

Enabling Objectives

- The purpose of this module is to explain or identify the following:
 - to whom the process applies;
 - what is covered by the USQ process;
 - when and where does the USQ process apply;
 - why do we need a USQ process;
 - activities outside the scope of the USQ process; and
 - when a full USQD is not required.

To Whom Does the USQ Process Apply?

- The USQ process applies to all Members of the Workforce (MOW) involved in design, engineering, maintenance, inspection, operations, and assessment of hazard category 1, 2, or 3 DOE nuclear facilities operated by Sandia. For purposes of the USQ process, MOW includes
 - Sandia employees; and
 - Sandia contractors regardless of location.

What is Covered by the USQ Process?

- All temporary or permanent changes to a nuclear facility, whether mechanical or procedural, require application of the process.
 - Nonsafety-related systems or procedures are not excluded from the scope of Section 830.203 if they have the potential to affect the DSA/facility safety basis.

Criticality Safety

- USQs and Criticality Safety Evaluations (CSE)
 - All proposed new or changed processes involving criticality safety that necessitate a new or revised Criticality Safety Evaluation, including those in an experimental facility, undergo a USQ review by the Nuclear Safety Management rule, 10 CFR 830.

From DOE G 424.1-1A, “Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements”

When and Where is the USQ Process Applied?

- The Sandia USQ process must be applied to temporary or permanent changes within hazard category 1, 2 and 3 facilities operated by Sandia, and changes outside those facilities when those changes have the potential to affect the safety of operations.

Temporary or Permanent Physical Changes

- A structure, system, or component (SSC) would be considered changed if any of the following were altered:
 - the function(s);
 - the method of performing those functions; or
 - the design specification or configuration.
- Changes to SSCs that are not explicitly addressed in the safety basis should also be considered.

Temporary or Permanent Physical Changes

- **All physical facility changes, including interim states, enter the USQ Process.**
 - Modifications that are performed in separate, distinct stages (usually for cost, schedule, or operational considerations) should be assessed at the intermediate stages as well as the overall "before-to-after" modification. Such staged activities may be addressed by multiple USQDs for individual stages, provided the overall change is not neglected.

Procedure Changes

- Procedures explicitly or implicitly identified in the safety basis shall be entered into the USQ Process. Such procedures are understood to be those that:
 - govern operations identified in the safety basis;
 - affect ITS equipment identified in the safety basis;
 - implement a safety management program identified in the safety basis; or
 - otherwise define or describe activities or controls over the conduct of work identified in the safety basis.

Procedure Changes

- **DOE Guide 424.1-1A states the following :**
 - Procedures may be identified explicitly or implicitly in a facility DSA.
 - If the procedure is implied directly by the nature of a topic in the safety basis (including the operational safety requirements or TSRs and their bases), that change should be considered to be to a procedure described in the DSA, so that a USQ determination is done when appropriate.

Procedure Changes (continued)

- **DOE Guide 424.1-1A states the following:**
 - Procedures are not limited to those items specifically identified as procedure types (for example, operating, chemistry, system, test, [maintenance], surveillance, and emergency plan) but could include a change as described in the DSAs that defines or describes activities or controls over the conduct of work.
 - Changes to procedures include revisions to an existing procedure and developing a new procedure.

New Activities

- DOE Guide 424.1-1A, page 5, states the following:
 - USQDs are required for tests or experiments not described in the existing safety analyses.
 - Tests and experiments should be broadly interpreted to include new activities or operations.
 - These activities could degrade safety margins during normal operations or anticipated transients or could degrade the ability of SSCs to prevent accidents or mitigate accident conditions.

Changes to External Activities

- External activities outside nuclear facilities are covered by the USQ process if they have the potential to affect the safety basis.

Why Do We Need the USQ Process?

- USQ process determines required approval level
 - Sandia; or
 - NNSA/SSO.

Why Do We Need the USQ Process?

- Intended to be implemented along with configuration management process, including change control.
- Change control process should include generalized steps for:
 - identifying and describing the temporary or permanent change;
 - technical reviews of the change;
 - management review and approval of the change;
 - implementation of the change; and
 - documenting the change [including revision of documents]. **[From DOE G 424-1A]**

Engineering Judgment Used in Applying Process

- Firm rules not always available.
 - No formal quantification of risk is available for prioritization purposes.
 - Depends on expert judgment, conservatively applied.
 - Experience from similar situations, background knowledge gained from formal study, knowledge gained from reading lessons learned and occurrence reports – all this factors into “engineering judgment”.
- USQ process is essentially a qualitative evaluation process, dependent upon the engineering judgment of the evaluators.

Activities Outside the Scope of the USQ Process

- Systems and activities at < hazard category 3 facilities
 - [SNL's Management of Change (MOC) process performs a similar function for moderate hazard industrial facilities]
- Changes that are covered by approved procedures and are considered within the DSA of the facility
 - Equipment line up to accommodate another process that is covered by the DSA

From DOE G 424.1-1, “Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements”

Routine Maintenance

- Only the performance of routine maintenance that involves changing components results in USQ process invocation.
- The definition of routine maintenance that can be dismissed without application of a Cat-X consists of housekeeping, calibration, lubrication, inspection, or testing.
 - Housekeeping includes janitorial services (e.g., sweeping, mopping, waxing, collecting trash, changing room illumination light bulbs).
- Maintenance activities that potentially introduce new hazards must be considered in USQ process.

USQ Process Has Two Levels

- USQ Screens
 - The purpose of screening is to identify and document situations that do **not** require USQD processing.
- USQDs
 - Answering the “seven questions.”

USQD Screening Criteria

- A full USQD is not required if one of three conditions is met:
 - Change meets a set of pre-defined criteria, agreed to by NNSA/SSO, that show that it is either bounded by another USQD or has no impact on safety;
 - Change is already known to require NNSA/SSO approval; or
 - Change does not have the potential to impact safety systems or processes as defined in the facility safety basis nor creates new hazards.

Full USQD is Not Required if Change is Bounded or Has No Impact on Safety

- Change can be bounded if it is already covered by
 - An approved Categorical Exclusion (Cat-X); or
 - An overlapping USQD.
- Change can be judged to have no impact on safety if the end product of the change:
 - Involves an exact replacement;
 - Involves an approved equivalent part;
 - Nonconforming part is restored to become compliant; or
 - System or structure is modified to meet original design and safety conditions.
- Change can be judged to have no impact on safety if the change is purely editorial.

When Is a Full USQD NOT Required?

- Categorical Exclusions (Cat-X)
 - Can promote significant cost savings;
 - Require a detailed evaluation of why an exclusion was accepted; or
 - Require DOE/NNSA approval before they are applied.

When is a Full USQD NOT Required?

- Another USQD exists that relates to the current issue:
 - **Current and prior USQD must be written against the same DSA and must have the same scope**
 - Changes that may have occurred in the DSA since the prior USQD was prepared must be considered for impact.
- The prior USQD must fully cover the current issue.

When is a Full USQD NOT Required?

- The installation of an item that is an exact replacement:
 - same manufacturer; and/or
 - same model number.

When is a Full USQD NOT Required?

- The installation of an item that is on the facility “Approved Equivalent Parts” list, for which a facility engineer has evaluated and concluded that the replacement item meets all the requirements pertinent to the specific application at the facility, including the service conditions.

From DOE G 424.1-1, “Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements”

When is a Full USQD NOT Required?

- When the change involves a non-conforming part restored to become compliant with requirements.
- However, interim condition may need to be evaluated.

When is a Full USQD NOT Required?

- When the change involves a restorative modification which returns the facility to a condition as described in the facility safety basis which is consistent with the approved design.
- However, interim condition may need to be evaluated.

When is a Full USQD NOT Required?

- Purely editorial changes
 - Changes to procedures, such as spelling or typographical corrections, grammatical changes, etc.
 - Minor revisions such as adding a clarifying note, hold point or reference that do not change the meaning.

Full USQD Not Required if Change is Known to Require NNSA/SSO Approval

- Change is already known to require NNSA/SSO approval:
 - Major Modifications;
 - Changes for which management has already decided will be submitted to DOE for safety review and approval; or
 - Changes to or the addition of a new TSR.

From DOE G 424.1-1, “Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements”

When is a full USQD NOT required?

- Other changes that do not require the preparation of a full USQD since DOE approval is required include:
 - DOE mandates, orders, or directed changes to safety basis documents
 - Procedures implementing the DOE mandates or orders may require a USQD
- Plans/matrices required to be submitted to DOE for approval
 - Maintenance Implementation Plan
 - Training Implementation Plan
 - Implementing procedures may still require USQDs
- USQ procedure revisions
- Changes to an existing Cat-X or a new Cat-X not yet approved by NNSA

Changes that Do Not Have the Potential to Impact Safety

- Next module will provide detailed guidance for this category.

Section Summary

- The purpose of this module is to explain or identify the following:
 - to whom the process applies;
 - what is covered by the USQ process;
 - When and where does the USQ process apply;
 - Why do we need a USQ process;
 - activities outside the scope of the USQ process; and
 - when a full USQD is not required.