

Introduction to Quality Assurance

Why Do Quality Assurance

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Learning Objectives

Upon completion of this module, the student will be able to:

- Understand the kinds of risks faced by the Department of Energy (DOE)
- Understand relationship of risk to quality assurance (QA) program rigor
- Understand how QA reduces risk
- Understand how QA pays off



Why Do Quality Assurance

What are DOE Risks?

There are many risks present everyday. Here are the major risks that must be balanced on every project DOE has underway.

Safety of workers and the Public is the primary imperative for all work conducted by DOE and DOE contractors. This extends well beyond the risks of construction and installation. The safety of operations of all DOE processes with respect to the worker and the Public is paramount.

Regulatory risk captures both the risk that regulations may change over the life of a project and the impacts that this may have, and for clean up work (like that performed by EM) that the standards to be satisfied can be affected by public comment and regulatory action. These types of changes are a large risk that must be recognized and managed.

Fielding a final design that fails to perform as expected/required is a large financial risk. Many DOE operations were/are one-of-a-kind activities performed in one-of-a-kind facilities. The failure to meet operational requirements during operations or clean up work results in lengthy delays and significant increases in project cost.

The Public and our regulators rightfully expect DOE to conduct operations and activities safely, with minimal risk. While risk acceptance is a Departmental responsibility, safely completing work activities builds Public trust and enhances DOE credibility with the Congress, Public, and regulatory agencies. A reduction or loss of this credibility is not an acceptable outcome.

What Is Quality Assurance Program Rigor and How Does Risk Affect It?

Rigor literally, is the stiffness of the quality assurance program. In practical terms, rigor is reflected in the types and number of checks performed for a specific activity. Rigorous application of QA requirements could be characterized as being unyielding to error (i.e.; no “wobble” room). In nuclear work, it is the actions planned and taken to ensure an expected result.

The “graded approach” is that process by which the specific risks are evaluated and steps taken during all stages of work to minimize the likelihood of an error or its perpetuation through succeeding work. Requirements cannot be “graded” away, minimum expectations apply.

The more risk presented by a task or an item the greater the need for assurance that work is performed correctly.



Where a craftsman previously built their reputation on flawless workmanship, that workmanship alone can't be depended upon in higher-risk nuclear work.

How Does Quality Assurance Reduce Risk? & How Does QA Pay Off?

Quality assurance controls work. When you control your activities, you build in safety and efficiencies, and when the work is completed, you can show evidence of satisfactory completion. All of this provides confidence in your ability to manage your work and create expected outcomes. This applies to all stages of design, installation, testing, and operations.

During operations, spare parts are controlled, as is repair and maintenance work to preserve the confidence in the equipment/ systems by preventing inadvertent changes to the as-built, as-tested configurations. Configuration control is critical over the activity lifecycle.

Performing activities in a way that increases or preserves confidence in the outcome is what builds credibility with outside stakeholders.

- The workers
- The general public
- Regulators
- Law makers and budget approvers.

