

EFCOG & DOE Improving Efficiency of the USQ Process

October 2009



Facilitated by
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LLNL-PRES-418026

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This work performed under the auspices of the U.S. Department of Energy by
Lawrence Livermore National Security, LLC under Contract DE-AC52-07NA27344
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Motivation – Save Money and Perform Better

➤ **The President's SAVE Award** [from the OMB webpage]

"Americans across the country know that the best ideas often come from workers – not just management. That's why we'll establish a process through which every government worker can submit their ideas for how their agency can save money and perform better."

– *President Barack Obama*



Motivation – Save Money and Perform Better

Letter from Secretary Chu on cutting costs

[Oct. 6, 2009](#)

Do you have a smart idea for how the Department of Energy can trim costs and save taxpayer dollars? [Submit](#) your cost-saving initiative for potential inclusion in the President's Budget and become the first-ever SAVE Award winner.

The deadline for submissions is Wednesday, Oct. 14. The winner will meet with President Obama at the White House and have his or her savings initiative incorporated into the FY 2011 Budget. In addition, the agency with the most participation in the contest will receive an award.

In a radio address on April 25, the president called for “a process through which every government worker can submit their ideas for how their agency can save money and perform better.”

The president's SAVE Award will fulfill this commitment by enabling any federal employee to submit ideas for efficiencies and savings as part of the annual budget process. This contest is part of a larger effort to make sure that we invest taxpayer dollars in programs and initiatives that have proven records of success and fix or end programs that do not.

All submissions are confidential and can be made on the [Web](#). The deadline is Wednesday, Oct. 14, and the winner will be announced in November. I urge you to participate not only so the Department of Energy can win the award for the best participation, but also because this effort is an important way to give the American people a government that does more for less.

Thank you for your support of this effort and for participating in the President's SAVE Award contest.

Sincerely,
Steve Chu



Big picture – Save Money and Perform Better

- Improve internal consistency of DOE USQ Guide
 - DOE can greatly benefit from a more efficient USQ process
 - This is a prime example for Secretary Chu's initiative for cost savings
 - DOE USQ process voraciously consumes limited DOE resources
 - Concern that this is not a wise stewardship of taxpayer dollars
 - Large costs to implement, direct and indirect
 - Manpower diverted from higher priority/value added topics
 - Focus diverted from key issues
 - Schedule delays
 - Morale issues
 - Is the USQ process broken?
 - Is there a better way?
 - Discussion will focus on improving efficiency by:
 - Improving the DOE USQ Guide aka create DOE G 424.1-1C
 - Changing 10 CFR 830

Note: The statements and quotations in this presentation are to facilitate discussion, summarize all viewpoints raised by the USQ Subgroup, DOE and contractors, and do NOT represent the views of the facilitator.



Outline

➤ Opportunities for Improvement

- **Improving internal consistency of DOE USQ Guide**
- **What enters the USQ process and what does not**
- Categorical Exclusions
- Screening
- **USQD**
 - **Expeditious USQD (Expert USQD)**
 - USQD level-of-detail (Who is the intended reviewer?)
 - Disconnect between DOE-STD-3009 and DOE USQ Guide
- **Proposals for revising 10 CFR 830**
 - Question: Is this feasible?
- Other suggestions?

➤ Path forward:

- Revise DOE USQ Guide (DOE G 424.1-1C) with these improvements
- Change 10 CFR 830.203



Improving the Efficiency of the USQ Process

➤ Improve internal consistency of DOE USQ Guide

- DOE G 424.1-1B consolidates PISA text in one location and improves consistency
- Proposal: Build upon this improvement, consolidating and improving consistency for the rest of the DOE USQ Guide
 - DOE USQ Guide, since it was drafted, has been subjected to many small changes, additions, clarifications, etc. that have had the effect of rendering it difficult to use and inconsistent
 - ‘Clean sheet’ rewrite to integrate the content, resolve the vagaries and inconsistencies, and format it into a guide rather than a collection of comment resolutions
 - Consistent terminology
 - Focus on Regulatory Basis, e.g.,
 - » USQ Determination – Definition of USQ in 10 CFR 830.3
 - » Screening – Criteria in 10 CFR 830.203(d)
 - » Documentation of USQ process implementation – 10 CFR 830.6



Improving the Efficiency of the USQ Process

➤ Improve internal consistency of DOE USQ Guide (cont'd)

➤ *Inconsistent Terminology:*

- 'USQD' and 'screening' are inconsistently used throughout the Guide
- Confusion of "USQ process" and "a change requiring a USQD"
 - These are two different concepts, however, the wording is used inconsistently
 - 'USQD' is generally understood to mean application of the seven questions
 - However, in multiple locations, 'USQD process' refers to the implementation of the DOE-approved USQ procedure (i.e., 'USQ process') that may/may not require USQD
 - These details are very important in implementation
- Confusion of Applicability Assessment and Screening
 - Applicability Assessment: whether change is inside or outside of USQ process
 - Screening: review inside USQ process which indicates if a USQD is required



Improving the Efficiency of the USQ Process

➤ Improve internal consistency of DOE USQ Guide (cont'd)

- Recommend adoption of consistent terminology with a thorough scrub
 - List of terms for which a definition section would be beneficial
 - Applicability Assessment/Entry Condition
 - USQ Process
 - USQ Documents
 - Categorical Exclusion
 - Screening
 - USQ Determination (aka USQ Evaluation)
 - Example proposals:
 - Applicability Assessment/Entry Condition: Changes that are excluded from USQ review based on the DOE-approved USQ procedure (e.g., 401k procedures, changes in cafeterias outside nuclear facilities that cannot effect nuclear facilities, changes that require DOE approval such as TIMs and TSRs).
 - » This includes changes which are exempted by identification and exclusion in other programs (e.g., routine maintenance) or procedures.
 - » Such exceptions are described in the DOE-approved USQ procedure, but implementation occurs in other programs and procedures.
 - USQ Documents: USQ documents include Categorical Exclusions, USQ screenings, and USQDs (does not include Applicability Assessments).
 - » Must be prepared by USQ qualified personnel.
 - » Subject to 10 CFR 830.203 documentation requirements.
- These details are very important in implementation.



Improving the Efficiency of the USQ Process

- **Improve internal consistency of DOE USQ Guide (cont'd)**
- Additional guidance that addresses the extent of implicit content of DSAs may be beneficial.



Improving the Efficiency of the USQ Process

➤ Applicability Assessments/Entry Condition

- Entry Condition for USQ process defined by DOE approved USQ procedure
 - Identifies what enters the USQ process and what does not, and thus no paperwork
 - No documents nor documentation retention requirements per 10 CFR 830.203
- Low value added (if any) yet high volume workload for many changes
- Question: Can we improve the process by eliminating paperwork for changes which can not effect the nuclear facility?
 - Changes outside nuclear facilities that can not impact nuclear facilities (e.g., changes in the cafeteria)
 - Institutional procedures (e.g., 401k procedures, travel procedures)
 - Procedures in general
 - » Check to ensure procedures within Safety Basis and no mistakes regarding DSATSR (value added)
 - » Confusion over the lower threshold for a procedure subject to the USQ process
 - Routine maintenance as operators understand the concept
 - » Housekeeping/calibration, etc.
 - » Exact replacement/AEP (formerly like-for-like and like-in-kind)
 - » Question: Inside or outside the USQ process?
 - » Question: Are they more appropriately handled within the design and work control processes since it is exclusively a technical equivalency evaluation rather than a safety basis consideration?
 - » Other issues?



Improving the Efficiency of the USQ Process

➤ Categorical Exclusions

- EFCOG USQ Survey, need more input for suggestions
 - CatXs possibilities:
 - Installation/repair of broadly applicable commercial part in SSCs which are not EITS using common commercial practices
 - Maintenance of non-EITS that cannot impact EITS
 - Changes to portions of procedures that pertain only to non-nuclear facilities (e.g., changing text pertaining to cafeterias in institutional procedures that apply to both non-nuclear and nuclear facilities)
 - Other suggestions?



Improving the Efficiency of the USQ Process

➤ Screening

- Question: What is the purpose of screening? How should it be implemented? What can you screen? Can you read the DSA?
- Proposal: Revise DOE USQ Guide, possibly as suggested below:
 - If each of the conditions in 10 CFR 830.203(d) is not met for a proposed change, then screening such a change from further consideration may be appropriate.
 - Is the change:
 1. A temporary or permanent change in the facility as described in the existing safety basis?
 2. A temporary or permanent change in the procedures as described in the existing safety basis?
 3. A test or experiment not described in the existing safety basis?
 - Screening is intended to be a simple go/no-go decision-making step without evaluative consideration.
 - When appropriately streamlined, an individual familiar with the screening process and facility safety basis can often complete a screening decision be completed in a matter of minutes.
 - Screening should be performed only by personnel qualified to perform USQDs.
 - “Non-evaluative” means that the answer to a screening question is obvious from a simple reading of the safety basis document and does not involve answering the seven USQD questions.
 - Criteria for screening is not whether the SSC or activity is described in the DSA, but whether the SSC or activity continues to be appropriately and adequately described in the DSA.



Improving the Efficiency of the USQ Process

➤ USQD

- Expert Based USQD/Expeditious USQD
- USQD level-of-detail
 - Who is the intended reviewer?
- Disconnect between DOE-STD-3009 and DOE USQ Guide
 - margin of safety, EITS, safety management programs



Improving the Efficiency of the USQ Process

Y-12 Pilot Expert USQD Process

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Safety Analysis Engineering
B&W Y-12

October 2009

Background

- Preparation, review, approval represents significant resources
 - ~1000 USQDs/year prepared @ Y-12 for proposed changes
- Senior Management Offsite initiative recommended reducing the number of USQDs
 - A team of SAE and Operations representatives formed
 - Must be 10 CFR 830.203 compliant
 - Reduce the number of standard USQDs/year
 - Limit the USQ Process to it's main purpose - "Determination of Approval Authority" USQ Process is not change control or safety analysis
 - Think "outside the box" (e.g., not constrained by USQD Guide)

Proposed Option

Develop an Expert USQ Process

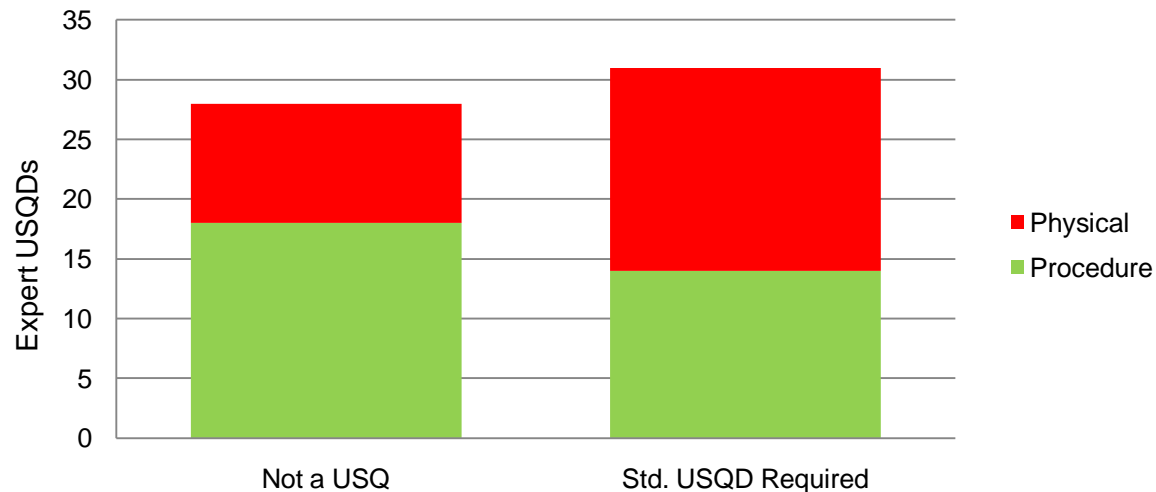
- Utilize extensive expertise of safety analysts who are very familiar with the facility and its safety basis
- “Expert Preparers” perform USQDs for a limited scope of proposed changes
 - Expert USQDs incorporate a checklist modeled after DOE and NRC USQD questions but w/o detailed justifications/ rationale for convincing 3rd party
 - Experts held accountable
 - Only highly experienced & trained personnel considered for Expert Preparers
- Risk of a USQD missing a USQ very low
 - Historically only 4/1000 (0.4%) of USQDs for proposed changes identify a USQ
 - Risk is not of an unsafe change (USQ Process does not determine safety)
 - Risk relates to determination of the correct approval level

Expert USQD Procedure Developed

- Expert USQD criterion checklist developed with input/comments from:
 - Y-12 Engineering & Operations
 - Y-12 Site Office
 - CDNS Staff
 - Y-12 DNFSB Staff
- Expert USQD determines:
 - Not a USQ, or
 - Requires Standard USQD
- Pilot procedure specifies performing the expert process in parallel with existing DOE approved USQ Process
- Approved by Y-12 mgt. for 6 month pilot use in a designated facility (12/08 – 5/09)

Pilot Expert USQD Results

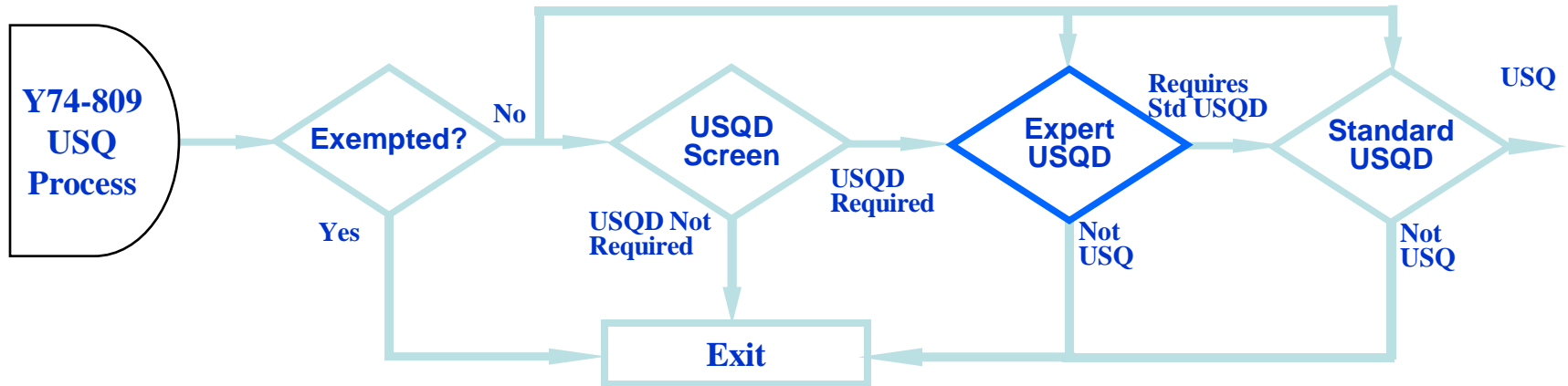
| Expert USQD Result | Procedure | Physical | All Changes |
|-----------------------|-----------|----------|-------------|
| Total | 32 | 27 | 59 |
| Std USQD Required | 14 | 17 | 31 |
| Not A USQ | 18 | 10 | 28 |
| Std. USQDs Eliminated | 56% | 37% | 47% |



Pilot Expert USQD Results (cont.)

- Significant potential savings
 - 6 months of piloted expert reviews represent
 - ~ 12% of changes normally requiring USQDs @ Y-12 for a this period
 - 47% of Std. USQDs potentially eliminated
 - Majority of procedure revision USQDs eliminated
- No wrong expert USQD outcomes
 - Results compared against the Std. USQD for the change
 - Some minor compliance/quality issues identified
 - Correctable during feedback and improvement
- Expert USQDs are rule compliant (10 CFR 830.203)

Path Forward



- Revise USQ Process Procedure to include Expert USQD
- Request HQ letter documenting rule compliance opinion
- Implement revised USQ Process at Y-12
- Special emphasis on expert USQDs in USQ Process assessments
- Improve the process as necessary by utilizing assessment results, user feedback, and improvement suggestions

Procedure Change Example

| EXPERT UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) WORKSHEET | | EXPERT USQD NUMBER EUSQD-09-B007-026 |
|--|---|---|
| TITLE Procedure Revisions to Y50-01-029 Rev.1.3 | | |
| FACILITY/SYSTEM B007/Material Inventories | PMR/DMR/CHANGE REQUEST NUMBER 09-PMR-203 | |
| Description Procedure Modification request 09-PMR-203 to Y50-01-029 Rev.1.3, <i>Improved Uranium Assay Verification (U)</i> , removes information related to B008 and clarifies that the procedure is not to be used for NMC&A purposes. B008 was deactivated, recategorized, and is no longer a Nuclear facility. | | |
| DETERMINATION CRITERIA | | |
| Relative to the DSA: Is it readily apparent, based on expert knowledge, training and experience, that the proposed change does not: | | |
| <ol style="list-style-type: none"> Increase the probability or consequences of an accident described in the DSA? Directly or indirectly increase the probability of failure or consequences of a malfunction of equipment important to safety described in the DSA. Create the possibility of an accident of a different type than previously evaluated in the DSA? Create the possibility of a malfunction of equipment important to safety of a different type than previously considered in the DSA? Change a design basis or operational limit as described in the DSA? Change a methodology or evaluation method that results in a departure from a method of evaluation described and used in establishing the design basis or in the safety analysis? | | |
| Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | |
| <i>If affirmative, provide a brief rationale why the change is not a USQ, otherwise prepare a standard USQ or request YSO approval.</i> | | |
| This procedure change supports the B008 Safety Basis documentation deactivation. The B008 facility is physically separate from B007 and has no association with B007 Safety Basis documentation. The clarification statement only helps ensure the procedure will not be used for unapproved use (i.e., NMC&A). The removal of information related to B008 as listed in 09-PMR-203 does not impact the B007 Safety Basis. | | |

Based on this determination, the proposed change does not represent a USQ.

Physical Change Example

EXPERT UNREVIEWED SAFETY QUESTION DETERMINATION (USQD) WORKSHEET

EXPERT USQD NUMBER

E-TTT3-20081201-B

TITLE

Install Three Vacuum Hose Reels

FACILITY/SYSTEM

B007/Rooms 120 and 127

PMR/DMR/CHANGE REQUEST NUMBER

CR-2008-0249

Description

Install three vacuum hose reels in building B007. Two reels will be mounted in room 127, one on the west wall and on the north wall at the existing vacuum line drop. A third reel will be mounted to column K-3 in room 120 at the existing vacuum line drop.

DETERMINATION CRITERIA

Relative to the DSA: Is it readily apparent, based on expert knowledge, training and experience, that the proposed change does not:

1. Increase the probability or consequences of an accident described in the DSA?
2. Directly or indirectly increase the probability of failure or consequences of a malfunction of equipment important to safety described in the DSA.
3. Create the possibility of an accident of a different type than previously evaluated in the DSA?
4. Create the possibility of a malfunction of equipment important to safety of a different type than previously considered in the DSA?
5. Change a design basis or operational limit as described in the DSA?
6. Change a methodology or evaluation method that results in a departure from a method of evaluation described and used in establishing the design basis or in the safety analysis?

Yes No

If affirmative, provide a brief rationale why the change is not a USQ, otherwise prepare a standard USQ or request YSO approval.

The proposed change attaches vacuum hose reels to the building structure which is a credited design feature for safety. Structural Engineering review and approval documents that the change does not adversely affect design criteria and credited safety functions of the structure. Therefore, the building response to natural phenomena is not affected by the proposed change.

The use of vacuum is consistent with current procedures and will not present a change to safety basis documents.

Based on this determination, the proposed change does not represent a USQ.

Improving the Efficiency of the USQ Process

➤ USQD (cont'd)

- USQD level-of-detail
 - Question: How much is enough?
 - Question: Who is the intended reviewer?
 - Perception in the field that current auditor expectations require excessive level-of-detail which increases workload, drives up cost, and delays schedule.



Improving the Efficiency of the USQ Process

- Disconnect between DOE-STD-3009 and DOE USQ Guide
 - Margin of Safety
 - DOE G 424.1-1A specifies one USQD question concerning margin of safety and provides a generic definition of explicit and implicit
 - When Safety Limits are not specified, DOE-STD-3009 is silent on implicit margin of safety and does not require identification of such in the DSA
 - Creates great difficulty for preparers to respond to the questions
 - Causes problems with USQD results when the contractor's idea of what is margin of safety differs from auditor



Improving the Efficiency of the USQ Process

➤ Disconnect between DOE-STD-3009 and DOE USQ Guide (cont'd)

- Safety Management Programs (SMPs)

- DOE G 424.1-1A specifically identifies as subject to the USQ process those procedures “that implement a safety management program described in the safety basis” as well as implicitly described procedures
- Proper treatment of SMPs in DSAs is defined explicitly in DOE-STD-3009
- DOE-STD-3009 does not identify the DSA as a vehicle for safety management program compliance with the myriad of relevant statutes, regulations and DOE orders to which such programs must answer
- Specifically DOE-STD-3009 states:
 - “Program commitments (e.g., radiation protection, maintenance, quality assurance) encompass a large number of details that are more appropriately covered in specific program documents (e.g., plans and procedures) external to the DSA. The cumulative effect of these details, however, are recognized as being important to facility safety, which is the rationale for a top level program commitment becoming part of the safety basis.”
 - “An overall commitment made in a DSA is that the contractor will not change the facility configuration underlying the documented safety basis without implementing and completing the unreviewed safety question (USQ) process. However, situations do occur where a USQ process is not necessary. For example, a stipulation to have a radiation protection program in the administrative control section of the TSR is a commitment; however, changes to specific program provisions do not require going through the USQ process. Further clarification of such interpretations can be found in DOE G 424.1-1, “Implementation Guide for Use in Addressing Unreviewed Safety Question (USQ) Requirements”.”



Improving the Efficiency of the USQ Process

- Disconnect between DOE-STD-3009 and DOE USQ Guide (cont'd)
 - DOE G 424.1-1A specifies that certain USQD questions be evaluated against a DSA that is not required by DOE-STD-3009 to adequately address EITS
 - DOE G 424.1-1A specifies three USQD questions concerning EITS and provides a generic definition while 3009 is silent and does not require identification or technical discussion of such equipment in the DSA
 - Creates great difficulty for preparers to respond to the questions
 - Causes problems with USQD results when the contractor's idea of what is EITS differs from auditor
 - EFCOG USQ teleconferences addressed this issue
 - Consensus resolution is to obtain DOE approval of EITS (list of EITS, IDID, DID) via a formal DOE approval of:
 - DSA
 - Separate EITS list
 - USQ Procedure containing EITS list



Improving the Efficiency of the USQ Process

- Proposals for revising 10 CFR 830
 - Question: Is the USQ process fundamentally flawed?
 - What is feasible? What adds value? Would you work on this?
 - Proposals:
 - 10 CFR 50.59 process
 - Nuclear safety review/focus on value added review
 - Other suggestions?



Improving the Efficiency of the USQ Process

➤ 50.59-like process

- Question: Is this feasible? Do DOE facilities have the DSAs and maintenance programs to support such an approach? Do the DSAs contain the infrastructure (e.g., performance criteria, design basis limits) to support such a questioning process?
- Question: What would this look like? What are the pros/cons?
- Question: Will this suffer the fate of all “NRC-like” or “OSHA-like” processes which differentiate over time and go different directions?
 - “Each time it’s a “like” process, it becomes a different process.”
 - What’s the new reactor process like? Is it different?
 - NRC has progressed in a different manner than DOE
 - DOE USQ process has significantly diverged from NRC 50.59 process.
 - Subtle definition differences, including differences with emphasis on role of Safety Management Programs rather than USQ process for interim state hazards.
 - No margin of safety question.
 - Emphasis in 10 CFR 50.59 questions on *minimal* increase rather than *direction of the change*.



Improving the Efficiency of the USQ Process

- 10 CFR 50.59 quotes with nuanced differences
 - *Change* means a modification or addition to, or removal from, the facility or procedures that affects a design function, method of performing or controlling the function, or an evaluation that demonstrates that intended functions will be accomplished.
 - *Procedures as described in the final safety analysis report (as updated)* means those procedures that contain information described in the FSAR (as updated) such as how SSCs are operated and controlled (including assumed operator actions and response times).
 - (c)(1) A licensee may make changes in the facility as described in the final FSAR (as updated), make changes in the procedures as described in the FSAR (as updated), and conduct tests or experiments not described in the FSAR (as updated) without obtaining a license amendment pursuant to Section 50.90 only if:
 - (i) A change to the technical specifications incorporated in the licenses is not required, and
 - (ii) The change, test, or experiment does not meet any of the criteria in paragraph (c)(2) of this section.



Improving the Efficiency of the USQ Process

➤ 10 CFR 50.59 (cont'd)

- *NRC 8 Questions of 50.59 differ from DOE USQD 7 Questions*
 - (i) Result in more than a *minimal* increase in the frequency of occurrence of an accident previously evaluated in the FSAR (as updated);
 - (ii) Result in more than a *minimal* increase in the likelihood of occurrence of a malfunction of a SSC important to safety previously evaluated in the FSAR (as updated);
 - (iii) Result in more than a *minimal* increase in the consequences of occurrence of an accident previously evaluated in the FSAR (as updated);
 - (iv) Result in more than a *minimal* increase in the consequences of occurrence of a malfunction of a SSC important to safety previously evaluated in the FSAR (as updated);
 - (v) Create a possibility for an accident of a different type than any previously evaluated in the FSAR (as updated);
 - (vi) Create a possibility for a malfunction of a SSC important to safety *with a different result* than any previously evaluated in the FSAR (as updated);
 - (vii) Result in a design barrier basis limit for a fission product barrier as described in the FSAR (as updated) being exceeded or altered; or
 - (vii) Result in a departure from a method of evaluation described in the FSAR (as updated) used in establishing the design bases or in the safety analysis.



Where do we go from here?

➤ Path forward:

- Overall Objective: Focus on improving the USQ process to perform better, increase efficiency, better utilize limited DOE resources, and reduce second guessing by auditors.
- Revise DOE USQ Guide (DOE G 424.1-1C) with these improvements
 - Respond to Secretary Chu's initiative, *save money and perform better*
 - Short term, *achieve real benefits fast*
- Change 10 CFR 830
 - Differences in perspectives by contractors, DOE organizations, Congress, stakeholders, etc.
 - Could be derailed/high risk approach
 - Historically such studies have encountered difficulties with politics, approval, and implementation
 - For example, the process for the Supplemental Guidance for DOE-STD-1027

