NQA-1 Introduction and Its Role in Meeting 10CFR50 Appendix B

SONIC SYSTEMS

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Introduction

"Quality is not an act. It is a habit"

Aristotle

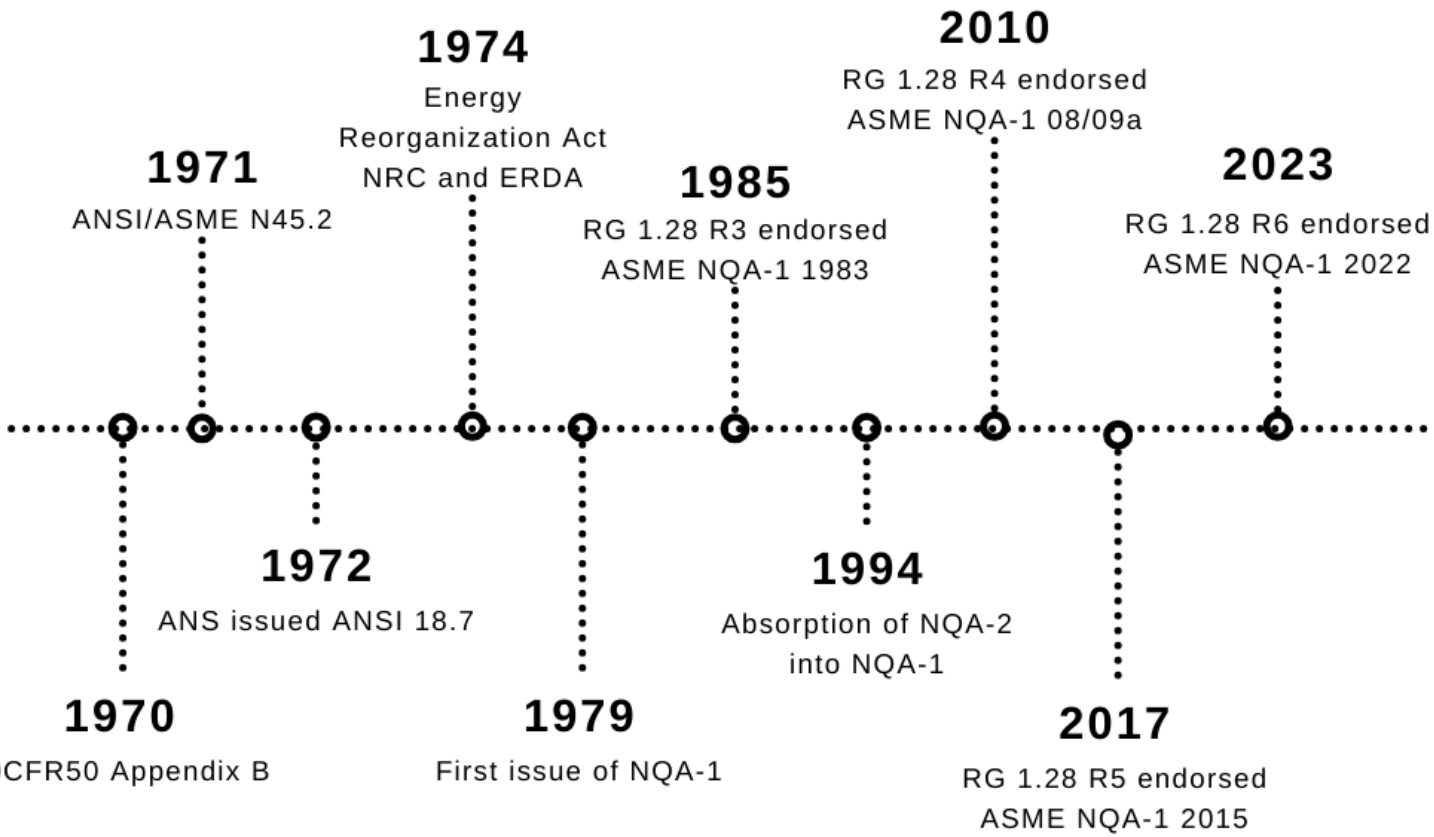
History of Nuclear Quality Assurance

Reasonable Assurance and Graded Approach

Quality Assurance Fundamentals

NQA-1 Organization

History of Nuclear Quality Assurance



from: NQA TR-2020, “Evolution of Quality Assurance Principles and Requirements in the US Nuclear Industry”

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Quality Program Requirements

1. Organization
2. Quality Assurance Program
3. Design Control
4. Procurement Document Control
5. Instructions, Procedures, & Drawings
6. Document Control
7. Control of Purchased Items & Services
8. Identification and Control of Items
9. Control of Special Process
10. Inspection
11. Test Control
12. Control of Measuring & Test Equipment
13. Handling, Storage and Shipping
14. Inspection, Test, and Operating Status
15. Control of Nonconforming Items
16. Corrective Action
17. Quality Assurance Records
18. Audits

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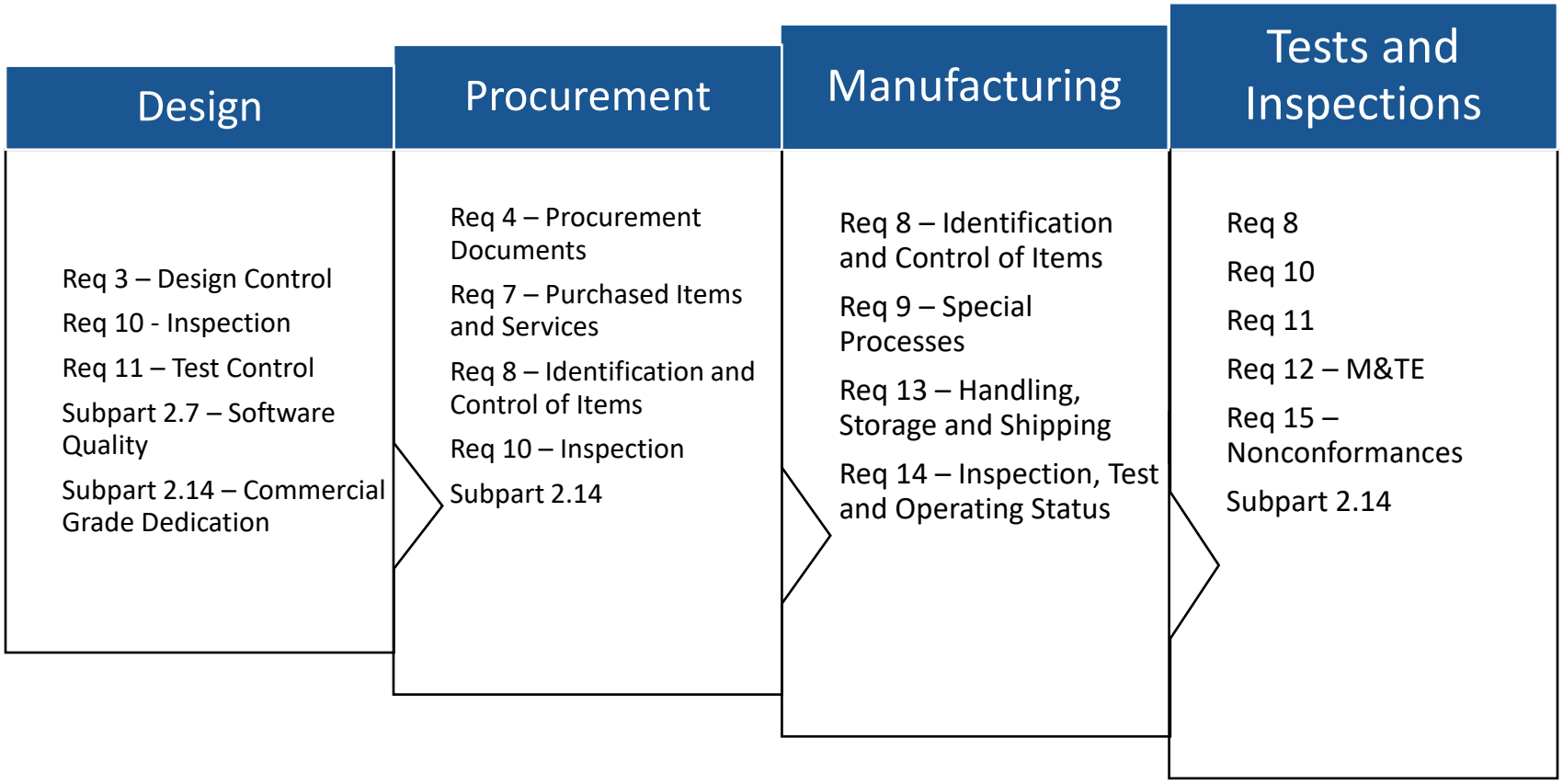
Quality Assurance Phases



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Reasonable Assurance

10CFR50 Appendix A Introduction

The principal design criteria establish the necessary …requirements for structures, systems, and components important to safety;

that is, 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.

NRC Glossary

Reasonable - Rational, sensible, or resulting from sound judgment.

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Graded Approach using NQA-1

Essential to safe, reliable and efficient performance

Focus on results…with the relative importance of an item or activity

Defined in NQA-1

- Relative importance to nuclear safety
- Magnitude and importance of any hazard
  Radiological or non-radiological
- Lifecycle stage
- Other relevant factors

Graded Approach using NQA-1

Nonmandatory Subpart 3.1-2.1

- Hazards with the work or the results
- Consequences of malfunction or failure or inappropriate use of the results of services provided
- Probability of the occurrence of the postulated consequences
- Complexity of design and manufacturing or uniqueness
- Difficulty to perform the service
- Special controls and oversight
- Functional compliance demonstration
- Quality history and standardization
- Difficulty to repair, replacement or replication of an item or service

Graded Approach using NQA-1

Graded Approach – 37 times

Relative Importance – 18 times

As Necessary – 28 times

As Needed – 4 times

As Required – 43 times

When Required – 6 times

When Necessary – 2 times

When Needed – 2 times

In a Manner Consistent – 5 times

ASME NQA Committee

Standard Committee – 33 Members

Six primary subcommittees

- Assessment and Verification – 26 Members
- Engineering and Procurement Processes – 31 Members
- Program Management Process – 25 Members
- Waste Management – 17 Members
- Software Quality Assurance – 18 Members
- International Activities – 13 Members

Resource Development Group

NQA-1 – the Standard

Part I – Basic Requirements

Mirrors 10 CFR 50 Appendix B (18 criteria)

Part II – Application Requirements

Provides amplified requirements for special topics

Part III – Non-mandatory Appendices

Provides acceptable method of compliance

Part IV - Positions and Application Matrices

Guidance Positions to Implement an NQA-1 Program using different approaches

Interpretations

More Information about NQA

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