

# Enabling Objectives

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- 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?

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- 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

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- 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?

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- 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

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- 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

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- **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)

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- **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

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- 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

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- 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?

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

# Why Do We Need the USQ Process?

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- 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

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- 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

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- 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

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- 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

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- 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

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- 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

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- 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?**

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- **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?

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- 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?

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

# When is a Full USQD NOT Required?

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- 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?

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- 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

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- 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?

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- 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**






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- Next module will provide detailed guidance for this category.



# Section Summary

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