documents, such as inconsequential editorial corrections or changes to commercial terms and conditions, may not require that the revised document receive the same review and approval as the original documents. To avoid a possible omission of a required review, the type of minor changes which do not require such a review	ANSI N45.2.11	X	X	X

* Editorial changes.

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		and approval and the persons who can authorize such a decision shall be clearly delineated in the document control procedures.					
	6A4.	Procedures are established to assure that documents are available at the location where the activity will be performed prior to commencing the work.		X	X	X	
*	6B1.	Procedures are established to assure that obsolete or superseded documents are removed and replaced by applicable revisions in work areas in a timely manner.		X	X	X	
	6B2.	A master list or equivalent document control system is established to identify the current revision of instructions, procedures, specifications, drawings, and procurement documents. When such a list is used, it should be updated and distributed to predetermined responsible personnel.		X	X	X	
*	6C1.	Procedures are established to provide for the preparation of as-built drawings and related documentation in a timely manner to accurately reflect the actual plant design.		X	X	X	
Activities related to Document Control (17.2.6) are acceptable if:							
*	1.	The criteria in 17.1.6 are satisfied.		X	X	X	
	2.	Maintenance, modification and inspection procedures are reviewed by qualified personnel knowledgeable in QA disciplines (normally the QA organization) to determine:		X	X	X	
		a. The need for inspection, identification of inspection personnel, and documentation of inspection results.		X	X	X	
		b. That the necessary inspection requirements, methods, and acceptance criteria have been identified.		X	X	X	

* Editorial changes.

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
	Activities related to Control of Purchased Material, Equipment, and Services (17.1.7) are acceptable if:					
**	7A1. Organizational responsibilities are established for the control of purchased material, equipment, and services including interfaces between design, procurement, and QA organizations.		X	X	X	
	7A2. Verification of suppliers' activities during fabrication, inspection, testing, and shipment of materials, equipment, and components is planned and performed with QA organization participation in accordance with written procedures to assure conformance to the purchase order requirements. These procedures, as applicable to the method of procurement, provide for:		X	X	X*	
	a. Specifying the characteristics or processes to be witnessed, inspected or verified, and accepted; the method of surveillance and the extent of documentation required; and those responsible for implementing these procedures.		X	X	X	
	b. Audits, surveillance, or inspections which assure that the supplier complies with the quality requirements.		X	X	X	
	7A3. Selection of suppliers is documented and filed. If an LCVIP letter of confirmation or the "CASE" Register is used to establish the qualifications of the supplier, the documentation should identify the "letter" or "audit" used.		X	X		
	5.1 A documented system for reviewing and evaluating the bids and awarding of contracts shall be established by the Purchaser.	ANSI N45.2.13	X	X	X	
	5.2 The Purchaser shall establish measures to assure that the bid conforms to the procurement document requirements.	ANSI N45.2.13	X	X	X	
	The bid evaluation shall be made by individuals or organizations designated to evaluate the following subjects, as applicable to the type of procurement:	ANSI N45.2.13	X	X	X	

* Delete "with QA Organization participation" for II min III max.

** Editorial changes.

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
	a. Technical considerations.					
	b. Quality assurance requirements.					
	c. Research and development effort.					
	d. Suppliers' personnel.					
	e. Suppliers' production capability.					
	f. Suppliers' past performance.					
	g. Alternates.					
	h. Exceptions.					
	Other considerations such as warranties, schedule, price, price adjustments, commercial terms and conditions, although not quality related, are recognized as factors affecting bid evaluation.					
7A4.	Procurement of spare or replacement parts for structures, systems, and components important to safety is subject to present QA program controls, to codes and standards, and to technical requirements equal to or better than the original technical requirements, or as required to preclude repetition of defects.		X	X	X	
	7.3 Implementation					
	7.3.1 Source Verification Activities. When planning requires Purchaser source surveillance, it shall be implemented to monitor, witness or observe activities. Similarly, source inspection shall be implemented in accordance with plans to perform inspections, examinations, or tests at predetermined points. Source surveillance and inspection may require the assignment of personnel to a Supplier's facilities.	ANSI N45.2.13	X	X	X	
	When conformance to procurement requirements is verified by audit, such audits shall be conducted in accordance with established methods.		X	X	X	

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
7B1. Receiving inspection is performed to assure:					
a. The material, component, or equipment is properly identified and corresponds to the identification on the purchase document and the receiving documentation.		X	X	X	
7.3.2 Receiving Inspection: When planning requires Purchaser receiving inspection, it shall be implemented and coordinated with source verifications performed.	ANSI N45.2.13	X	X	X	
b. Material, components, equipment, and acceptance records satisfy the inspection instructions prior to installation or use.		X	X	X	
c. Specified inspection, test and other records (such as certificates of conformance attesting that the material, components, and equipment conform to specified requirements) are available at the nuclear power plant prior to installation or use.		X	X	X	
7.6 Measures shall be established to provide for the reporting of activities performed to verify conformance to requirements of procurement documents. These measures shall include reporting of source surveillances and inspections, audits, receiving inspections, nonconformances, dispositions, waivers, and corrective actions.	ANSI N45.2.13	X	X		
In addition, the Purchaser shall assure that these reports are evaluated to determine the Supplier's quality assurance program effectiveness.		X	X		
10.2 Where not precluded by other requirements, documentary evidence may take the form of written certificates of conformance which identify the requirements met by the items. Where certificates of conformance are used, the following minimum criteria shall be met:	ANSI N45.2.13 and R.G. 1.123	X	X		
a. The certificate shall identify the purchased material or equipment, such as by the purchase order number.		X	X		
b. The certificate shall identify the specific procurement requirements met by the purchased material or equipment, such as codes, standards, and other specifications. This may be accomplished by including a list of the specific requirements or by providing, onsite, a copy of the purchase order and the procurement specifications or drawings, together with a suitable certificate. The procurement requirements identified should include any approved changes, waivers, or deviations applicable to the subject material or equipment.		X	X		

		GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
		c. The certificate shall identify any procurement requirements that have not been met, together with an explanation and the means for resolving the nonconformances.		X	X		
		d. The certificate shall be attested to by a person who is responsible for this quality assurance function and whose function and position are described in the Purchaser's or Supplier's quality assurance program.		X	X		
		e. The certification system, including the procedures to be followed in filling out a certificate and the administrative procedures for review and approval of the certificates, shall be described in the Purchaser's or Supplier's quality assurance program.		X	X		
*	7B2.	Items accepted and released are identified as to their inspection status prior to forwarding them to a controlled storage area.		X	X		
		Items shall be identified prior to releasing them for installation or further work.		X	X	X	
	7B3.	The supplier furnishes the following records to the purchaser:		X	X	X	
		a. Documentation that identifies the purchased item and the specific procurement requirements (e.g., codes, standards, and specifications) met by the item.		X	X	X	
		b. Documentation identifying any procurement requirements that have not been met.		X	X	X	
		9.2 In the case of significant conditions adverse to quality which may arise during the procurement process, the Purchaser's measures shall describe the method used to:	ANSI N45.2.13	X	X		
		a. Identify and document deviations and nonconformances.		X	X		
		b. Review and evaluate the conditions to determine the cause, extent, and measures needed to correct and prevent recurrence.		X	X		
		c. Report the conditions and corrective action to the appropriate levels of management.		X	X		
		d. Assure corrective action is implemented and maintained as necessary.		X	X		
	7B3 c.	A description of those nonconformances from the procurement requirements dispositioned "accept as is" or "repair."		X	X	X	

* Editorial rewrite.

		GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
	9.3	The Purchaser's corrective action measures shall include verification of implementation of Supplier corrective action system. These measures shall determine that conditions adverse to quality such as deficiencies, deviations, defective items and nonconformances have had corrective action implemented and maintained as necessary.	ANSI N45.2.13	X	X		
	C.3	Section 9.3 of ANSI N45.2.13-1976 states, "The Purchaser's corrective action measures shall include verification of implementation of Supplier's corrective action system." The Purchaser should verify the implementation of the Supplier's corrective action system when such a system is required, but this verification need not be included as part of the Purchaser's corrective action measures. While Section 9.0 of ANSI N45.2.13-1976 addresses elements of the Purchaser's corrective action system, these same elements are applicable to the Supplier's corrective action system when one is required.	R.G.1.123	X	X		
*	7B3.	The review and acceptance of these documents should be described in the purchaser's QA program.		X	X	X	
*	7B4.	For commercial "off-the-shelf" items where specific quality assurance controls appropriate for nuclear applications cannot be imposed in a practicable manner, special quality verification requirements shall be established to provide the necessary assurance of an acceptable item by the purchaser.		X	X	X	
	7B5.	Suppliers' certificates of conformance are periodically evaluated by audits, independent inspections, or tests to assure they are valid and the results documented.		X	X	X	
*	7B6.	The control of procurement provisions listed above satisfies the regulatory position in Regulatory Guide 1.38 and Regulatory Guide 1.123.		SRP review note			
Activities related to Control of Purchased Material, Equipment and Services (17.2.7) are acceptable if:							
*		The criteria in 17.1.7 are satisfied.		X	X	X	

* Editorial changes.

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
	Activities related to Identification and Control of Materials, Parts, and Components (17.1.8) are acceptable if:					
*	8A. Controls are established to identify and control materials (including consumables), parts, and components including partially fabricated subassemblies. Organizational responsibilities shall be identified.		X	X	X	
	8B1. Procedures are established which assure that identification is maintained either on the item or on records traceable to the item to preclude use of incorrect or defective items.		X	X	X	
	5.2.13.3 These procedures shall be implemented to provide assurance that only correct and accepted items are used and installed and relate an item of production (batch, lot, component, part) at any stage, from initial receipt through fabrication, installation, repair or modification, to an applicable drawing, specification, or other pertinent technical document. Physical identification shall be used to the maximum extent possible. Where physical identification is either impractical or insufficient, physical separation, procedural control or other appropriate means shall be employed.	ANS 3.2	X	X	X	
	8B2. Identification of materials and parts important to the function of structures, systems, and components important to safety can be traced to the appropriate documentation such as drawings, specifications, purchase orders, manufacturing and inspection documents, deviation reports, and physical and chemical mill test reports.		X	X	X	
	5.2.13.3 Where identification marking is employed, the marking shall be clear, unambiguous and indelible, and shall be applied in such a manner as not to affect the function of the item. Markings shall be transferred to each part of an item when subdivided and shall not be obliterated or hidden by surface treatment or coatings unless other means of identification are substituted.	ANS 3.2	X	X	X	
	5.2.13.3 When laws, standards or specifications require traceability of materials, parts or components to specific inspection or test records, the program shall be designed to provide such traceability.	ANS 3.2	X	X	X	

* Editorial changes.

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
9. Measures shall be established and documented for the identification and control of materials, parts, and components including partially fabricated subassemblies. These measures shall provide for assuring that only correct and accepted items are used and installed, and relating an item of production (batch, lot, component, part) at any stage, from initial receipt through fabrication, installation, repair or modification, to an applicable drawing, specification or other pertinent technical document. Physical identification shall be used to the maximum extent possible. Where physical identification is either impractical or insufficient, physical separation, procedural control, or other appropriate means shall be employed. Identification may be either on the item or on records traceable to the item, as appropriate.	ANSI N45.2	X	X		
8B3. Correct identification of material, parts, and components is verified and documented prior to release for fabrication, assembling, shipping, and installation.		X	X	X	
Activities related to Identification and Control of Materials, Parts, and Components (17.2.8) are acceptable if:					
* The criteria in 17.1.8 are satisfied.		X	X	X	
Activities related to Control of Special Processes (17.1.9) are acceptable if:					
* 9A1. The criteria for determining those processes that are controlled as special processes are established. As complete a listing as possible of special processes, which are generally those processes where direct inspection is impossible or disadvantageous, should be provided. Some examples are welding, heat treating, NDT, and chemical cleaning.		X	X	X	
* 9A2. Organizational responsibilities including those for the QA organization are established for qualification of special processes, equipment, and personnel.		X	X	X**	
9B1. Procedures, equipment, and personnel associated with special processes are qualified and are in conformance with applicable		X	X	X***	

* Editorial changes.

** Delete "... including those for the QA organization..." for II min./III max.

*** Delete last sentence for II min./III max.

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
codes, standards, QA procedures, and specifications. The QA organization is involved in the qualification activities to assure they are satisfactorily performed.					
9B2. Procedures are established for recording evidence of acceptable accomplishment of special processes using qualified procedures, equipment, and personnel.		X	X	X	
10. For special processes not covered by existing codes or standards, or where item quality requirements exceed the requirements of established codes or standards, the necessary qualifications of personnel, procedures, or equipment shall be defined.	ANSI N45.2	X	X		
9B3. Qualification records of procedures, equipment, and personnel associated with special processes are established, filed, and kept current.		X	X	X	
2.4 Personnel performing tests and inspections required by this standard shall be qualified in accordance with ANSI N45.2.6. Personnel performing field inspection and testing activities shall be certified for Level I capability. On-site supervisors of level I personnel shall be certified for Level II capability and shall be responsible for the proper performance of on-site inspections and tests. Persons charged with engineering managerial responsiblity of the inspection and testing organization at the site in either a resident or nonresident capacity shall be certified for Level III capability.	ANSI N45.2.5	X	X		
Personnel performing nondestructive examinations shall be qualified to appropriate levels of capability as specified in American Society for Nondestructive Testing Recommended Practice SNT-TC-1A.		X	X	X	
Activities related to the Control of Special Processes (17.2.9) are acceptable if:					
* The criteria in 17.1.9 are satisfied.		X	X	X	
Activities related to Inspection (17.1.10) are acceptable if:					
* 10A. The scope of the inspection program indicates an effective inspection program has been established.		X	X	X	X

* Editorial changes.

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Program procedures provide criteria for determining the accuracy requirements of inspection equipment and criteria for determining when inspections are required or define how and when inspections are performed.		X	X	X	
The QA organization participates in the above functions.		X	X		
11. Examinations, measurements, or tests of items processed shall be performed for each work operation where necessary to assure quality.	ANSI N45.2	X	X	X	
Where a sample is used to verify acceptability of a group of items, the sampling procedure shall be based on recognized standard practices and shall provide adequate justification for the sample size and selection process.	ANSI N45.2	X	X	X	
If inspection of processed items is impossible or disadvantageous, indirect control by monitoring of processing methods, equipment, and personnel shall be provided.	ANSI N45.2	X	X	X	
Both inspection and process monitoring shall be provided when control is inadequate without both.	ANSI N45.2	X	X	X	
If mandatory inspection hold points, which require witnessing or inspecting by the purchaser's designated representative and beyond which work shall not proceed without the consent of the purchaser's designated representative, are required, the specific hold points shall be indicated in appropriate documents.	ANSI N45.2	X	X	X	
Such consent shall be documented prior to the continuation of work beyond the designated hold point.	ANSI N45.2	X	X	X	
A program for required inservice inspection of completed systems, structures, and components shall be planned and executed by or for the organization responsible for operation of the nuclear facility.	ANSI N45.2	X	X	X	
10B1. Organizational responsibilities for inspection are described. Individuals performing inspections are other than those who performed or directly supervised the activity being inspected and do not report directly to the immediate supervisors who are		X	X	X*	X*

* Delete "by the QA organization" for II min./III max. and III min.

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
responsible for the activity being inspected. If the individuals performing inspections are not part of the QA organization, the inspection procedures, personnel qualification criteria, and independence from undue pressure such as cost and schedule should be reviewed and found acceptable by the QA organization prior to the initiation of the activity.					
2.1* Plans shall be developed for staffing, indoctrination, and training of an adequate number of personnel to perform the required inspections, examinations, and tests and shall reflect the schedule of project activity so as to allow adequate time for assignment or selection and training of the required personnel.	ANSI N45.2.6	X	X		
2.1.1 Indoctrination. Provisions shall be made for the indoctrination of personnel as to the technical objectives of the project; the codes and standard that are to be used; and the quality assurance elements that are to be employed.	ANSI N45.2.6	X	X		
1082. A qualification program for inspectors (including NDT personnel) is established and documented, and the qualification and certifications of inspectors are kept current.		X	X	X	X
3.1 The requirements contained within this Section define the minimum capabilities that qualify personnel to perform inspections, examinations, and tests which are within the scope of this Standard.	ANSI N45.2.6	X	X		
3.2 There are three levels of qualification. The requirements for each level are not limiting with regard to organizational position of professional status, but rather, are limiting with regard to functional activities which are within the scope of this Standard.	ANSI N45.2.6	X	X		
3.3 A Level I person shall be capable of performing the inspections, examinations, and tests that are required to be performed in accordance with documented procedures and/or industry practices. The individual shall be familiar with the tools and equipment to be employed and shall have demonstrated	ANSI N45.2.6	X	X		

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proficiency in their use. The individual shall also be capable of determining that the calibration status of inspection and measuring equipment is current, that the measuring and test equipment is in proper condition for use, and that the inspection, examination, and test procedures are approved.					
3.4 A Level II person shall have all of the capabilities of a Level I person for the inspection, examination or test category or class in question. Additionally, a Level II person shall have demonstrated capabilities in planning inspections, examinations, and tests; in setting up tests including preparation and set-up of related equipment, as appropriate; in supervising or maintaining surveillance over the inspections, examinations, and tests; in supervising and certifying lower level personnel; in reporting inspection, examination, and testing results; and in evaluating the validity and acceptability of inspection, examination, and test results.	ANSI N45.2.6	X	X		
A Level III person shall have all of the capabilities of a Level II person for the inspection, examination or test category or class in question. In addition, the individual shall also be capable of evaluating the adequacy of specific programs used to train and test inspection, examination, and test personnel whose qualifications are covered by this Standard.			X	X	
3.5 The following is the recommended personnel education and experience for each level. These education and experience recommendations should be treated to recognize that other factors may provide reasonable assurance that a person can competently perform a particular task. Other factors which may demonstrate capability in a given job are previous performance or satisfactory completion of capability testing.	ANSI N45.2.6	X	X		
3.5.1 Level I					
(1) Two years of related experience in equivalent inspection, examination, or testing activities, or	ANSI N45.2.6	X	X		
(2) High school graduation and six months of related experience in equivalent inspection, examination, or testing activities, or	ANSI N45.2.6	X	X		

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
(3)	Completion of college level work leading to an Associate Degree in a related discipline plus three months of related experience in equivalent inspection, examination, or testing activities.	ANSI N45.2.6	X	X		
3.5.2	Level II					
(1)	One year of satisfactory performance as Level I in the corresponding inspection, examination or test category or class, or	ANSI N45.2.6	X	X		
(2)	High school graduation plus three years of related experience in equivalent inspection, examination, or testing activities, or	ANSI N45.2.6	X	X		
(3)	Completion of college level work leading to an Associate Degree in a related discipline plus one year related experience in equivalent inspection, examination, or testing activities, or	ANSI N45.2.6	X	X		
(4)	Four-year college graduation plus six months of related experience in equivalent inspection, examination, or testing activities.	ANSI N45.2.6	X	X		
3.5.3	Level III					
(1)	Six years of satisfactory performance as a Level II in the corresponding inspection, examination or test category or class, or	ANSI N45.2.6	X	X		
(2)	High school graduation plus ten years of related experience in equivalent inspection, examination, or testing activities; or high school graduation plus eight years experience in equivalent inspection, examination, or testing activities, with at least two years as Level II, and with at least two years associated with nuclear facilities--or if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility, or	ANSI N45.2.6	X	X		

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
	(3) Completion of college level work leading to an Associate Degree and seven years of related experience in equivalent inspection, examination, or testing activities, with at least two years of this experience associated with nuclear facilities--or if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility, or	ANSI N45.2.6		X	X	
	(4) Four-year college graduation plus five years of related experience in equivalent inspection, examination, or testing activities, with at least two years of this experience associated with nuclear facilities--or if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility.	ANSI N45.2.6		X	X	
2.1.2	Training. The need for formal training programs shall be determined and such training activities shall be conducted as required toqualify personnel who perform inspections, examinations, and tests. On-the-job participation shall also be included in the program, with emphasis on first-hand experience gained through actual performance of inspections, examinations, and tests. Records of training, when used as the basis for certification, shall be maintained.	ANSI N45.2.6		X	X	
2.2	Determination of Initial Capability					
	The capabilities of a candidate for certification shall be initially determined by a suitable evaluation of the candidate's education, experience, training, test results, or capability demonstration.	ANSI N45.2.6		X	X	
2.3	Evaluation of Performance					
	The job performance of inspection, examination, and testing personnel shall be reevaluated at periodic intervals not to exceed three years. Reevaluation shall be by evidence of continued satisfactory performance or redetermination of capability in accordance with Subsection 2.2. If, during this evaluation or at any other time, it is determined by the responsible organization that the capabilities of an individual	ANSI N45.2.6		X	X	

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
are not in accordance with the qualifications specified for the job, that person shall be removed from that activity until such time as the required capability has been demonstrated.					
Any person who has not performed inspection, examination, or testing activities in his qualified area for a period of one year shall be reevaluated by a redetermination of required capability with Subsection 2.2.	ANSI N45.2.6	X	X		
2.4 Written Certification of Qualification	ANSI N45.2.6				
The qualification of personnel shall be certified in writing in an appropriate form including the following information:		X	X		
(1) employer's name					
(2) identification of person being certified					
(3) level of capability					
(4) activities certified to perform					
(5) basis used for certification, including:					
(a) records of education, experience and training					
(b) test results, where applicable					
(c) results of capability demonstration					
(6) results of periodic evaluations					
(7) results of physical examinations when required					
(8) signature of employer's designated representative					
(9) date of certification and date of certification expiration					

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
2.5 Physical					
The responsible organization shall identify any special physical characteristics needed in the performance of each activity. Personnel requiring these characteristics shall have them verified by examination not to exceed one year.	ANSI N45.2.6	X	X		
4. PERFORMANCE					
Personnel who are assigned the responsibility and authority to perform functions covered by this Standard shall have, as a minimum, the level of capability shown in Table 1. When a single inspection or test requires implementation by a team or group, personnel not meeting the requirements of this Standard may be used in data-taking assignments or in plant or equipment operation provided they are supervised or overseen by a qualified individual participating in the inspection, examination, or test.	ANSI N45.2.6	X	X		
10C1. Inspection procedures, instructions, or checklists provide for the following:		X	X	X	X
a. Identification of characteristics and activities to be inspected.		X	X	X	X
b. A description of the method of inspection.		X	X	X	
c. Identification of the individuals or groups responsible for performing the inspection operation in accordance with the provisions of item 10B1.		X	X	X	
d. Acceptance and rejection criteria.		X	X	X	X
e. Identification of required procedures, drawings and specifications and revisions.		X	X	X	X
f. Recording inspector or data recorder and the results of the inspection operation.		X	X	X	X
g. Specifying necessary measuring and test equipment including accuracy requirements.		X	X	X	

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
TABLE 1. MINIMUM LEVELS OF CAPABILITY FOR PROJECT FUNCTIONS	ANSI N45.2.6	X	X		

Project Function	L-I	L-II	L-III
Recording inspection, examination, and testing data*	X	X	X
Implementing inspection, examination, and testing procedures	X	X	X
Planning inspection, evaluations, and tests; setting up tests including preparation and set-up of related equipment		X	X
Evaluating the validity and acceptability of inspection, examination, and testing results		X	X
Reporting inspection, examination, and testing results		X	X
Supervising equivalent or lower level personnel		X	X
Qualifying lower level personnel		X	X
Evaluating the adequacy of specific programs used to train and test inspection, examination and testing personnel			X
Qualifying same level personnel			X

*Except as exempted by Section 4 of this Standard.

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
*	10C2. Procedures are established to identify, in pertinent documents, mandatory inspection hold points beyond which work may not proceed until inspected by a designated inspector.		X	X	X	X
	10C3. Inspection results are documented, evaluated and their acceptability determined by a responsible individual or group.		X	X	X	X
	5.2.17 The owner organization shall evaluate inspection results along with test results (see Section 5.2.19) to determine whether the individual inspection and test programs demonstrate that the plant can be operated safely and as designed. Records shall be kept in sufficient detail to permit adequate confirmation of the inspection program. The person recording the data as well as the person approving the inspection results shall be identified. Deviations, their cause, and any corrective action completed or planned as a result of the deviations shall be documented. Inspection records shall be identified as such and shall be retrievable.	ANS 3.2	X	X	X	
Activities related to <u>inspection</u> (17.2.10) are acceptable if:						
*	1. The criteria in 17.1.10 are satisfied.		X	X	X	X
	2. When inspections associated with normal operations of the plant (such as routine maintenance, surveillance, and tests) are performed by individuals other than those who performed or directly supervised the work, but are within the same group, the following controls are met:		X	X	X	
	a. The quality of the work can be demonstrated through a functional test when the activity involves breaching a pressure retaining item.		X	X	X	
	b. The qualification criteria for inspection personnel are reviewed and found acceptable by the QA organization prior to initiating the inspection.		X	X	X	

* Editorial changes.

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
Activities related to Test Control (17.1.11) are acceptable if:						
*	11A1. The scope of the test control program indicates an effective test program has been established for tests including proof tests prior to installation and preoperational tests. Program procedures provide criteria for determining the accuracy requirements of test equipment and criteria for determining when a test is required or how and when testing activities are performed.		X	X	X	X
	5.2.19 A test program shall be established to assure that testing required to demonstrate that the item will perform satisfactorily in service is identified and documented, and that the testing is performed in accordance with written test procedures which incorporate or reference the requirements and acceptance limits contained in applicable design documents. The test program shall cover all required tests including:	ANS 3.2	X	X	X	
	(1) Tests during the preoperational period to demonstrate that performance of plant systems is in accordance with design intent and that the coordinated operation of the plant as a whole is satisfactory, to the extent feasible.	ANS 3.2	X	X	X	
	(2) Tests during the initial operation phase to demonstrate the performance of systems and components that could not be tested prior to operation and to confirm those physical parameters, hydraulic or mechanical characteristics that need to be known, but which could not be predicted with the required accuracy, and to confirm that plant behavior conforms to design criteria. The initial start-up test program shall be planned to permit safe fuel loading and start-up; to increase power in safe increments; and to perform major testing at specified power plateaus. If tests require the variation of operating parameters outside of their normal range, the limits within which such variation is permitted shall be prescribed. Prerequisites and record keeping shall be given attention and the scope of the testing shall demonstrate insofar as practicable that the plant is capable of withstanding the design transients and accidents. The suitability of plant operating procedures shall be checked to the maximum extent possible during the preoperational and initial start-up test programs.	ANS 3.2	X	X	X	

* Editorial changes.

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
(3) Surveillance tests during the operational phase to provide assurance that failures or substandard performance do not remain undetected and that the required reliability of systems important to safety is maintained.	ANS 3.2	X	X	X	
(4) Tests during design, fabrication and construction activities associated with plant maintenance and modifications during the operational phase and the demonstration of satisfactory performance following plant maintenance and modifications or procedural changes.	ANS 3.2	X	X	X	
11B1. Test procedures or instructions provide as required for the following:					
a. The requirements and acceptance limits contained in applicable design and procurement documents.		X	X	X	X
b. Instructions for performing the test.					
c. Test prerequisites such as calibrated instrumentation, adequate test equipment and instrumentation including their accuracy requirements, completeness of item to be tested, suitable and controlled environmental conditions, and provisions for data collection and storage.		X	X	X	X
d. Mandatory inspection hold points for witness by owner, contractor, or inspector (as required).		X	X	X	X
e. Acceptance and rejection criteria.		X	X	X	X
f. Methods of documenting or recording test data and results.		X	X	X	X
g. Provisions for assuring test prerequisites have been met.		X	X	X	X
11C1. Test results are documented, evaluated, and their acceptability determined by a responsible individual or group.		X	X	X	

		GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
Activities related to Test Control (17.2.11) are acceptable if:							
*		The criteria in 17.1.11 are satisfied.		X	X	X	X
Activities related to Control of Measuring and Test Equipment (17.1.12) are acceptable if:							
*	12.1	The scope of the program for the control of measuring and test equipment is established and the types of equipment to be controlled are established. This information indicates an effective calibration program has been reestablished.		X	X	X	X
*	12.2	QA and other organizations' responsibilities are identified for establishing, implementing, and assuring effectiveness of the calibration program.		X	X	X	X
*	12.3	Procedures are established for calibration (technique and frequency), maintenance, and control of the measuring and test equipment (instruments, tools, gages, fixtures, reference and transfer standards, and nondestructive test equipment) that is used in the measurement, inspection, and monitoring of structures, systems, and components. The review and documented concurrence of these procedures is described and the organization responsible for these functions is identified.		X	X	X	X
	12.4	Measuring and test equipment is identified and traceable to the calibration test data.		X	X	X	X
	12.5	Measuring and test equipment is labeled or tagged or "otherwise controlled" to indicate due date of the next calibration. The method of "otherwise controlled" should be described.		X	X	X	X
		2.8.2 Measures shall be taken to assure proper handling, storage, and care of the measuring and test equipment after calibration in order to maintain the required accuracy of such equipment.	ANSI N45.2.8	X	X		
		3.5 Measuring and Test Equipment. Measuring and test equipment used to determine compliance with specifications shall be controlled in accordance with the requirements of IEEE Std 498-1975. When general voltage levels, flow directions or other parameters are checked, an uncontrolled indicating instrument may be used.	ANSI N45.2.4 (IEEE 336)	X	X		

* Editorial changes.

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
12.6 Measuring and test equipment is calibrated at specified intervals based on the required accuracy, purpose, degree of usage, stability characteristics, and other conditions affecting the measurement.		X	X	X	X
Calibration of this equipment should be against standards that have an accuracy of at least four times the required accuracy of the equipment being calibrated or, when this is not possible, have an accuracy that assures the equipment being calibrated will be within required tolerance and that the basis of acceptance is documented and authorized by responsible management. The management authorized to perform this function is identified.		X	X	X	X
12.7 Calibrating standards have greater accuracy than standards being calibrated. Calibrating standards with the same accuracy may be used it it can be shown to be adequate for the requirements and the basis of acceptance is documented and authorized by responsible management. The management authorized to perform this function is identified.		X	X	X	X
12.8 Reference and transfer standards are traceable to nationally recognized standards; where national standards do not exist, provisions are established to document the basis for calibration.		X	X	X	X
12.9 Measures are taken and documented to determine the validity of previous inspections performed and the acceptability of items inspected or tested since the last calibration when measuring and test equipment is found to be out of calibration. Inspections or tests are repeated on items determined to be suspect.		X			
Activities related to Control of Measuring and Test Equipment (17.2.12) are acceptable if:					
* 1. The criteria in 17.1.12 are satisfied.		X	X	X	
Activities related to Handling, Storage, and Shipping (17.1.13) are acceptable if:					
3.1.d Although ANSI N45.2.2-1972 is entitled "Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants During the Construction Phase," the requirements included in the standard are considered to be applicable during the operation phase and should be used, where applicable, consistent with the recommendations of this regulatory guide.	RG.1.38	X	X	X	

* Editorial changes.

		GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
	13.1	Special handling, preservation, storage, cleaning, packaging, and shipping requirements are established and accomplished by suitably trained individuals in accordance with predetermined work and inspection instructions.		X	X	X	
*	13.2	Procedures are established to control the cleaning, handling, storage, packaging, and shipping of materials, components, and systems in accordance with design and procurement requirements to preclude damage, loss, or deterioration by environmental conditions such as temperature or humidity.		X	X	X	
		3.9 Marking					
		To maintain proper identification and instructions or both during shipping, receiving and storage, and to provide for identification after the outside of the container has been removed, the item and the outside of containers shall be marked.	ANSI N45.2.2	X	X		
	13.3	The control of handling, storage, and shipping listed above satisfies the regulatory position in Regulatory Guide 1.38.		SRP review note			
Activities related to Handling, Storage, and Shipping (17.2.13) are acceptable if:							
*	1.	The criteria in 17.1.13 are satisfied.		X	X	X	
*	2.	Provisions are established for the storage of chemicals, reagents (including control of shelf life), lubricants, and other consumable materials.		X	X	X	

* Editorial changes.

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
Activities related to Inspection, Test, and Operating Status (17.1.14) are acceptable if:						
	14.1 Procedures are established to indicate the inspection, test, and operating status of structures, systems, and components throughout fabrication, installation, and test.		X	X	X	
*	14.2 Procedures are established to control the application and removal of inspection and welding stamps and status indicators such as tags, markings, labels, and stamps.		X	X	X	
*	14.3 Procedures are established to control altering the sequence of required tests, inspections, and other operations important to safety. Such actions should be subject to the same controls as the original review and approval.		X	X	X	
	14.4 The status of nonconforming, inoperative, or malfunctioning structures, systems, and components is documented and identified to prevent inadvertent use. The organization responsible for this function is identified.		X	X	X	
	5.4 Status Indicating System					
	A system or method for identifying the status of items (e.g., an inventory system, tagging, labeling, color code) shall be employed that clearly indicates whether items are acceptable or unacceptable for installation. A controlled physical separation is an acceptable equivalent method. The system shall indicate the date the item was placed in the acceptable or unacceptable installation status. The use of the system shall be regulated by the Quality Control program. The system shall provide for the conditional release of items for installation pending subsequent correction of the nonconformance. When tags are used the stock shall be made from material which will not deteriorate during storage; tags shall be securely affixed to the items and displayed in an area that is readily accessible. The stock used shall not be deleterious to the item.	ANSI N45.2.2	X	X		

* Editorial changes.

		GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
Activities related to Inspection, Test, and Operating Status (17.2.14) are acceptable if:							
*	1.	The criteria in 17.1.14 are satisfied.		X	X	X	
Activities related to Nonconforming Materials, Parts, or Components (17.1.15) are acceptable if:							
*	15.1	Procedures are established for identification, documentation, segregation, review, disposition, and notification to affected organizations of nonconforming materials, parts, components and as applicable to services (including computer codes) if disposition is other than to scrap. The procedures provide identification of authorized individuals for independent review of nonconformances, including disposition and closeout.		X	X	X	X
*	15.2	QA and other organizational responsibilities are established for the definition and implementation of activities related to nonconformance control. This includes identifying those individuals or groups with authority for the disposition of nonconforming items.		X	X	X	X
	15.3	Documentation identifies the nonconforming item; describes the nonconformance, the disposition of the nonconformance, and the inspection requirements; and includes signature approval of the disposition. Nonconformances are corrected or resolved prior to the initiation of the preoperational test program on the item.		X	X	X	
		5.3.3 Conditional Release -- If the nonconformance which caused the item to be classified "unacceptable" can be corrected after installation, the item may be released for installation on a conditional release basis. A statement documenting the authority and technical justification for the conditional release of the item for installation shall be prepared, and made part of the documentation.	ANSI N45.2.2	X	X		
	15.4	Reworked, repaired, and replacement items are inspected and tested in accordance with the original inspection and test requirements or acceptable alternatives.		X	X	X	

* Editorial changes.

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
5.5 Correction of Nonconformances					
Items designated nonconforming or unacceptable for installation or use shall be corrected using authorized procedures, to meet specified requirements, or accepted "As is". If this is not possible, the item shall be scrapped or otherwise discarded.	ANSI N45.2.2	X	X		
5.5.1 Reinspection -- Items that have been corrected shall be reinspected. The area of inspection may be confined to the area of the nonconformance. When it has been determined that the corrected item is satisfactory, the status of the item as denoted by the system shall be changed to acceptable. An appropriate entry shall be made in the documentation after acceptance is determined.	ANSI N45.2.2	X	X		
15.5 Nonconformance reports are periodically analyzed by the QA organization to show quality trends, and the significant results are reported to upper management for review and assessment.		X	X		
Activities related to Nonconforming Materials, Parts, or Components (17.2.15) are acceptable if:					
* 1. The criteria in 17.1.15 are satisfied.		X	X	X	
Activities related to Corrective Action (17.1.16) are acceptable if:					
* 16.1 Procedures are established indicating an effective corrective action program has been established. The QA organization reviews and documents concurrence with the procedures.		X	X	X	
16.2 Corrective action is documented and initiated following the determination of a condition adverse to quality (such as a nonconformance, failure, malfunction, deficiency, deviation, and defective material and equipment) to preclude recurrence. The QA organization is involved in the documented concurrence of the adequacy of the corrective action.		X	X	X	

* Editorial changes.

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
	16.3 Followup action is taken by the QA organization to verify proper implementation of corrective action and to close out the corrective action in a timely manner.		X	X	X**	
	16.4 Significant conditions adverse to quality, the cause of the conditions, and the corrective action taken to preclude repetition are documented and reported to immediate management and upper levels of management for review and assessment.		X	X	X	
	Activities related to Corrective Action (17.2.16) are acceptable if:					
*	1. The criteria in 17.1.16 are satisfied.		X	X	X	
	Activities related to Quality Assurance Records (17.1.17) are acceptable if:					
*	17.1 The scope of the records program is established. QA records include results of reviews, inspections, tests, audits, and material analyses; monitoring of work performance; qualification of personnel, procedures, and equipment; and other documents, calibration procedures and reports; nonconformance reports; and corrective action reports.		X	X	X	X
	18. Requirements and responsibilities for record transmittal, retention, and maintenance subsequent to completion of work shall be established and documented consistent with applicable codes, standards, and procurement documents.	ANSI N45.2	X	X		
	4.4 Status					
	Each receipt control system shall be structured to permit a current and accurate assessment of the status of quality assurance records during the receiving process.	ANSI N45.2.9	X	X		
	18. In general, records which correctly identify the as-built conditions of items in the nuclear facility shall be maintained for the life of the particular item while it is installed in the nuclear facility and stored for future use by or for the owner. These records should include material certification and test data for traceability and quality verification; reports of inspections,	ANSI N45.2	X	X		

* Editorial changes.

** Delete "by the QA organization"

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
examinations, and test results for conformance verification; drawings; specifications, procedures, and instruction for use in control of configuration; and records of nonconformances and their resolution. These records shall be indexed, filed, and maintained in facilities that provide suitable environment to minimize deterioration or damage and prevent loss.					
2.1 Records System					
A quality assurance records system shall be established by the organization responsible at the earliest practicable, time consistent with the schedule for accomplishing work activities and in compliance with the general requirements of this standard.	ANSI N45.2.9	X	X		
5.2.12 Plants Records Management					
Provisions shall be made for preparation and retention of plant records. The responsibility for maintaining records and storing them at a specified location or locations shall be assigned. Retention periods of sufficient duration to assure the ability to reconstruct significant events and satisfy any statutory requirements for Nuclear Power Plants, NQA-1 [2], shall be used for management of plant records during the operational phase.	ANS 3.2	X	X	X	
2.2 Categories					
Two categories of quality assuance records are established--life-time and nonpermanent.	ANSI N45.2.9	X	X		
2.2.1 Lifetime Quality Assurance Records. Lifetime records are those which meet one or more of the following criteria:		X	X		
1. Those which would be of significant value in demonstrating capability for safe operation.		X	X		
2. Those which would be of significant value in maintaining, reworking, repairing, replacing, or modifying the item.		X	X		

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
	3. Those which would be of significant value in determining the cause of an accident or malfunction of an item.	ANSI N45.2.9	X	X		
	4. Those which provide required baseline data for inservice inspection.		X	X		
	Lifetime quality assurance records are required to be maintained by or for the plant owner for the life of the particular item while it is installed in the plant or stored for future use.		X	X		
	2.2.2 Nonpermanent Quality Assurance Records. Nonpermanent records are those which meet all of the following criteria:	ANSI N45.2.9	X	X		
	1. Those of no significant value in demonstrating capability for safe operation.					
	2. Those of no significant value in maintaining, reworking, repairing, replacing, or modifying the item.					
	3. Those of no significant value in determining the cause of an accident or malfunction of an item.					
	4. Those which do not provide baseline data for in-service inspection.					
	Nonpermanent records are required to show evidence that an activity was performed in accordance with the applicable requirements but need not be retained for the life of the item.					
*	17.2 QA and other organizations are identified and their responsibilities are established for the definition and implementation of activities related to QA records.		X	X	X	
	17.3 Inspection and test records contain the following where applicable:		X	X	X	X
	a. A description of the type of observation.					
	b. The date and results of the inspection or test.					
	c. Information related to conditions adverse to quality.					
	d. Inspector or data recorder identification.					

* Editorial changes.

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
	e. Evidence as to the acceptability of the results.					
	f. Action taken to resolve any discrepancies noted.					
17.4	Suitable facilities for the storage of records are established and satisfy the regulatory position given in Regulatory Guide 1.88 (endorses N45.2.9). Alternatives to the fire protection rated provisions are acceptable if records storage facilities conform to NFPA No. 232 Class 1 for permanent-type records and that the 2-hour fire rating requirement contained in the proposed N45.2.9 standard is met by applicants in any one of the following three ways. Specifically, (1) a 2-hour vault meeting NFPA No. 232; (2) 2-hour rated file containers meeting NFPA No. 232 (Class B); or (3) a 2-hour rated fire resistant file room meeting NFPA No. 232 if the following additional provisions are provided.		X	X		
	1. Early warning fire detection and automatic fire suppression should be provided, with electronic supervision at a constantly attended central station.		X	X		
	2. Records should be stored in fully enclosed metal cabinets. Records should not be permitted on open steel shelving. No storage of records should be permitted on the floor of the facility. Adequate access and aisle ways should be maintained at all times throughout the facility.		X	X		
	3. Work not directly associated with records storage or retrieval should be prohibited within the records storage facility. Examples of such prohibited activities include but are not limited to: records reporduction, film developing, and fabrication of microfiche cards.		X	X		
	4. Smoking and eating/drinking should be prohibited throughout the records storage facility.		X	X		
	5. Ventilation, temperature, and humidity control equipment should be protected inside with standard fire-door dampers where they penetrate fire barriers bounding the storage facility.		X	X		
17.5	The description of the control of records provisions listed above satisifes the regulatory position of Regulatory Guide 1.88.		SRP review note			
Activities related to Quality Assurance Records (17.2.17) are acceptable if:						
* 1.	The criteria in 17.1.17 are satisfied.		X	X	X	
2.	QA records include operating logs, maintenance and modification procedures, and related inspection results, reportable occurrences, and other records required by Technical Specifications.		X	X	X	

* Editorial changes.

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
Activities realted to Audits (17.1.18) are acceptable if:					
18A1. Audits to assure that procedures and activities comply with the overall QA program are performed by:		X	X	X	
a. The QA organization to provide a comprehensive independent verification and evaluation of quality-related procedures and activities.		X	X	X*	
b. The applicant (and principal contractors) to verify and evaluate the QA programs, procedures, and activities of suppliers.		X	X	X	
18A2. An audit plan is prepared identifying audits to be performed, their frequencies, and schedules. Audits should be regularly scheduled based upon the status and safety importance of the activities being performed and are initiated early enough to assure effective QA during design, procurement, manufacturing, construction, installation, inspection, and testing.		X	X	X	
4.5 The quality assurance organization shall ensure that audits are performed in accordance with the quality assurance program requirements. Audits of selected aspects of operational phase activities shall be performed with a frequency commensurate with their safety significance and in such a manner as to assure that an audit of all functions important to safety is completed within a period of two years. As a minimum, the audit program shall provide for audit of the following elements at the increased frequencies given below:	ANS 3.2	X	X	X	
(1) The results of actions taken to correct deficiencies that affect nuclear safety and occur in facility equipment, structures, systems, or method of operation--at least once per six months.	ANS 3.2	X	X		
(2) The conformance of facility operation to provisions contained within the Technical Specifications and applicable license conditions--at least once per 12 months.	ANS 3.2	X	X		
(3) The performance, training, and qualifications of the facility staff--at least once per 12 months.	ANS 3.2	X	X		

* Delete "The QA..." and insert "An appropriate..." for II min./III max.

	GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
C.3.a	(2) Design and Construction Phase Activities--Applicable elements of an organization's quality assurance program should be audited at least annually or at least once within the life of the activity, whichever is shorter. In determining the scope of the audit, an evaluation of the area being audited may be useful. The evaluation may include some or all of the following: prior quality assurance program audits; results of audits from other sources: nature and frequency of identified deficiencies; and significant changes in personnel, organization, or quality assurance program.	R.G.1 144	X	X*		
C.3.b	External Audits					
	(1) External audits, after the award of a contract, are not necessary for procurement actions when the items or services are all of the following:	RG 1.144	X	X*		
	(a) Relatively simple and standard in design, manufacture, and test, and	RG 1.144	X	X*		
	(b) Adaptable to standard or automated inspections or tests of the end product to verify quality characteristics after delivery, and	RG 1.144	X	X*		
	(c) Such that receiving inspection does not require operations that could adversely affect the integrity, function, or cleanness of the item.	RG 1.144	X	X*		
	(2) For other procurement actions not listed in Item C.3.b(1), audits should be conducted as follows:	RG 1.144	X	X*		
	Elements of a supplier's quality assurance program should be audited by the purchaser on a triennial basis with the audit implemented in accordance with Section 4, "Audit Implementation," of ANSI/ASME N45.2.12-1977. The triennial period should begin with performance of an audit when sufficient work is in progress to demonstrate that the organization is implementing a Quality Assurance Program having the required scope for purchases placed during the triennial period. When a subsequent contract or a contract modification that significantly enlarges the scope of activities performed by the same supplier is executed, an audit					

* Applies to I min. only.

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
should be conducted of the increased requirements, thus starting a new triennial period. If, at the time of the pre-award survey, the supplier is already implementing the same quality assurance program for other customers that he proposes to use on the auditing party's contract, then the pre-award survey, if it was conducted in accordance with Section 4 of ANSI/ASME N34.2.12-1977, may serve as the first triennial audit. Therefore, when such pre-award surveys are employed as the first triennial audits, those surveys should satisfy the same audit elements and criteria used on other triennial audits.	R.G.1.144				
A documented evaluation of the supplier should be performed annually. Where applicable, this evaluation should take into account (1) review of supplier-furnished documents such as certificates of conformance, nonconformance notices, and corrective actions, (2) results of previous source verifications, audits, and receiving inspections, (3) operating experience of identical or similar products furnished by the same supplier, and (4) results of audits from other sources, e.g., customer, ASME, or NRC audits.	R.G.1.144	X	X*		
3.5.3 Regularly scheduled audits should be supplemented by audits for one or more of the following conditions:	ANSI N45.2.12	X	X*		
3.5.3.1 When it is necessary to assess the capability of a contractor's quality assurance program prior to awarding a contract or purchase order.		X	X*		
3.5.3.2 When, after award of a contract, sufficient time has elapsed for implementing the quality assurance program and it is appropriate to determine that the organization is adequately performing the functions as defined in the quality assurance program description, codes, standards, and other contract documents.		X	X*		
3.5.3.3 When significant changes are made in functional areas of the quality assurance program such as significant reorganization or procedure revisions.		X	X*		
3.5.3.4 When it is suspected that the quality of the item is in jeopardy due to deficiencies in the quality assurance program.		X	X*		

* Applies to I min. only.

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
3.5.3.5 When a systematic, independent assessment of program effectiveness is considered necessary.	ANSI N45.2.12	X	X*		
3.5.3.6 When necessary to verify implementation of required corrective action.	ANSI N45.2.12	X	X*		
18A3. Audits include an objective evaluation of quality-related practices, procedures, instructions; activities and items; and review of documents and records to ensure that the QA program is effective and properly implemented.		X	X	X	
4.5 Audits shall include as a minimum verification of compliance and effectiveness of implementation of internal rules, procedures (for example, operating, design, procurement, maintenance, modification, shift relief and turnover, refueling, surveillance test, security and radiation control procedures and the emergency plan), regulations and license provisions; programs for training, retraining, qualification and performance of operating staff; corrective actions taken following abnormal occurrences; and observation of performance of operating, refueling, maintenance and modification activities, including associated record keeping. Written reports of such audits shall be reviewed by the independent review body and by appropriate members of management including those having responsibility in the area audited. In addition, follow-up action shall be taken upon identification of a failure of the administrative or technical control over an item.	ANS 3.2	X	X	X	
18A4. Provisions are established requiring that audits be performed in all areas where the requirements of Appendix B to 10 CFR Part 50 are applicable. Areas which are often neglected but should be included are activities associated with:		X	X	X	
a. The determination of site features which affect plant safety (e.g., core sampling, site and foundation preparation, and foundation preparation, and methodology). (PSAR only).		X	X	X	
b. The preparation, review, approval, and control of early procurements. (PSAR only).		X	X	X	

* Applies to I min. only.

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
c. Indoctrination and training programs.		X	X	X	
d. Interface control among the applicant and the principal contractors.		X	X	X	
e. Corrective action, calibration, and nonconformance control systems.		X	X	X	
f. SAR and SSAR commitments.		X	X	X	
g. Activities associated with computer codes.		X	X	X	
18B1. Audit data are analyzed by the QA organization and the organization and the resulting reports indicating any quality problems and the effectiveness of the QA program, including the need for reaudit of deficient areas, are reported to management for review and assessment.		X	X	X	
4.5 Periodic review of the audit program shall be performed by the independent review body or by a management representative at least semiannually to assure that audits are being accomplished in accordance with requirements of technical specifications and of this Standard.	ANS 3.2	X	X	X	
18B2. Audits are performed in accordance with pre-established written procedures or checklists and conducted by trained personnel having no direct responsibilities in the areas being audited.		X	X	X	
4.1 Organizational Responsibility					
Training of auditors shall be the responsibility of the employer.	ANSI N45.2.23	X	X		
4.5 Those performing the audits may be members of the audited organization; however, they shall not audit activities for which they have immediate responsibility. While performing the audit, they shall not report to a management representative who has immediate responsibility for the activity being audited. Appropriate and timely followup action, including reaudit of deficient areas, shall be taken.	ANS 3.2	X	X	X	

GUIDELINE	Ref.	I Max	I Min II Max	II Min III Max	III Min
5.3 Personnel Records					
Records shall include documentary evidence of the qualification and training of auditors and shall be retrained for the same period of time as required for the audit report with which the auditors are associated.	ANSI N45.2.12	X			
1883. The description of the conduct of audit provisions satisfies the regulatory position in Regulatory Guides 1.144 and 1.46.		SRP review note			
Activities related to Audits (17.2.18) are acceptable if:					
* 1. The criteria in 17.1.18 are satisfied.		X	X	X	
2. Where the "onsite" QA organization does not report to the "offsite" organization:		X	X	X	
a. The "offsite" QA organization conducts audits sufficient to verify adequacy of activities conducted by the "onsite" QA organization.		X	X	X	
b. The "offsite" QA organization reviews and concurs in the schedule and scope of audits performed by the "onsite" QA organization.		X	X	X	
c. Results of audits performed by the "onsite" QA organization are provided to the "offsite" QA organization for review and assessment.		X	X	X	

* Editorial changes.

IDENTIFICATION AND QA RANKING OF NUCLEAR PLANT STRUCTURES, SYSTEMS, AND COMPONENTS

IDENTIFICATION AND QA RANKING OF NUCLEAR PLANT STRUCTURES, SYSTEMS, AND COMPONENTS

The structures, systems, and components that comprise BWR, PWR, and GCR type reactors have been listed under 13 separate groups such as Structures, Engineered Safety Features, Electrical Power, etc. The groups are common to all lists. The breakdown within the groups becomes specific to the type of plant (BWR, PWR, or GCR). The items have been generally specified to the system level of detail with any further breakdown being done only for clarification.

A model Safety Analysis Report (SAR), and the Standard Review Plan (SRP) for Light Water Reactors were used for generation of the BWR and PWR lists. The FSAR for the Fort St. Vrain Reactor was used for the GCR list. Various regulations and regulatory guides were also used.

For each item listed that is considered important to safety, a quality assurance level (QAL) of I, II, and III was assigned. Those items not considered important to safety were assigned NITS (Not Important To Safety). The definitions for these four categories are given in the attached notes. The further A, B, C breakdown within a level is for assistance in clarifying the level boundaries and to a degree giving the reason why an item was categorized as it was. It should be noted that the A, B, C breakdown is not by declining importance. It is not intended that within a level, A is more important than B, and B more important than C. For whatever reason an item is assigned a level, QAL-I A, B, or C is still a QAL-I item, for example.

If an item is mentioned in the SRP, it is considered to be important to safety. Each item listed that is in the SRP has the SRP section(s) listed also. The items in the list that have a blank in the SRP section column are those items not specifically mentioned in the SRP.

Notes for Ranking Lists

1. The QA level of piping, supports, instrumentation (including annunciators and alarms) and controls, electrical distribution equipment, computer software and hardware, and associated consumables and procedures, shall be at least the same QA level as the structure, system, or component of which they are a part except that where two different QA level structures, systems, or components interface, the QA level of the support located at the boundary or the next support located in the lower QA level structure, system, or component shall be the higher of the two QA levels involved.

2. The interface between connected QAL-I and lesser QAL fluid systems shall be two closed valves or two valves capable of automatic closure and shall be categorized as QAL-I.

3. The QA level in some cases is dependent on location and, therefore, may be different than listed if a failure could initiate a transient or cause damage to a QAL-I structure, system, or component.

4. Included with each system are the fuels, chemicals, and materials that are procured over the lifetime of the plant for use in these systems.

5. If the SRP section is not given on the list, the SRP does not specifically call out that structure, system, or component.

6. Equipment used for measurement and testing, calibration, and in-service inspection shall comply with the same or higher QAL listed for the structure, system, or component that they are used on.

7. The data (such as geography, demography, meteorology, hydrology, geology, and seismology) obtained for site selection and design of structures, systems, and components shall be obtained with equipment having the same or higher QAL than listed for the structure, system, or component that they are used for. The data shall be controlled in accordance with that QAL also.

8. Structures are given the same QAL as the systems within the structure and may differ from this listing because of location differences for specific plants.

9. The listings provide guidance, generally, and are not intended to include detailed listings of hardware. The level specified can be deviated from for specific parts of a system or component if justified.

10. Items have been considered important to safety even if their function during plant operation isn't important to safety if verification is needed during the design and construction phases or subsequent modification. The verification is needed to assure that the item isn't located by or connected to other items in such a way that safety can be affected.

The quality assurance levels (QAL) I, II, and III contain those structures, systems, and components that provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public.

QAL-I, Quality Assurance Level I

QAL-I contains those structures, systems, and components required to assure:

A. The integrity of the reactor coolant pressure boundary,

B. The capability to shut down the reactor and maintain it in a safe shutdown condition, and

C. The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the guidelines of 10 CFR 100.

QAL-II, Quality Assurance Level II

QAL-II contains those structures, systems, and components not included in QAL-I that affect the health and safety of the public in a direct or indirect manner:

A. If their failure initiates a transient that requires measures to terminate other than those associated with normal operations,

B. By serving as a potential backup for cooling or energy for a QAL-I system or component, or

C. By preventing long-term deterioration of the reactor coolant pressure boundary.

QAL-III, Quality Assurance Level III

QAL-III contains those structures, systems, and components not included in QAL-I, or QAL-II.

Those structures, systems, and components that are categorized as "Not Important to Safety (NITS)" are those whose failure does not directly or indirectly pose an undue radiological risk to the health and safety of the public.

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Structures			
	Diesel Generator Building	3.8.4	I(B,C)
	Turbine Building	3.8.4	I(C)
	Containment Enclosure Building (Reactor Building)	3.8.4	I(C)
	Auxiliary Building	3.8.4	I(C)
	Fuel Storage Building (New and Used Fuel)	3.8.4	I(C)
	Cooling Water Intake Structure (at ultimate heat sink)	3.8.4	I(B,C)
	Control Building	3.8.4	I(B,C)
	Shield Building	3.8.4	I(C)
	Radwaste Building	3.8.4	III
	Primary Containment	3.8.1/3.8.2/ 6.2.1	I(C)
	Service Building		NITS
	Demineralized Water Storage Tank		NITS
	CO_2 Storage		I(C)
	Class IE Electrical Systems, Manholes and Duct Runs	3.8.4	I(B,C)
	Emergency Response Facilities	13.3	III
	Office Building		NITS
	Gate House	13.6	III

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Structures (Cont.)	Low Level Onsite Waste Storage		III
	Concrete and Internal Structures of Steel or Concrete Containments, such as: Refueling Pool Walls Polar Crane Supporting Elements Weirwall Drywell Reactor Pedestal Reactor Shield Wall	3.8.3	I(A,B,C)
	Meteorological Tower	2.3.3	I(C)
Reactor	Reactor Vessel	5.3.1/5.3.3	I(A,B,C)
	Reactor Vessel Internals:		
	Control Rod System	3.9.4/3.9.5	I(A,B,C)
	Core Support Structures	3.9.5	I(B,C)
	Jet Pump Assemblies		I(C)
	Moisture Separator (Operational)		NITS
	Moisture Separator (Structural)		I(C)
	Steam Dryer (Operational)		NITS
	Steam Dryer (Structural)		I(C)
	SBLC Sparger		I(B)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUP PART)
Reactor (Cont.)	Feedwater Sparger		NITS
	Incore Flux Monitor Housing	3.9.5	I(A)
	Core Spray Lines and Spargers		I(C)
	Fuel System	4.2	I(B,C)
Reactor Coolant System (RCS)	Reactor Recirculation System [Pressure Boundary and Normal Operation with ATWS (anticipated transient without scram)]		I(A,C)
	Reactor Recirculation System (Normal Operation without ATWS)		NITS
	Reactor Core Isolation Cooling (RCIC)	5.4.6	I(C)
	Residual Heat Removal (RHR) System (Shutdown Heat Removal/Head Spray Mode)	5.4.7	I(C)
	RHR System (ECCS Modes)	5.4.7	I(C)
	RHR System (Fuel Pool Cooling)	5.4.7	I(C)
	Main Steam Line Isolation Valve Leakage Control System	5.4.5/6.7	I(C)
	Reactor Water Cleanup System:	5.4.8	
	Piping and outermost containment isolation valve	5.4.8	I(A)
	Other components outside containment (piping, valves, demineralizers)	5.4.8	II(C)
	Main Steam Line and Feedwater Piping		
	Piping up to and including outermost containment isolation valves	5.4.3/5.4.9	I(A,C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
RCS (Cont.)	Main Steam Line and Feedwater Piping (Continued)		
	MSIV's	5.4.12	I(C)
	Main Steam Line Flow Restrictors	5.4.4	I(C)
	Safety/Relief Valves (Pressure Boundary and Function)	5.2.2/5.4.13	I(A)/I(C)
	Reactor Coolant Pressure Boundary Leakage Control System	5.2.5	I(C)
Steam and Power Conversion	Main Steam Supply System:		
	Piping downstream of MSIV's up to but not including turbine stop valves	10.3	II(A)
	Turbine Stop Valves (Function)	10.2/10.3	II(A)
	Turbine Stop Valves (Pressure Boundary)	10.2/10.3	II(A)
	Turbine Control Valves (Function)	10.2/10.3	II(A)
	Turbine Control Valves (Pressure Boundary)	10.2/10.3	II(A)
	Turbine System: Turbine disk (integrity)		II(A)
	Turbine (Overspeed features)	10.2	II(A)
	Turbine (Other than overspeed features)	10.2	II(A)
	Moisture Separators/ Reheaters	10.3	NITS
	Main Condenser System (Condenser and Hotwell)	10.4.1	II(A)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Steam and Power Conversion (Cont.)	Main Condenser Evacuation System	10.4.2	II(A)
	Turbine Bypass System (Steam Dump)	10.4.4	II(A)
	Turbine Gland Sealing System (Seals Main Turbine Shaft)	10.4.3	III
	Turbine Gland Sealing System (Seals MFW Turbine Shaft)	10.4.3	II(B)
	Extraction Steam System		NITS
	Injection Seal Water System (for FW and condensate booster pumps)		II(B)
	Injection Seal Water System (for heater drain tank pumps)		III
	Heater Drain and Vent Systems		III
	Auxiliary Boiler		NITS
	Circulating Water System	10.4.5	II(B)
	Condensate Cleanup System	10.4.6	II(C)
	Condensate and Feedwater Systems	10.4.7	II(B)
Engineered Safety Features	Primary Containment Isolation System	6.2.4	I(C)
	Suppression Pool		I(C)
	Suppression Pool Makeup System		NITS
	Combustible Gas Control System (In-Containment) Hydrogen Recombiner	6.2.5	I(C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Engineered Safety Features (Cont.)	Combustible Gas Control System (Continued) Purge Exhaust Hydrogen Monitor	6.2.5	I(C)
	Emergency Core Cooling Systems, such as: High Pressure Core Spray Low Pressure Coolant Injection High Pressure Coolant Injection ADS Low Pressure Core Spray Containment Spray Cooling ECCS Discharge Line Fill System	6.3	I(C)
	Main Control Room Habitability System	6.4	I(C)
	ESF Atmosphere Cleanup Systems:	6.5.1	
	Standby Gas Treatment System		I(C)
	Containment Spray System (Also used for containment heat removal)	6.5.2	I(C)
	In-Containment Recirculation Systems		I(C)
	Protective Coating Systems (Paint) - Organic Materials [Inside Containment]	6.1.2	III
	Materials of Construction: The QA Category for the materials of construction of the structures, systems and components is the same category as the structure, system, and component that they are a part of.	6.1.1 (Covered Partially)	

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Instrumentation and Control (I&C)	Reactor Trip System (Reactor Protection System)	7.2	I(B,C)
	ESF Actuation Systems	7.3	I(C)
	Safe Shutdown Systems	7.4	I(B)
	Information Systems	7.5	I(C)
	Interlock Systems	7.6	I(A,B,C)
	Control Systems (Normal Operation)	7.7	II(A)
Electrical Power	Offsite Power System	8.2	II(A,B)
	A-C Power Systems (Onsite)	8.3.1	I(B,C)
	D-C Power Systems (Onsite)	8.3.2	I(B,C)
Fuel Storage and Handling	New Fuel Storage	9.1.1	III
	Spent Fuel Storage	9.1.2	I(C)
	Spent Fuel Cooling and Cleanup System (Cooling Function)	9.1.3	I(C)
	Spent Fuel Cooling and Cleanup System (Cleanup Function)	9.1.3	III
	Light Load Handling (Related to Refueling)	9.1.4	I(C)
	Overhead Heavy Load Handling	9.1.5	I(C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Auxiliary Water Systems	Essential Service Water System This system is generally QAC I because it serves the following QAC I components: RHR Heat Exchangers Standby Gas Treatment System Room Coolers RCIC Room Coolers Hydrogen Recombiner Coolers RHR Pump Room Coolers LPCS Pump Motor Bearings LPCS Pump Room Coolers Diesel Generators Fuel Pool Cooling Heat Exchangers Closed Cooling Water HX's	9.2.1	I(B,C)
	However, portions of this system that serve only the following types of non-QAC I components may be of lesser quality with proper isolation from the QAC I Components: Water chillers for Drywell Steam Tunnel Air Coolers Radwaste Evaporative Condenser		

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Auxiliary Water Systems (Cont.)	Closed Cooling Water (CCW) System	9.2.2	
	This system is generally QAC I because it serves these QAC I components:		
	Recir. Pump Seal Cooler		I(A)
	CRD Pump Coolers		I(B,C)
	Fuel Pool Cooling HX's		I(C)
	Drywell Control Air Compressor		I(C)
	However, portions of this system that serve only the following types of non-QAC I components may be of lesser quality with proper isolation from the QAC I components:	9.2.2	
	Waste Disposal System Condenser		
	RWCU Non-Regenerative HX		
	RWCU Pump Coolers		
	Drywell Coolers		
	Recirc. Pump Motor Coolers		
	Sample Coolers		
	Exciter Air Coolers		
	Generator Hydrogen Gas Coolers		
	Generator Stator and Rectifier Coolers		
	Main Turbine Oil Coolers		
	Condenser Mechanical Vacuum Pump Cooler		

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Auxiliary Water System (Cont.)	CCW System (Continued) Recirc. MG Oil Coolers Condensate Booster Pump Oil Coolers Condensate Pump Motor Thrust Bearings EHC Oil Coolers RFP Turbine Oil Coolers Air Compressor and After Coolers		
	Demineralized Water Makeup System	9.2.3	III
	Potable and Sanitary Water System	9.2.4	III
	Chilled Water System		I(C)
	Ultimate Heat Sink	9.2.5	I(B,C)
	Condensate Storage Facility (Required for normal operation)	9.2.6	II(B)
	Condensate Storage Facility (Required for safe shutdown and accident mitigation)	9.2.6	I(B,C)
	Process Sampling Systems The QA Category for the Process Sampling Systems is the same category as the systems and components they serve.	9.3.2	
	Equipment and Floor Drainage System	9.3.3	III
	Standby Liquid Control System	9.3.5	I(B)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Auxiliary Water Systems (Cont.)	Standby Coolant Supply System		I(C)
	Suppression Pool Cleanup System		NITS
Auxiliary Air Handling Systems	Control Room Ventilation	9.4.1/6.5.1	I(B,C)
	Spent Fuel Pool Area Ventilation System	9.4.2	I(C)
	Auxiliary and Radwaste Area Ventilation System	9.4.3	
	Auxiliary Building Ventilation System	9.4.3	I(C)
	Radwaste Building Ventilation System	9.4.3	III
	Turbine Building Ventilation System	9.4.4	III
	ESF Ventilation Systems	9.4.5	I(C)
	Reactor Building Ventilation Systems		
	Containment Ventilating and Cooling System		II(B)
	Containment Pressure Control and Purge System		I(C)
	Drywell Cooling System		II(B)
	Shield Building Annulus Recirculating Exhaust System		I(C)
	Drywell Purge System		I(C)
Miscellaneous Auxiliary Systems	Fire Protection (Detection and Extinguishment)	9.5.1	

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Miscellaneous Auxiliary Systems (Cont.)	The QA Category for the Fire Protection Systems is the same category as the structures, systems, and components they protect.		
	Compressed Air System	9.3.1	
	Supply to ADS	9.3.1	I(C)
	Other Service and Instrument Air	9.3.1	III
	Emergency Diesel Engine (EDE) Fuel Oil Storage and Transfer System	9.5.4	I(B,C)
	EDE Cooling Water System	9.5.5	I(B,C)
	EDE Starting System	9.5.6	I(B,C)
	EDE Lubricating System	9.5.7	I(B,C)
	EDE Combustion Air Intake and Exhaust Air System	9.5.8	I(B,C)
	Ground Water Dewatering Systems (Required for structural integrity of QAC I structures)	2.4.12	I(B,C)
Radiation, Seismic and Meteorological Instrumentation, Communications, and Lighting Systems (RSMCLS)	Process and Effluent Radiation Monitoring Instrumentation and Sampling Systems	11.5	I(C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
RSMCLS (Cont.)	Radiation and Airborne Monitoring Instrumentation, such as: Area Radiation and Airborne Radioactivity Monitoring Fixed Airborne Radioactivity Monitoring Portable Airborne Radioactivity Monitoring	12.3/12.4	III
	Seismic Instrumentation	3.7.4	I(C)
	Meteorological Instrumentation	2.3.3	I(C)
	Communication Systems	9.5.2	
	Intraplant Communications	9.5.2	
	Emergency Use	9.5.2	I(B,C)
	Normal Use	9.5.2	III
	Interplant and/or Offsite Communications	9.5.2	
	Emergency Use	9.5.2	I(B,C)
	Normal Use	9.5.2	III
	Lighting Systems	9.5.3	
	Normal	9.5.3	III
	Standby	9.5.3	III
	Emergency	9.5.3	I(B,C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Radwaste Systems			
	Liquid Radwaste Systems	11.2	III
	Gaseous Radwaste Systems	11.3	III
	Solid Radwaste Systems	11.4	III

PWR STRUCTURES/SYSTEMS/COMPONENTS AND QA RANKING

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Structures	Primary Containment	3.8.1/3.8.2/ 6.2.1	I(C)
	Concrete and steel internal structures of steel and concrete containments such as; Supports for vessel, steam generators and pressurizer Primary shield wall and reactor cavity Secondary shield walls Refueling pool wall Polar crane supporting elements	3.8.3	I(A,B,C)
	Containment Enclosure Bldg. (Reactor Bldg.)	3.8.4/6.2.1	I(C)
	Auxiliary Bldg.	3.8.4	I(C)
	Control Bldg.	3.8.4	I(B,C)
	Diesel Generator Bldg.	3.8.4	I(B,C)
	Fuel Storage Bldg. (New and spent fuel)	3.8.4	I(C)
	Intake pumping station (at ultimate heat sink)	3.8.4	I(B,C)
	Condensate Demineralizer Waste Evaporator Bldg.	3.8.4	III
	Steam valve room(s) (for MSIV's)	3.8.4	I(C)
	Reactor Water Storage Tank (RWST)	3.8.4/9.2.7	I(C)
	Pipe Tunnel(s) from RWST to Auxiliary Bldg.	3.8.4	I(C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Structures (Cont.)	Primary Makeup Water Storage Tank (PMWST)	3.8.4	II(B)
	Pipe Tunnel(s) from PMWST to Auxiliary Bldg.	3.8.4	II(B)
	Class 1E Electrical Systems Manholes and Duct Runs	3.8.4	I(B,C)
	Cooling Towers	3.8.4	II(B)
	Meteorological Tower	2.3.3	I(C)
	Turbine Bldg.		II(A)
	Condensate Circulating Water Bldg.		II(B)
	CO_2 Storage		I(C)
	Low Level Onsite Waste Storage		III
	Emergency Response Facilities	13.3	III
	Service Bldg.		NITS
	Additional Equipment Bldg.		NITS
	Chemical Storage Bldg.		NITS
	Hypochlorite Bldg.		NITS
	Hydrogen Trailer Port		NITS
	LP Gas Storage		NITS
	Office Bldg.		NITS
	Gate House	13.6	III

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Reactor	Reactor Vessel	5.3.1/5.3.3	I(A,B,C)
	Reactor Vessel upper and lower core supports and incore instrument support	3.9.5/4.5.2	I(A,B,C)
	Fuel System	4.2	I(B,C)
	Control Rod System	3.9.4/4.5.1/4.6	I(A,B,C)
Reactor Coolant System (RCS)	Pressurizer Relief Valves (Pressure Boundary)	5.2.2	I(A)
	Pressurizer Relief Valves (Function)	5.2.2	II(A)
	Pressurizer Safety Valves (Pressure Boundary and Function)	5.2.2	I(A)
	Reactor Coolant Pump (Pressure Boundary)	5.4.1	I(A)
	Reactor Coolant Pump (Function)	5.4.1	II(B)
	Reactor Coolant Pump Flywheel Integrity	5.4.1.1	I(A)
	Steam Generator (SG)	5.4.2	I(A)
	Pressurizer (Pressure Boundary)	5.4.10	I(A)
	Pressurizer (RCS Pressure Source)	5.4.10	II(A)
	Pressurizer Relief Tank System	5.4.11	III
	RHR (as part of startup/shutdown)	5.2.2/5.4.7	I(A,B)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
RCS (Cont.)	RHR (as part of refueling)	5.4.7	I(C)
	Reactor Coolant Pressure Boundary (RCPB) Leakage Detection System	5.2.5	I(C)
Steam and Power Conversion	Main Steam Supply System		
	SG Outlet Flow Restricters	10.3/5.4.4	I(C)
	SG Relief Valves	10.3	II(A,B)
	SG Safety Valves	10.3	I(C)
	Isolation Valves (MSIV) and Piping Upstream	10.3	I(B,C)
	Piping Downstream of MSIV's	10.3	II(A)
	Turbine Stop and Control Valves	10.2/10.3	II(A)
	Turbine System	10.2	
	Turbine (overspeed features)		II(A)
	Turbine (other than overspeed features)		NITS
	Turbine disk (integrity)		II(A)
	Moisture Separators/Reheaters		NITS
	Extraction Steam		NITS
	Main Condenser System	10.4.1	II(A,B)
	Auxiliary Boiler		NITS

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Steam and Power Conversion (Cont.)	Main Condenser Evacuation System	10.4.2	II(A)
	Turbine Gland Sealing System (for main turbine shafts and valve stems)	10.4.3	III
	Turbine Gland Sealing System (for main FW pump turbine shafts)	10.4.3	II(B)
	Turbine Bypass System (Steam Dump)	10.4.4	II(A)
	Circulating Water System	10.4.5	II(B)
	Condensate Cleanup System	10.4.6	II(C)
	Condensate and Feedwater Systems (as part of isolation and auxiliary FW)	10.4.7	I(B,C)
	Condensate and Feedwater Systems (not part of isolation and auxiliary FW)	10.4.7	II(B)
	FW Secondary Treatment		II(C)
	Injection Water System (for heater drain tank pumps)		III
	Injection Water System (for FW and Condensate Booster Pumps)		II(B)
	SG Blowdown System	10.4.8	II(A,C)
	Auxiliary FW System	10.4.9	I(B,C)
	Heater Drains and Vent Systems		III
Engineered Safety Features (ESF)	Materials of Constructions		

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
ESF (Cont.)	The QA category for these materials is the same category as the structure, system, or component they are a part of.	Covered partially in 6.1.1	
	Protective Coating Systems (paints) - Organic Materials (in containment)	6.1.2	III
	RHR Spray System (containment heat removal)	6.1.1/6.2.2	I(C)
	Containment Spray	6.1.1/6.2.2	I(C)
	Ice Condenser System	6.2.1/6.2.2	I(C)
	Containment Isolation System	6.2.4	I(C)
	Combustible Gas Control (in containment), such as; Containment Gas Monitor System Hydrogen Recombiner Hydrogen Purge Exhaust System	6.2.5	I(C)
	ECCS, such as Cold Leg Accumulator System Upper Head Injection System RHR (Lowhead Injection) Safety Injection System High Head Safety Injection System	6.3	I(C)
	Main Control Room Habitability Systems	6.4	I(C)
	Emergency Gas Treatment System (EGTS)	6.5.1/6.1.1	I(C)
	Auxiliary Building Gas Treatment System (ABGTS)	6.5.1	I(C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
ESF (Cont.)	Fission Product Control Systems and Structures	6.5.3	I(C)
Instrumentation and Control (I&C)	Reactor Trip System	7.2	I(B,C)
	ESF Actuation System	7.3	I(C)
	Safe Shutdown Systems	7.4	I(B)
	Information Systems	7.5	I(C)
	Interlock Systems	7.6	I(A,B,C)
	Control Systems (Normal Operation)	7.7	II(A)
Electrical Power	Offsite Power System	8.2	II(A,B)
	A-C Power System (onsite)	8.3.1	I(B,C)
	D-C Power System (onsite)	8.3.2	I(B,C)
Fuel Storage and Handling	New Fuel Storage	9.1.1	III
	Spent Fuel Storage	9.1.2	I(C)
	Spent Fuel Pool Cooling and Cleanup System (decay heat removal)	9.1.3	I(C)
	Spent Fuel Pool Cooling and Cleanup System (water cleaning)	9.1.3	III
	Fuel Handling System	9.1.4	I(C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Fuel Storage and Handling	Overhead Handling Equipment	9.1.5	I(C)
Auxiliary Water Systems	Station Service Water System (Emergency Raw Cooling Water)(ERCW) This system is generally QAC I because it serves these QAC I types of components; CCW Hx Containment Spray Hx Emergency Diesel Generators Emergency Makeup for CCW System Control Bldg. A/C System Aux. Bldg. Ventilation Coolers for ESF Equipment Air Compressors Auxiliary FW (as backup to condensate storage tank) RHR Hx (during certain flood conditions) Spent Fuel Pool Hx's (during certain flood conditions) However, portions of this system that serve only the following non QAC I types of components may be of lesser quality with proper isolation from the QAC I system; Containment Ventilation Coolers RCP Motor Coolers Control Rod Drive Ventilation Coolers Instrument Room Coolers	9.2.1	I(B,C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Auxiliary Water Systems (Cont.)	Reactor Auxiliary Cooling Water System (Component Cooling Water) (CCW) This system is generally QAC I because it serves these QAC I types of components CCW Pump CVCS Centrifugal Charging Pump CVCS Letdown Hx CVCS Excess Letdown Hx CVCS Seal Water Hx RHR Pump RHR Hx Spent Fuel Pool Hx SI Pump However, portions of this system that serve only the following non QAC I types of components may be of lesser quality with proper isolation from the QAC I system; RCP Thermal Barrier CVCS Reciprocating Charging Pump CVCS Gas Stripper and Boric Acid Evaporator Package Sample System Sample Hx Sample System Hot Sample Chillers Sample System Gross Failed Fuel Detector Waste Disposal System (WDS) Waste Evaporator Package WDS Auxiliary Waste Evaporator Package Waste Gas Compressor	9.2.2	I(B,C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Auxiliary Water Systems (Cont.)	Raw Cooling Water System This system is generally QAC II because it serves these QAC II types of components FW Pump Turbine Oil Hx Condenser Vacuum Pump Coolers Condensate Booster Pumps Hx However, portions of the system that serve only the following non QAC I or II types of components may be of lesser quality with proper isolation from the QAC-II system; Raw Service Water System As Makeup for Circulating Water System As Makeup for Water Treatment Plant Nonessential A/C Equipment in the Aux. Bldg. Turbine Generator (TG) Stator Hx's TG Hydrogen Hx's TG Exciter HX's TG Main Bus Hx's TG Seal Oil Hx's Main Turbine Oil Hx's Turbine EHC Fluid Hx's Heater Drain Tank Pump Hx's Turbine Bldg. Ventilation Coolers Sample Hx's (in Turbine Bldg.)		II(A,B)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Auxiliary Water Systems (Cont.)	Raw Service Water System (Supplies water for general maintenance and cleaning and fill for High Pressure Fire Protection System)		NITS
	Demineralized Water Makeup System	9.2.3	III
	Potable and Sanitary Water Systems	9.2.4	III
	Ultimate Heat Sink	9.2.5	I(B,C)
	Condensate Storage Facilities (required for safe shutdown or accident mitigation)	9.2.6	I(B,C)
	Condensate Storage Facilities (not required for safe shutdown or accident mitigation)	9.2.6	II(B)
	Process Sampling System The QA category for the components of this system is the same category as the systems or components that they service.	9.3.2	
	Equipment and Floor Drainage System	9.3.3	III
	Chemical and Volume Control System (CVCS) (Portions used for RCS volume control)	9.3.4	I(A)
	CVCS (Portions used for RCP seal water flow)	9.3.4	I(A,C)
	CVCS (Portions used for chemistry control)	9.3.4	II(C)
	CVCS (Portions used for ECCS)	9.3.4	I(C)
	CVCS (Portions used for pressure control in RHR mode)	9.3.4	I(B)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Auxiliary Water Systems (Cont.)	Boron Recovery System	9.3.4	III
	Auxiliary Charging System or Flood Mode Boration Makeup System		NITS
Auxiliary Air Handling System	Control Room Ventilation System (CRVS)	9.4.1/6.5.1	I(B,C)
	Spent Fuel Pool Area Ventilation System	9.1.3/9.4.2	I(C)
	Auxiliary and Radwaste Area Ventilation System such as	9.4.3	
	Bldg. Air Supply and Exhaust System		NITS
	Bldg. Cooling System		NITS
	Shutdown Board Room A/C System		I(C)
	Auxiliary Board Room A/C System		I(C)
	Shutdown Transformer Room Ventilation System		I(C)
	Misc. Ventilation and A/C Systems		NITS
	Turbine Area Ventilation System	9.4.4	III
	ESF Ventilation System	9.4.5	I(C)
	Reactor Bldg. Purge System		I(C)
	Containment Air Cooling Systems, such as Lower Compartment Air Cooling System Upper Compartment Air Cooling System Control Rod Drive Mechanism Air Cooling System Instrument Room Air Cooling System		II(B)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
Misc. Auxiliary Systems	Groundwater Dewatering Systems (required for structural integrity of QAC I structures)	2.4.12	I(B,C)
	Compressed Air Systems	9.3.1	
	Station Control and Service Air System		III
	Auxiliary Control Air System		I (B,C)
	Fire Protection (Detection and Extinguishment) The QA category for the Fire Protection Systems is the same category as the structure, system or component they protect.	9.5.1	
	Emergency Diesel Engine (EDE) Fuel Oil Storage and Transfer System	9.5.4	I(B,C)
	EDE Cooling Water System	9.5.5	I(B,C)
	EDE Starting System	9.5.6	I(B,C)
	EDE Lubrication System	9.5.7	I(B,C)
	EDE Combustion Air Intake and Exhaust System	9.5.8	I(B,C)
Radiation, Seismic, and Meteorological Instrumentation, Communications and Lighting Systems (RSMCLS)	Meteorological Instrumentation	2.3.3	I(C)
	Seismic Instrumentation	3.7.4	I(C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	SRP SECTION	QA LEVEL (DEFINITION SUB PART)
RSMCLS (Cont.)	Intraplant Communications (emergency uses)	9.5.2	I(B,C)
	Intraplant Communications (normal uses)	9.5.2	III
	Interplant and/or offsite Communications (emergency uses)	9.5.2	I(B,C)
	Interplant and/or offsite Communications (normal uses)	9.5.2	III
	Lighting Systems (emergency uses)	9.5.3	I(B,C)
	Lighting Systems (normal uses)	9.5.3	III
	Process and Effluent Radiation Monitoring Instrumentation and Sampling Systems	11.5	I(C)
	Radiation and Airborne Monitoring Instrumentation such as; Area Radiation and Airborne Radioactivity Monitoring Instrumentation Fixed Airborne Radioactivity Monitoring Systems Portable Airborne Radioactivity Monitoring Systems	12.3/12.4	III
Radwaste	Liquid Waste Management Systems	11.2	III
	Gaseous Waste Management Systems	11.3	III
	Solid Waste Management Systems	11.4	III

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
Structures	Reactor Bldg.	I(C)
	Turbine Bldg.	I(C)
	Prestressed Concrete Reactor Vessel (PCRV) Support Structure	I(A,B,C)
	Equipment Storage Wells	III
	Hot Service Facility	III
	New Fuel Storage Bldg.	III
	Spent Fuel Storage Facility	I(C)
	Control Room Facility	I(B,C)
	Air Breathing Facility	I(C)
	Evaporative Cooler Bldg.	NITS
	Gas Charging Facility	?
	Water Chiller Bldg.	I(B,C)
	Emergency Response Facilities	III
	Service Bldg.	NITS
	Office Bldg.	NITS
	Main Cooling Towers	II(B)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
Structures (Cont.)	Service Water Cooling Towers	I(B,C)
	Meteorological Tower	I(C)
	Liquid Nitrogen Storage Tank	I(C)
	Condensate Storage Facilities (Required for safe shutdown or accident mitigation)	I(B,C)
	Condensate Storage Facilites (Not required for a safe shutdown or accident mitigation)	II(B)
	CO_2 Storage Tank	I(C)
	LP Gas Tank	NITS
	Service Water Pump House	I(B,C)
	Service Water Pump Pit	I(B,C)
	Storage Basin Pump Structure	I(C)
	Fire Water Storage Tank	I(B,C)
	Fire Pump Pit	I(B,C)
	Fire Pump Houses	I(B,C)
	Acid Tank	III
	Caustic Tank	III
	Ammonia Tank	III

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
Reactor	PCRV	I(A,B,C)
	Core Support Structures	I(A,B,C)
	Fuel System	I(B,C)
	Control Rod System	I(A,B,C)
	Reflector Elements	I(A)
	Orificing System	I(B,C)
	Reserve Shutdown System	I(C)
Reactor Coolant System (RCS)	Steam Generator (SG)	I(A,B,C)
	Helium Circulators	I(A,B,C)
	Helium Circulators (overspeed)	I(A)
	Helium Circulator Disc (integrity)	I(A)
	Helium Circulator Steam Turbine Drives	I(B,C)
	Helium Circulator Water Turbine Drives	I(B,C)
	Helium Circulator Primary Coolant Shutoff Valves	I(A,B,C)
	Circulator Auxiliary Systems such as Buffer Helium System Bearing Water System	I(B,C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
RCS (Cont.)	Circulator Auxiliary Drive Supply System	
	Circulator Brake and Static Seal	
Steam and Power Conversion	Main Steam Supply System including components such as,	
	Superheater Safety Valves	I(B,C)
	Reheater Safety Valves	
	Main Steam Electromatic Safety Valves	
	Hot Reheat Steam Line Safety Valves	
	Bypass Flash Tank Safety Valves	
	Desuperheaters	
	Bypass Valves	
	Combined Reheat Valves	
	Preflash Tank	
	Bypass Flash Tank	
	Piping from SG to Main Steam Stop Check Valves	
	Piping from Main Steam Stop Check Valves	II(A)
	Turbine System including components such as	
	Turbine (overspeed features)	II(A)
	Turbine (other than overspeed features)	NITS
	Turbine Disk (integrity)	II(A)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
Steam and Power Conversion (Cont.)		
	Hot Reheat Bypass System	II(A)
	Extraction Steam	NITS
	Low Pressure (150 psig) Auxiliary Steam System	III
	Auxiliary Boiler	III
	Backup Auxiliary Boiler	III
	Main Condenser System	II(A,B)
	Main Condenser Evacuation System	II(A)
	Condensate and Feedwater System	I(B,C)
	Condensate Pumps	II(D)
	Boiler Feed Pumps	II(B)
	Feedwater Heaters	II(C)
	Condensate Cleanup System including components such as; Polishing Condensate Demineralizer Deaerator Deaerator Heater Deaerator Storage Tank	III
	Condensate Makeup System	

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
Steam and Power Conversion (Cont.)	Circulating Water System	II(B)
	Circulating Water Makeup System	III
	Gland Seal Steam System	NITS
	Emergency Feedwater System	I(B,C)
	Emergency Condensate System	I(B,C)
Engineered Safety Features (ESF)	Reactor Bldg. Ventilation System (Exhaust fans and filters portion)	I(C)
	Steam/Water Dump System including components such as; Feedwater Isolation Valves Main Steam Stop Check Valves Steam/Water Dump Valves Primary Coolant Moisture Monitoring System Primary Coolant Pressure Monitoring System Steam/Water Dump Tank	I(C)
	Steam Generator Feedwater Flow Limiters including components such as; Feedwater Ring Header Trim Valves Economizer Tube Inlet Orifice	I(C)
	PCRV Penetration Flow Restriction Devices such as; Hexagonal Hold-down Plates Shield Plug Lugs	I(C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
ESF (Cont.)	Shield Plug Support Keys Restrictor Ring Anchored in the PCRV Bottom Head Preheat Pipe Restraints	
	PCRV Penetration Secondary Closures	I(C)
	PCRV Safety Valve System including components such as; Isolation Valves Rupture Discs Relief Valves Containment Tank	I(C)
	Control Room Habitability Systems	I(C)
Instrumentation and Control (I&C)	Reactor Plant Protective System	I(B,C)
	ESF Actuation Systems	I(C)
	Regulating System	
	Plant Control System	II(A)
	Rod Control and Indicating System	II(A)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
(I&C) Cont.	Instrument Systems	
	Nuclear Instrumentation (Neutron Monitoring Systems)	I(C)
	Moisture Monitoring System	I(C)
	Outlet Coolant Temperature Monitors	III
	Analytical Instrumentation, such as: Carbon Monoxide Monitors Moisture Monitors	III
Electrical Power	Offsite Power Systems	II(A,B)
	A-C Power Systems (Onsite)	I(B,C)
	D-C Power Systems (Onsite)	I(B,C)
	Alternate Cooling Method Power System	II(B)
Fuel Storage and Handling	New Fuel Storage	III
	Spent Fuel Storage	I(C)
	Spent Fuel Cooling System	I(C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
Fuel Storage and Handling (Cont.)	Fuel Handling System Fuel Handling Machine Auxiliary Transfer Cask Shielded Isolation Valve Fuel Handling Purge System	I(C)
	Overhead Handling Equipment	I(C)
Auxiliary Water Systems	Reactor Plant Cooling Water Provides cooling water for the following reactor plant heat loads:	
	PCRV Liner Cooling Tubes	I(A,B,C)
	Spent Reactor Fuel	I(C)
	Fuel Handling Machine	I(C)
	Fuel Handling Purge System	I(C)
	Purification Cooling Water System	I(B,C)
	Service Water System This system is generally QAC I because it serves the following QAC I components:	
	Reactor Plant Cooling Water HX's	I(C)
	Purification Cooling Water HX's	I(C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
Auxiliary Water Systems (Cont.)	Instrument Air Compressors	I(C)
	Air Conditioning System Water Chiller Units	I(C)
	Decay Heat Removal HX's	I(C)
	Helium Circulator Auxiliary System	I(C)
	Standby Diesel Generators	I(B,C)
	However, portions of this system that serve only the following types of non-QAC I components may be of lesser quality with proper isolation from the QAC I components: Hydrogen coolers for turbine-generator set Turbine-generator lube oil coolers and reservoir Hydrogen seal oil coolers Service air compressors Boiler feed pump lube oil coolers Steam generator tube plugging machine Radioactive gas waste and helium transfer compressors EHC system coolers	
	Domestic (potable) Water System	III
	Chilled Water System	I(B,C)

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
Auxiliary Air Handling Systems	Reactor Plant Ventilation System (Exhaust Portion)	I(C)
	Reactor Plant Ventilation System (Non-exhaust Portions) The non-exhaust portions of this system is generally QAC-II(A) because they provide cooling and/or ventilation to the following areas: Refueling Area PCRV Cavity Beneath the PCRV PCRV Support Ring	II(A)
	However, portions of this system that serve only the following types of non-QAC-II areas may be of a lesser quality with proper isolation from the QAC-II areas: Instrument Room Radio Chemistry Lab Counting Room	
	Control Room and Auxiliary Electrical Equipment Room System	I(B,C)
	Turbine Building Service Area System (Includes office and administrative areas, locker, and shower areas)	NITS
	Turbine Building Operating Area System	NITS

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
Miscellaneous Auxiliaries	Fire Protection Systems (Detection and Extinguishment) The QA Category for the Fire Protection Systems is the same category as the structures, systems and components they protect.	
	Instrument Air System	I(B,C)
	Standby Diesel Support Systems	I(B,C)
	Service Air System	II(B)
	Air Breathing Systems	I(C)
	Reactor and Turbine Building Heating System	NITS
	Hydraulic System	II(A)
	Nitrogen System	I(B,C)
	Helium Purification System	I(B,C)
	Helium Storage System	II(B)
	Decontamination System	III
	Steam Generator Tube Plugging Machine	III
	Helium Circulator Cask	III
	Primary Coolant Plateout Probe Handling Equipment	III

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
Radiation, Seismic and Meteorological, Instrumentation, Communications, Lighting and Miscellaneous Systems (RSMCLMS)	Process and Effluent Radiation Monitoring Instrumentation and Sampling Systems: Reheat Steam Monitoring Systems Ventilation Exhaust Monitoring Systems	I(C)
	Fission Product Plateout Monitor System	III
	Iodine Monitor System	III
	Fast Gas Sampling System	III
	Pipe Rupture Detection System	I(C)
	Area Radiation Monitoring Systems	III
	Seismic Instrumentation	I(C)
	Meteorological Instrumentation	I(C)
	Communication Systems	
	Intraplant Communications	
	Emergency Use	I(B,C)
	Normal Use	III

GROUP	STRUCTURES/SYSTEMS/COMPONENTS	QA LEVEL (DEFINITION SUB PART)
(RSMCLMS) Cont.	Interplant and/or Offsite Communications	
	Emergency Use	I(B,C)
	Normal Use	III
	Lighting Systems	
	Normal (Station Lighting)	III
	Essential Lighting	III
	Emergency Lighting	I(B,C)
Radwaste	Liquid Waste Management Systems	III
	Gaseous Waste Management Systems	III
	Solid Waste Management Systems	III

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