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Unreviewed Safety Question (USQ) Process
SBP-112-3-R1.1
Safety Basis Procedure

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Revision Log

| Document Number | Revision Number | Date | Description of Change |
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| SBP112-3 | 0 | 06/03/09 | <p>Major revision to</p> <ul style="list-style-type: none"> • Renumbered document of P112-3, <i>LANL Unreviewed Safety Question</i> • Clarify the USQ process at LANL • Include new, simpler CatExs • Simplify the application of CatExs • Simplify USQ screens • Require a second signature for a USQ Screen • Provide separate forms for USQ screens and USQDs • Specific instructions for completing the CatEx Application, USQ Screen, and USQD forms • Change the training and qualification requirements for QEVs • Add responsibilities for SB-TS • Add the responsibility for the FOD to identify the page changes for the DSA annual update • Add reference to a New Information process |
| SBP112-3 | 1 (this version not implemented per AD-NHHO:12-070) | 9/22/11 | <p>Revised to</p> <ul style="list-style-type: none"> • Reflect DOE G 424.1-1B rather than DOE G 424.1-1A • Provide better linkages between the USQ process, the New Information process (SBP112-5), and Operability Determinations • Added Addendum for a pilot Expert USQ Screening process • Updated definitions • Added required times for PISA actions • Reformatted • Addressed LASO comments |
| SBP112-3 | 1.1 | 6/2013 | <p>Revised to</p> <ul style="list-style-type: none"> • Address open comments in the FO approval of SBP112-3, Rev. 1 (Rev. 1 will not be implemented; instead, Rev. 1.1 will be implemented). Examples: <ul style="list-style-type: none"> ○ Revised Section 3.1 to clarify the documents that are not subject to the USQ process; clarified definition of "Administrative procedure" ○ Revised Section 3.7 NI process as a New Information/Initial Confirmatory process (NI/NC) to align with DOE G 424.101B, Section C.2 • Revisions throughout document to align with revisions in Section 3.1 • Minor editorial or wording revisions throughout • Revised Section 6 training requirements • Revised Section 9 definitions • Revised Section 11 references • Attachment A: Deleted Categorical Exclusions on ((B) Editorial Changes to Engineering Documents and Drawings. Revised Categorical Exclusion on Like-for-Like or Equivalent Replacements and (E) Product Quality. • Deleted Expert USQ Screen process and added the Expert USQD Process. |

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Unreviewed Safety Question (USQ) Process

1.0 PURPOSE

This procedure was specifically developed to comply with §203 *Unreviewed Safety Question Process*, of Title 10 of the Code of Federal Regulations 830 Subpart B *Safety Basis Requirements*.

10 CFR 830.203, *Unreviewed Safety Question Process*, allows contractors to make physical or procedural changes and to conduct tests and experiments without prior *Department of Energy (DOE)/National Nuclear Security Administration (NNSA)* approval if the proposed activity can be accommodated within the existing safety basis. This procedure provides requirements and guidelines for implementing the Unreviewed Safety Question (USQ) process at Los Alamos National Laboratory (LANL) nuclear facilities. It thus establishes the mechanism to determine who has the authority to approve a change: the DOE or LANL.

According to 10 CFR 830.203, *Unreviewed Safety Question Process*, a DOE-approved USQ procedure is required for the following situations.

- Temporary or permanent change in the facility as described in the existing *Documented Safety Analysis (DSA)*.
- Temporary or permanent change in the procedures as described in the existing DSA.
- Test or experiment not described in the existing DSA.
- Potential Inadequacy of the Documented Safety Analysis (PISA).

2.0 AUTHORITY AND APPLICABILITY

2.1 Authority

This procedure is issued under the authority of the Laboratory Director to direct the management and operation of LANL, as delegated to the Associate Director of Nuclear and High Hazard Operations (ADNHHO) as provided in the Prime Contract. This document is derived from LANL Governing Policies, particularly the section on safety and 10 CFR 830.203, *Unreviewed Safety Question Process*.

- Issuing Authority (IA): Associate Director of Nuclear and High Hazard Operations (ADNHHO)
- Responsible Manager (RM): Safety Basis Division Leader (SB-DL)
- Responsible Office (RO) Safety Basis–Technical Services (SB-TS)

2.2 Applicability

This USQ procedure is applicable to all persons and organizations, including tenants and contractor/subcontractor personnel, that perform activities in, related to, or that could impact one or more of LANL's nuclear facilities or the Safety Basis of a nuclear facility.

The USQ process must not be used as a mechanism to ensure Technical Safety Requirement (TSR) compliance or as a substitute for an assessment of the adequacy of TSR implementation procedures for readiness reviews, system adequacy determinations, design changes during construction for which a Preliminary Documented Safety Analysis (PDSA) exists, or other purposes outside the requirements of 10 CFR 830.203. As discussed in DOE G 424.1-1B, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*, it is important to note that the USQ process does not determine if the proposed activity is safe.

2.2.1 Scope

This procedure applies to LANL's Hazard Category (HC) 2 and 3 nuclear facilities and activities. (There are currently no HC-1 nuclear facilities at the Laboratory.) The term *nuclear facility* also includes nuclear activities such as onsite transportation. Approval by DOE/NNSA of this procedure establishes the sole reference for requirements in the performance of the USQ process at LANL.

The USQ process is intended to evaluate day-to-day changes that could affect the DOE-approved DSA of the nuclear facility or activity. Therefore, the USQ process is not applicable to major modifications (consistent with the definition of a major modification as found in 10 CFR 830), new technologies that impact a facility's safety basis, or any other changes that would require DOE approval.

The USQ process applies not only to changes within the boundaries of nuclear facilities, but also to changes outside those boundaries when those changes have the potential to affect the nuclear facility as described in the safety basis.

The DOE has issued guidance that establishes the expectations for the development and implementation of a USQ process in DOE G 424.1-1B, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*, April 8, 2010. In addition, DOE explicitly provides the following notice with regard to this guidance document:

This Guide describes suggested non-mandatory approaches for meeting requirements. Guides are not requirements documents and are not construed as requirements in any audit or appraisal for compliance with the parent Policy, Order, Notice, or Manual.

This procedure utilizes DOE G 424.1-1B to the extent practical for specific situations at the Laboratory. This procedure provides all of the details and guidance necessary to ensure compliance with 10 CFR 830.203.

The USQ process neither supersedes nor excludes a change from consideration under the *National Environmental Policy Act* or *Emergency Preparedness Response Assessment* processes. These are separate processes, and appropriate actions should be taken to comply with the necessary requirements.

3.0 USQ PROCESS METHODOLOGY

The USQ procedure is required for the following situations:

- Temporary or permanent change in the facility as described in the existing DSA,
- Temporary or permanent change in the procedures as described in the existing DSA,
- Test or experiment not described in the existing DSA, and
- A PISA because the analysis may not be bounding or may be otherwise inadequate.

Personnel qualified to perform the USQ process at the facility must carefully evaluate any proposed change to determine if it will explicitly or implicitly affect the existing DSA. The USQ process was established to determine the approval authority for proposed changes and as-found conditions. Facilities use the USQ process to demonstrate that changes to facility structures, systems, and components (SSCs) and operations remain within the current DOE-approved safety basis. The USQ process must be completed before proposed changes or new activities are initiated. Any such proposal that results in a positive Unreviewed Safety Question Determination (USQD) must be approved by DOE/NNSA prior to implementation. A positive USQD does not mean that a proposed change/activity or the current facility status is unsafe, but only that DOE/NNSA approval is required before initiating the proposed change or activity.

Changes must be determined to be safe and compliant, particularly with the TSRs, before entry into the USQ process.

The applicability of the USQ process to other situations is discussed in Section 3.1. An overview of the USQ process is presented in Section 3.2. The process described in Sections 3.3 through 3.6 must be followed for proposed changes or new activities. The relationship between the USQ process and the New Information/Initial Confirmatory (NI/IC) Process is described in Section 3.7. The applicability of the USQ process to a PISA is described in Section 3.8.

3.1 Applicability of the USQ Process

3.1.1 *Actions or Changes that DO NOT Require Review Under 10 CFR 830.203, Unreviewed Safety Question Process*

For the following situations, there is no requirement to review the proposed change/activity under 10 CFR 830.203, *Unreviewed Safety Question Process*, (i.e., the USQ process does not apply.) There are no documentation requirements per this procedure. (Italicized text are quoted from DOE G 424.1-1B.)

- 1) Changes to the LANL contract (i.e., Appendix G). However, the implementation of contract changes in specific nuclear facilities may be subject to this procedure.
- 2) The cancellation of procedures prior to their implementation.
- 3) Exact Replacements. Exact replacements must be of the same make, model, and manufacturer. **Note:** The procedure for equipment installation/removal remains subject to the USQ process due to the potential for an interim state to be involved that could constitute a change. Criticality Safety Evaluations (CSEs), Criticality Safety Limit Approvals (CSLAs), Process Accountability Flow Diagrams (PAFDs), and Process Monitoring Flow Diagrams (PMFDs). These are not facility work-implementing procedures.
- 4) *Nonconformance Report (NCR) Documents*. These are documents associated with the implementation of Quality Assurance (QA) requirements, and do not require review under 10 CFR 830.203. **Note:** An NCR may identify a condition requiring USQ review if it involves changes to the nuclear facility configuration, including equipment, or to nuclear operations. The NCR in and of itself does not enter into the USQ process; however, the work control documents for disposition may be subject to the USQ process. For example, the disposition of an NCR that does not restore a nonconforming SSC to an approved configuration constitutes a change and must enter the USQ process. Any change to the facility or procedures as a result of the disposition of an NCR that does not restore a nonconforming SSC to the approved configuration constitutes a change and must enter the USQ process.
- 5) System Design Descriptions (SDDs) and other engineering documents/drawings. Changes to the facility and its systems cannot be made via the creation/revision of SDDs and other engineering documents/drawings.
- 6) Calculations. Calculations are not required to enter the USQ process. However, calculation results may need to be evaluated under the NI/IC process.
- 7) Procedures specifying methods for performing calculations.
- 8) Forms that record data or that specific procedures / steps were followed, and do not contain procedural steps beyond those in a parent procedure (the parent procedure is subject to the USQ process), and do not implement safety basis requirements
- 9) Routine maintenance (e.g. preventive maintenance). Routine maintenance is that type of maintenance activity that does not create an interim state that may adversely impact SSCs.
- 10) Administrative documents (defined in Section 9.1) contain written information or instructions that have no association with the safety basis and cannot be used to conduct work in the nuclear facility. Administrative documents are not subject to the requirements of 10 CFR 830.203, Unreviewed Safety Question Process. Consistent with this definition, the

following examples are administrative documents that do not require review through the USQ process:

- a. Payroll
- b. Finance
- c. Timecard
- d. Travel
- e. Charters for committees/boards that are not described/ credited in the safety basis
- f. Mission statements
- g. Personnel/human resources procedures/policies
- h. Institutional assets management/payroll procedures/policies
- i. Institutional legal, public relations, ethics, and good-neighbor procedures/policies
- j. Institutional administrative business and office procedures
- k. Shift or standing orders that are administrative and do not relate to work activities within a nuclear facility.
- l. Narrative logs
- m. Notices regarding administrative policies/procedures
- n. Changes of LANL subcontractor companies and personnel in procedures
- o. Project/Implementation Plans provided that they are not used in lieu of procedures for work in the nuclear facility
- p. Budgets and schedules
- q. Administrative Policies (Division level or below)
- r. Procurement Specifications
- s. QA travelers (provided they are not used in lieu of procedures for work in the nuclear facility)
- t. Study Guides

3.1.2 Actions or Changes that Require Approval by DOE/NNSA and DO NOT Require Review Under 10 CFR 830.203, Unreviewed Safety Question Process

The following changes to a facility's SB can only be approved by DOE/NNSA and, therefore, do not need to be evaluated through the USQ process:

- 1) DOE/NNSA mandates or direction, including approvals of new or revised Safety Basis documents and implementing procedures for the Safety Basis documents.
- 2) Safety Basis amendment (e.g., DSA or TSR amendment)
- 3) Annual DSA/TSR update
- 4) A change to the TSRs
- 5) A change that constitutes a major modification
- 6) Changes that management has decided will be submitted to DOE/NNSA for approval
- 7) Changes to an existing Categorical Exclusion or a proposed new Categorical Exclusion
- 8) Changes to this USQ procedure

3.1.3 General Considerations for the USQ Process

For an existing nuclear facility or activity, there is a time period after issuance of the Safety Evaluation Report (SER) for a safety basis document during which implementation occurs. Care must be taken to ensure the USQ process is properly performed. The USQ process must be performed against the relevant safety basis documents, both the current *implemented* safety basis, and the newly approved safety basis document, as appropriate. For example, if a permanent facility modification is being proposed, the USQ process must be performed against the existing DSA and also the newly approved but unimplemented DSA. (The existing DSA is used because this is the current safety basis for the facility, and the new unimplemented DSA is used to ensure the change will be within the safety basis when the new DSA is implemented.) If a procedure change is proposed on a procedure that is currently in use, but will not be used when the new DSA is implemented, the USQ process is performed against the current DSA only. If a new procedure is proposed that will only be used to implement the new DSA, then the USQ process is performed against the new, unimplemented DSA only. Furthermore, as procedures are revised in accordance with the approval of new safety basis documents, effective dates for such revisions must be staged to avoid undermining the implemented safety basis.

The PISA process (Section 3.8) allows for a backward-looking evaluation.

3.2 USQ Process Overview

The USQ process is intended to be implemented as a subpart of a configuration management process, which includes facility and document change control. The following generalized steps for change control are identified in DOE G 424.1-1B, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*:

- Identifying and describing the temporary or permanent change,
- Technical review of the change,
- Management review and approval of the change,
- Implementation of the change, and
- Documenting the change.

DOE G 424.1-1B, pages 7 and B-1, describes the initiation of the change process as follows:

As part of the technical reviews of a change and separate from the USQ process, the contractor performs the appropriate type of safety analysis to ascertain whether the change is indeed safe...

...the change should already be known to be safe before it enters the USQ process. The USQ process determines if final approval by the contractor is sufficient or DOE review and approval are required. DOE wants to review and approve those changes that involve a USQ (that is, when the USQ determination is positive) to verify that the safety controls are adequate to provide an acceptable level of safety to the public and workers. The existence of a positive USQ determination does not mean that the change is unsafe but only that DOE is to be responsible for the final approval action.

Note: Effects on other facilities must be considered when a change to a facility, procedure, or test/experiment is proposed. Any potential adverse impacts must be determined by the facility personnel during technical reviews and communicated to the other facilities. If there is a possibility that the change in one facility could affect another facility, the potentially affected facility must evaluate the change through its configuration management/change control process. A proposed change in an adjacent facility to a nuclear facility should be considered for USQ evaluation through the nuclear facility's change control process.

LANL's requirements for change control and configuration management is described in SD 330, *Los Alamos National Laboratory Quality Assurance Program*, or successor document. Once the change control steps, including technical reviews determining that the change is safe, have been completed, the USQ process is entered. DOE-STD-1073-2003, *Configuration Management*, contains additional detail on the relationship of the USQ process to Configuration Management (particularly Figure 5-1.)

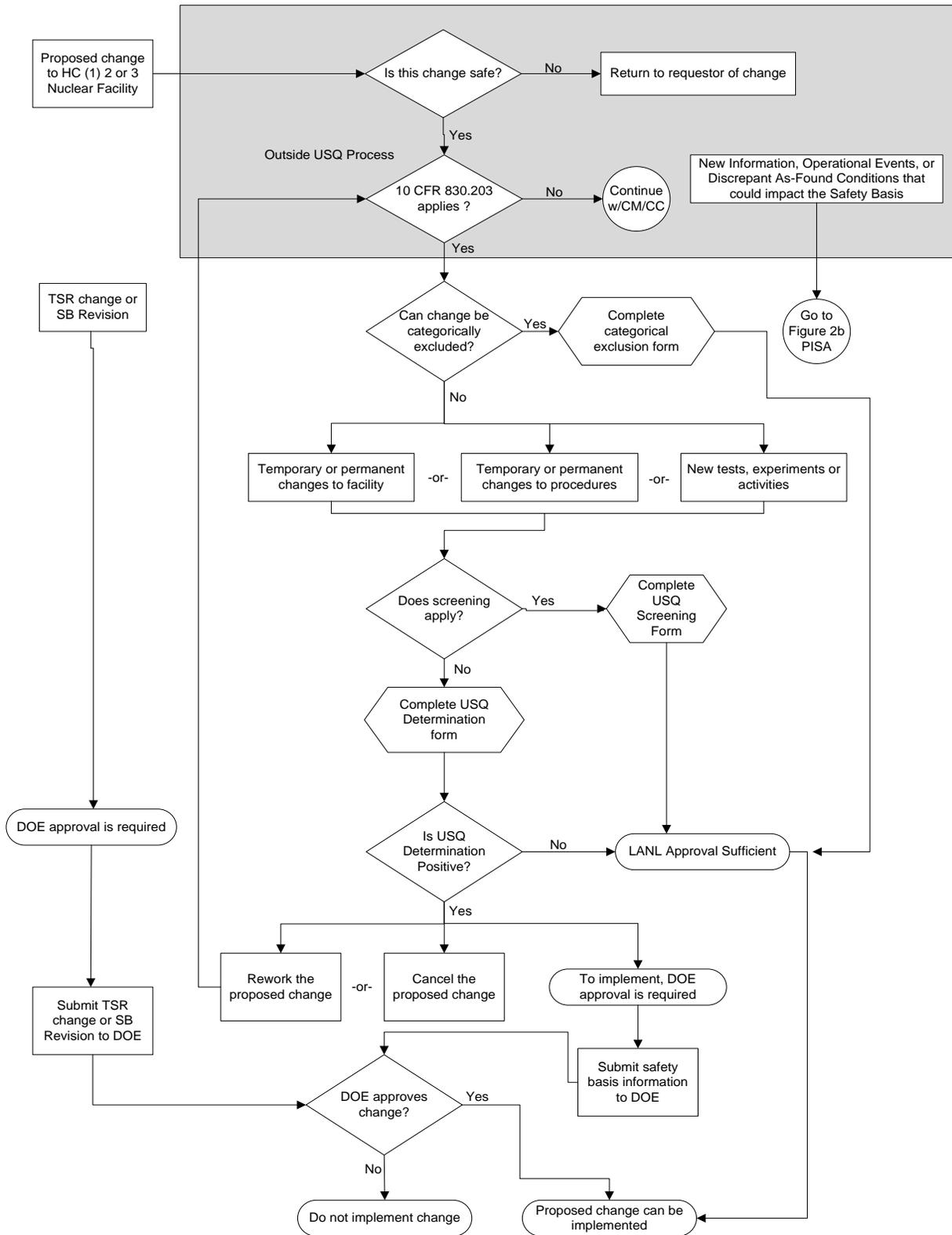
In addition, DOE guidance recognizes that some changes do not warrant the investment of valuable time and resources required to perform a USQD. Section 3.2 of DOE G 424.1-1B provides discussion on this subject. Accordingly, the LANL's USQ process has three levels of review:

1. Categorical Exclusions are a type of screen, and are approved by DOE. Categorical Exclusions cannot be applied to PISAs. Instructions for Categorical Exclusions are provided in Section 3.4.
2. USQ screening of proposed changes that cannot be categorically excluded to determine if a USQD is required. USQ screens cannot be used for PISAs. Instructions for USQ screens are provided in Section 3.5.
3. Unreviewed Safety Question Determination. This level applies to PISAs and proposed changes that can neither be categorically excluded nor screened. Instructions for USQDs are provided in Section 3.6 and for the PISA process in Section 3.8. The follow-on actions to complete the USQ process are stated in Section 3.9.
 - 3.a An Expert USQD for proposed changes that cannot be screened but for which it is obvious to any qualified independent reviewer that the change cannot adversely affect the facility safety basis. Instructions for the expert USQD process are provided in Addendum 1.

The USQ process documentation for each level must be prepared and reviewed as appropriate by USQ Qualified Evaluators (QEVs).

- Categorical Exclusion applications, USQ screens, and USQDs shall receive independent technical review by a USQ Reviewer who was not involved in the preparation of the USQ document.
- Expert USQ Screens shall receive technical review by an Expert QEV who was not involved in the preparation of the USQ document.
- Positive USQDs must be approved by the Facility Operations Director (FOD) prior to submittal to DOE/NNSA. DOE/NNSA must approve any change that results in a positive USQD before implementation.

The overall USQ process is shown in Figure 1 which illustrates the routine portion of the USQ process. Figure 2 shows the PISA process and its interface with the NI/IC process.



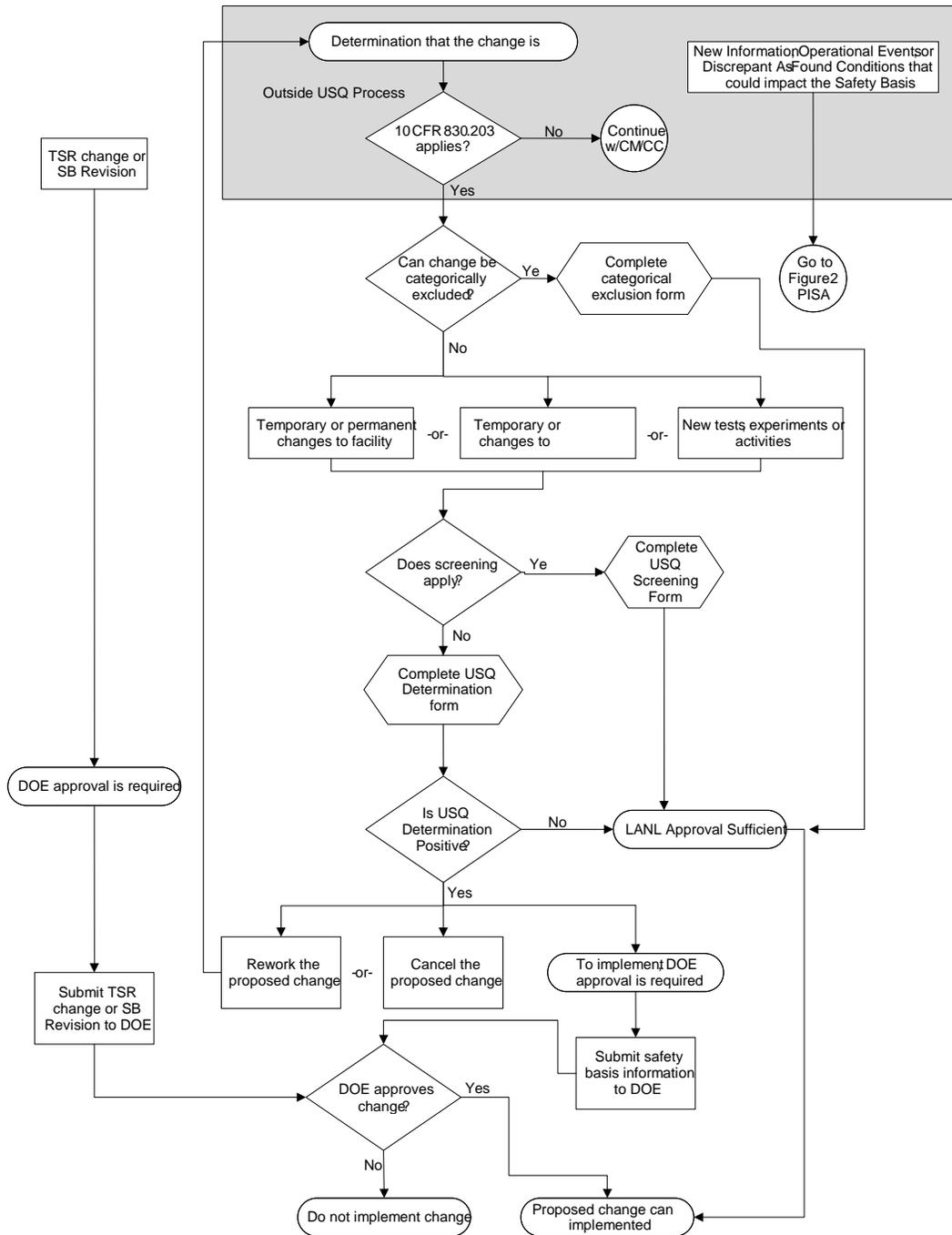


Figure 1. USQ Process Flow Chart

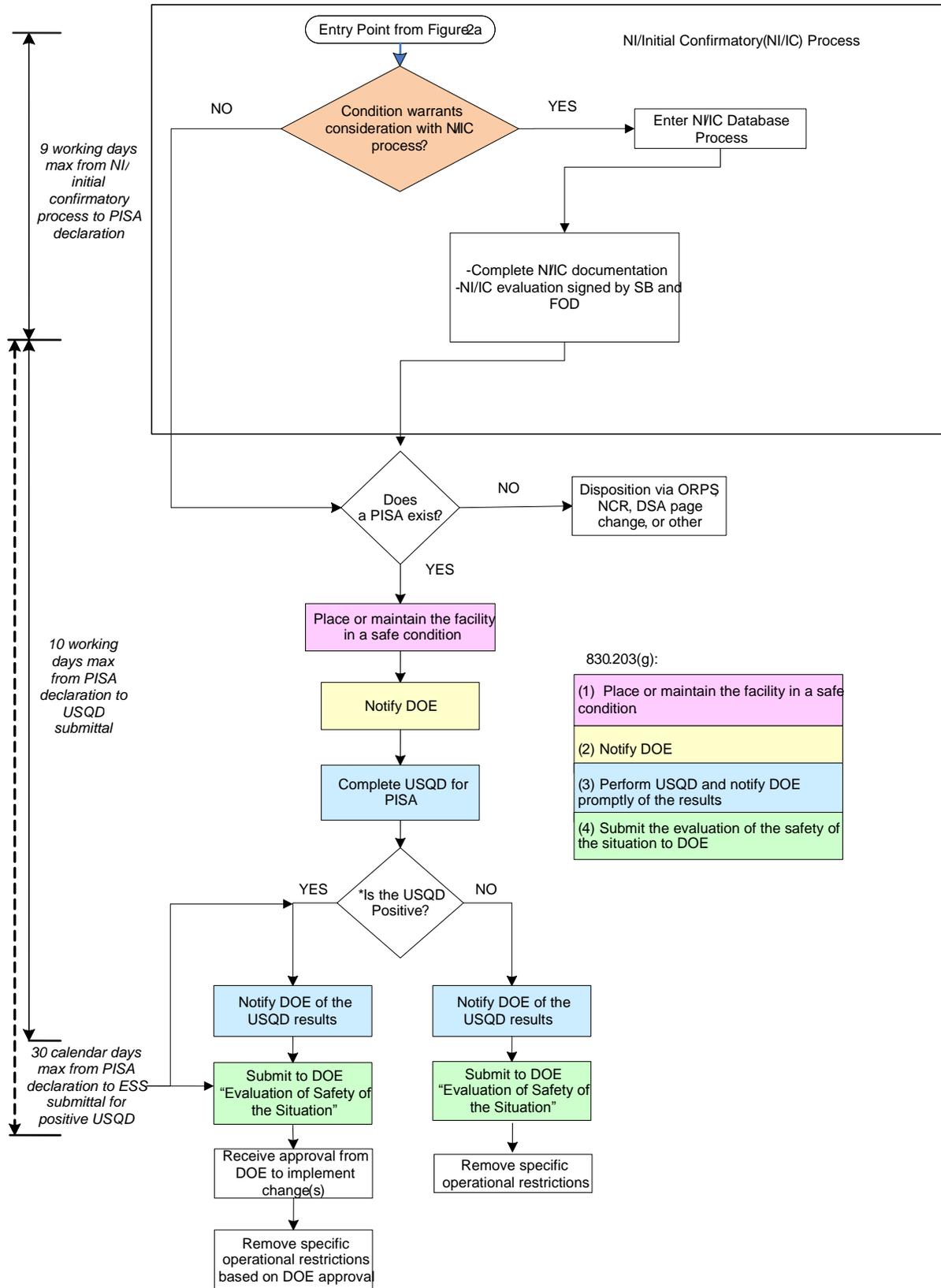


Figure 2. PISA and NI/IC Processes

3.3 Entry Conditions for the USQ Process

After determining that the USQ process is applicable for a proposed change, there are three specific entry conditions for the USQ process:

1. proposed changes to a facility,
2. proposed changes to procedures, and
3. proposed new activities (i.e., tests or experiments).

These conditions are defined in Sections 3.3.1 through 3.3.3.

A fourth entry condition to the USQ process is the discovery of existing, previously unrecognized conditions that may or may not place a facility outside its authorized safety basis (this entry condition is not applicable to proposed changes). The identification of these conditions can result in entering the USQ process through a potential inadequacy of the DSA. This entry condition is defined in Section 3.8.

3.3.1 Changes to a Facility

DOE Guide 424.1-1B states the following:

USQDs should be performed on changes in nuclear facilities as described in the existing safety analysis text, drawing, or other information that is part of the facility safety basis. An SSC would be considered changed if any of the following were altered: (1) its function(s), (2) the method of performing those functions, or (3) its design configuration.

Although safety analyses include descriptions of many SSCs, a nuclear facility also contains many SSCs not explicitly described in the safety analyses. These can be components, subcomponents of larger components, or even entire systems.

Changes to SSCs that are not explicitly discussed in the safety analyses should not be excluded from the USQ process because changes to these SSCs may have potential to alter the function of an SSC explicitly described in the safety analysis. Also, a change to an SSC that does not involve equipment important to safety could initiate an accident or affect the course of an accident, so virtually no change can be ignored.

Changes to SSCs explicitly or implicitly identified in the safety basis must enter the USQ process. During the USQ screening step (Section 3.5), some changes may screen out if they meet the screening criteria in Attachment C or Addendum 1.

Modifications that are performed in separate, distinct stages (usually for cost, schedule, or operational considerations) should assess the issue of SSCs left in temporary condition during 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.

3.3.2 Changes to Procedures

Procedures that contain written information or instructions explicitly or implicitly referenced in the DSA for performing work in the nuclear facility or implementing DSA requirements, are subject to the USQ process. As defined in Section 3.1, documents do not define or describe activities or controls related to the conduct of work in nuclear facilities, and are not considered *procedures* for the purposes of the USQ process. Therefore, documents are not subject to the USQ process.

DOE Guide 424.1-1B 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 USQD is done when appropriate. Such implicitly described procedures include –

- *the procedures that implement a safety management program described in the safety basis,*
- *procedures for implementing a specific administrative control, and*
- *operating, testing, surveillance, and maintenance procedures for equipment when that equipment is identified in the DSA.*

If characteristics of a safety management program described in the safety basis remain correct, complete, and valid, the result of the USQD would be expected to be negative, signifying that DOE approval is not needed.

Procedures are not limited to those specifically identified by type (for example, operating, chemistry, system, test, surveillance, and emergency planning) but could include anything described in the DSAs that defines or describes activities or controls over the conduct of work. Changes to these activities or controls qualify as changes to procedures as described in the DSA, and therefore need to be evaluated as potential USQs.

Changes to procedures include revisions to existing procedures and developing a new procedure. For a new procedure that could not have already been described, the question is, if the DSA were to be prepared (or updated) after the new procedure had been approved, is the new procedure of a type that would be identified in the DSA. If so, a USQD should be prepared.

Changes to procedures explicitly or implicitly identified in the Documented Safety Analysis must enter the USQ process. Such procedures are understood to be those that:

1. govern operations identified in the DSA,
2. affect equipment important to safety (EITS) identified in the DSA,
3. implement a safety management program identified in the DSA, or
4. otherwise, define or describe activities or controls over the conduct of work identified in the DSA. Changes to maintenance procedures are within the scope of the USQ process.

During the USQ screening step (Section 3.5), some changes may screen out if they meet the screening criteria in Attachment C.

Administrative documents as addressed in Section 3.1.1 item #10, and defined in Section 9.1 do not impact the safety basis of the nuclear facility as described in the documented safety analysis. Thus, these documents are not considered *procedures* in the context of SBP112-3 and are not subject to the USQ process.

3.3.3 Proposed New Activities

DOE Guide 424.1-1B states the following:

Written 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.

A USQD should be performed to ascertain whether a DOE review and approval of a new process configuration is needed. For preoperational, surveillance, functional, and startup tests performed regularly, USQDs are not required every time a test is performed if the procedures are not changed. However, one-of-a-kind tests that measure the effectiveness of new techniques or a new system configuration will need to be evaluated before the tests can be conducted. Post modification testing should be considered and included in the USQD for the modification.

New activities (test or experiments) not described in the DSA must enter the USQ process.

3.4 Categorical Exclusions

DOE G 424.1-1B specifically allows Categorical Exclusions (CatExs) and discusses their use. CatExs must be approved by DOE/NNSA, and the use of the application of approved CatExs must be documented. CatExs represent a mechanism to define the types of changes determined to present no credible capability for creating a USQ. The defined categories may include plans, programs, activities, systems, or equipment. Once the exclusions are identified, procedures and work documents can then be determined to be excluded based on the activity they control.

Attachment B, *USQ Categorical Exclusion Form*, must be completed by an appropriate QEV Preparer and Reviewer. Attachment B also provides the instructions for completing the CatEx Form. Approved Categorical Exclusions are listed in Attachment A, *Categorical Exclusions*.

See Section 3.9 for follow-up actions to complete the USQ process.

A Categorical Exclusion cannot be applied to a PISA.

3.4.1 Identification of Additional Categorical Exclusions

It is recognized that additional CatExs or revisions to existing CatExs may be desired as experience is gained.

The following steps must be followed for the addition of new or modified CatExs:

1. SBP112-3 is revised to indicate the addition of new or modified CatExs.
2. The red-lined pages and final version of the proposed revisions to SBP112-3 are provided to DOE/NNSA for approval.
3. Upon approval, the new revision of SBP112-3 showing the addition of new or modified CatExs will be provided as training to the QEVs.

3.5 Unreviewed Safety Question Screening

DOE G 424.1-1B states:

USQ screening is used to ascertain if it is necessary to expend the valuable time and resources necessary to perform a USQD, or whether there is reasonable technical justification for not performing a USQD.

USQ screening is intended to be a simple go/no-go decision-making step, without evaluative consideration. When appropriately streamlined, this step in the USQ process can often be

completed in a matter of minutes. The basic intent of screening is to eliminate unnecessary time and effort being spent performing a USQ determination if there is no possible way that the change could impact the safety basis and involve a USQ. Conversely, screening criteria make certain that changes which could possibly involve a USQ are "screened in" and hence a USQ determination is performed. The USQ screening criteria center on the question of whether the item to be changed is described in the safety basis.

The LANL's screening form first considers if the proposed change can be screened because it is covered by a previous USQD. Any location differences must be considered to ensure that they do not invalidate the assumptions of the previous USQD. If the proposed change is completely covered by a previous USQD, the next part of screening is not required. If the SB has changed since the time of the original USQD, the QEV must confirm that any changes in the DSA, since the original USQD was completed, cannot impact the change under consideration.

Next, the formal USQ screening involves comparing the proposed change to the three conditions as defined in 10 CFR 830.203(d). If all three conditions can be answered in the negative, a USQD is not required.

USQ Screening is optional, and proposed changes may proceed directly to a USQD if desired. A proposed change is screened using the following questions to determine if a USQD is required.

Is the proposed change:

1. A temporary or permanent change in the facility as described in the existing DSA?
2. A temporary or permanent change in the procedures as described in the existing DSA?
3. A new test, experiment, or operation not described in the existing DSA?

Answering the seven USQD questions during the screening step is inappropriate because screening must only involve non-evaluative criteria. However, it is acceptable to provide the technical basis or rationale used for screening. Non-evaluative means that the answer to a screening question is obvious from a simple reading of the safety basis document. An affirmative response to one or more of these three screening questions requires the proposed change be reviewed through a USQD in accordance with Section 3.6.

Attachment C, *Instructions for the USQ Screening Form*, provides additional instructions for QEV Preparers and Reviewers in responding to these screening questions. If the proposed change is completely enveloped by a previous USQD or responses to the three screening questions are negative, the proposed change is enveloped within the existing safety basis and may be implemented without DOE/NNSA approval. If the proposed change is not completely enveloped by a previous USQD or the response to one or more of the three screening questions is positive, a USQD or expert screen must be performed.

The *USQ Screening Form* in Attachment D must be used to document all USQ and Expert Screens. The QEV Preparer and Reviewer must sign the completed form. The Reviewer must not have been involved in the preparation of the USQ screening.

See Section 3.9 for follow-up actions to complete the USQ process.

3.6 Unreviewed Safety Question Determination

The purpose of a USQD is to determine the approval authority of a proposed change or activity. Proposed changes or activities may present a new or increased risk which DOE/NNSA must be aware of and approve. The following seven questions ascertain if a proposed change or activity presents new or increased risk:

1. Could the proposed change increase the probability of occurrence of an accident previously evaluated in the facility's existing DSA?

2. Could the proposed change increase the consequences of an accident previously evaluated in the facility's existing DSA?
3. Could the proposed change increase the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the facility's existing DSA?
4. Could the proposed change increase the consequences of a malfunction of equipment important to safety previously evaluated in the facility's existing DSA?
5. Could the proposed change create the possibility of an accident of a different type than any previously evaluated in the facility's existing DSA?
6. Could the proposed change create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the facility's existing DSA?
7. Could the proposed change reduce a margin of safety?

The documentation associated with answering the seven questions of the USQD must be technically defensible and based on sound engineering judgment. Documentation should be concise, but must be complete enough to permit a knowledgeable individual to reproduce the logic train.

If the answer to any of these questions is yes, the proposed change or activity is considered to be a positive USQD. Laboratory management must determine if the change is to be pursued as is (in which case DOE/NNSA approval of the positive USQD is necessary), cancelled, or modified, with the modified proposed change reevaluated through the USQ process. If all the questions are answered *NO*, the proposed activity or change can be implemented with LANL management approval.

Attachment E, *Instructions for the USQD Form*, provides guidance to Preparers and Reviewers in responding to these questions. The documentation must include a description of the change being evaluated and its effects on the safety basis. The USQD must evaluate the change with respect to both the currently approved safety basis, as well as the approved-but-not-yet-implemented safety basis, as discussed in Section 3.1. The Preparer provides sufficient detail to allow a qualified independent Reviewer who is familiar with the facility and its safety basis to understand the basis for and concur with the Preparer's conclusions. The factors considered and assumptions made by the Preparer (i.e., experience and engineering knowledge and judgment) must be clearly stated.

The *USQ Determination Form* in Attachment F must be used to document the USQD.

The USQ Preparer, Reviewer, and Approver (if positive) must sign the completed USQD form. No Reviewer will review any USQD that the Reviewer has prepared.

See Section 3.9 for follow-up actions to complete the USQ process.

3.7 New Information/Initial Confirmatory (NI/IC) Process

Section C.2 of DOE G 424.1-1B indicates that it is allowable to determine whether a situation is a result of a potential inadequacy in the safety analysis. The LANL USQ New Information/Initial Confirmatory (NI/IC) process is a formal process that can be used to determine if a PISA should be declared. The NI/IC process provides a record of the decision made by management pursuant to DOE G 424.1-1B:

A PISA may result from situations that indicate that the safety basis may not be bounding or may be otherwise inadequate; for example, discrepant as-found conditions, operational events, or the discovery of new information. It is appropriate to allow a short period of time (hours or days but not weeks) to investigate the conditions to confirm that a safety analysis is potentially inadequate before declaring a PISA...

To restate, the NI process documents the basis for the decision that a PISA exists or not, that is, when it is confirmed that the safety analysis is (or is not) potentially inadequate. Therefore a PISA is not declared if it is confirmed that the safety analysis is not potentially inadequate; alternatively, a PISA is declared when it is confirmed that the safety analysis may not be bounding or may be otherwise inadequate.

Note: The NI/IC process is omitted when it is obvious that a PISA exists.

The NI/IC process is used to initially review and disposition conditions that may indicate a potential inadequacy of the safety basis. The NI/IC process is separate from the USQ process.

Consistent with Section C.2 of DOE G 424.1-1B, the time frame from discovery of a NI/IC condition to the determination of whether a PISA exists should typically be on the order of hours or days, not weeks. This procedure stipulates a maximum of nine working days unless dispensation is obtained from DOE/NNSA. Dispensation from DOE/NNSA to go beyond the nine working days may be communicated by e-mail correspondence.

When a PISA does not exist, the facility should not enter the PISA process unnecessarily. This causes a disruption to operations, resulting in excessive costs without a reduction in risk. Entering the PISA process unnecessarily could also cause potential increases in risk as resources are focused on unnecessary issues, rather than on maintaining the safety basis or safely operating the facility.

Details for the NI process are contained in *SBP112-5, New Information Process (or successor document)*.

3.8 Potential Inadequacy of the Safety Analysis Process

The PISA process is a safety basis process used when a situation indicates that the safety analysis supporting the DOE/NNSA-approved safety basis may not be bounding or may be otherwise inadequate. As soon as a potential inadequacy is determined to exist, the PISA process must be entered. The PISA process is officially entered upon declaration by the safety basis owner (typically the FOD).

DOE G 424.1-1B identifies three general categories that provide potential entry conditions for a PISA:

- a discrepant as-found condition,
- an operational event or incident, or
- new information, including discovery of an error, sometimes from an external source.

The main consideration is that the analysis does not match the current physical configuration, or the analysis is inappropriate or contains errors. The analysis might not match the facility configuration because of a discrepant as-found condition. Analytical errors might involve using incorrect input values, invalid assumptions, improper models, or calculation errors. The USQ process starts when facility management has information that gives reason to believe that there is a potential that the facility DSA might be inadequate.

There does not need to be an actual inadequacy in order to assess the appropriateness of the PISA process; however, as soon as a potential inadequacy is determined to exist, the PISA process must be entered. The PISA process is a defined mechanism for dispositioning issues that require DOE/NNSA involvement. **Note:** Entry into the process should not be construed as a judgment of inappropriate contractor performance. It is failure to properly use the PISA process that may reflect on LANL management performance.

TSR and safety basis violations do not normally require a PISA declaration unless they result in a discovery of New Information that the DSA was inaccurate or otherwise inadequate.

Figure 2b shows the PISA process along with timing requirements on notifying DOE on the outcome of the USQD and submittal of the ESS.

DSA upgrades in response to new requirements or to the use of new or different analytical tools during the upgrade process do not constitute PISAs. However, a PISA may exist when there is reason to believe that the current safety basis might be in error or otherwise inadequate.

Design basis reconstitution efforts do not in and of themselves constitute a PISA. DOE G 424.1-1B states the following:

A similar situation exists for design basis reconstitution projects where documentation on the original design bases may be lost or outdated. In this case, it can be expected that a team of engineers may identify many questions or issues that may not have current documentation and which may or may not constitute PISAs. For the purposes of the USQ process, design reconstitution projects can be regarded as DSA upgrades. For DSA upgrades, USQs should not result from the use of new analytical tools or in response to new requirements.

The USQ process is not applicable when new requirements are being implemented or different analysis methods that are used result in changed accident consequences or probabilities. The USQ process is applicable when the project identifies situations where it is apparent that the existing safety basis may not be bounding or may be otherwise inadequate. A reconstitution project should have a process for prompt sorting and prioritizing of the questions and issues between those that can be addressed as a normal part of the reconstitution project and those that are to be handled promptly as PISAs. This process should be sufficiently timely to ensure that the expectations for PISAs can be met.

Design basis reconstitution efforts may yield a PISA. Information may be uncovered that indicates the safety basis as potentially inadequate because it does not match the current physical configuration of the facility, or otherwise contains errors. In other words the SSCs relied upon or credited in the approved safety basis for the development of the hazards, accidents, and risks to workers and the public do not match the current physical configuration or the analysis contains errors.

Note: The PISA process is not entered for discrepancies for approved but not implemented DSAs.

3.8.1 Discrepant As-Found Condition

A discrepant as-found condition is a situation where the actual physical configuration in the facility does not match the description in the current DSA.

DOE G 424.1-1B provides guidance on SSC degradation or breakdown in the course of normal operation. Such occurrences discovered during surveillances or inspections do not constitute a PISA, provided the SSC is restored to conformance with the documented design descriptions and specifications as prescribed in the governing DSA and TSRs. If the resolution would be another approach (i.e., use-as-is or replace with another component), then the PISA process must be entered.

3.8.2 Operational Events

Operational events or incidents that may lead to the conclusion that the safety analyses are invalid include events or incidents when:

- Event analysis reveals that the safety analysis is invalid or inadequate (e.g., increased source term, failure to recognize existing hazards, assumptions either not realistic or not conservative).
- Facility response to an event or incident does not occur as expected.
- Consequences exceeded the bounds of previously analyzed events.

Such operational events or incidents do not include the following:

- Events beyond the required design basis of the facility, or
- Events caused by procedural noncompliance.

An operational event may point to the receipt of New Information, as discussed in Section 3.8.3.

It is important to distinguish between the concept of a PISA and operational events. Not every event that results in exceeding the boundaries of a safety analysis is a PISA. For example, the occurrence of an operational event that results in exceeding the limits specified in the DSA would not be a PISA (but may be a TSR violation) if the event were caused by failure to follow operating procedures. Of course, certain types of operating events may add New Information that brings into question the validity of the risk envelope approved in the DOE/NNSA-approved DSA.

3.8.3 Receipt of New Information

A PISA may arise from any New Information. Typical sources of New Information include, but are not limited to:

- a discrepant as-found condition,
- an operational event or incident,
- discovery of errors, inaccuracies, or omissions in the current safety basis
- assessments, audits, and periodic procedure reviews,
- changes or evolution in science, engineering, or calculation models,
- adoption of newer versions or alternate consensus codes and standards such as required by changes to the Prime Contract, or
- other external sources such as manufacturer's notice, lessons learned, information notices, bulletins, etc.

DOE G 424.1-1B provides additional guidance for the last bullet above:

A special case regarding PISAs exists when dealing with external audit team multiple concerns, each of which may (or may not) indicate the possibility of a potential inadequacy in the safety analyses. It may be impractical for facility staff to assess the situation quickly and disposition multiple concerns in the time frame normally expected for deciding a concern indicates a PISA (hours to days) and performing a USQD for each finding that qualifies as a PISA. In the face of multiple issues, it might be concluded that the short-term response to assuring a safe condition is to shut down operations. This might not be appropriate in all cases.

As an option in these cases, except where it is apparent that an imminent hazard exists, DOE should be consulted without delay, and a mutually agreed upon approach to handling the concerns, including an expeditious schedule, should be developed. This approach should have a high priority for addressing the concerns, should prioritize the safety related concerns, and should disposition each as described for individual PISAs. Where it is apparent that an imminent hazard exists, the four steps for a potential inadequacy should be undertaken without delay.

Receipt of New Information does not include:

- A new or revised safety analysis resulting from the application of new DOE/NNSA requirements. For example, DOE/NNSA may require the addition of Beyond Design Basis Accidents in the DSA. These new results would not invalidate the existing safety analysis since the new requirement is beyond the existing DSA.
- Certain New Information received as part of a safety analysis upgrade is excluded from being considered by the USQ process. An example is the use of new or different analytical tools during the upgrade process as specified in Section 2.4 of DOE G 424.1-1B.

3.8.4 PISA Actions

In accordance with 10 CFR 830.203 (g), *Unreviewed Safety Question Process*, the following actions, in sequence, must be taken upon identification of a PISA:

1. Place or maintain the facility in a safe condition,
2. Notify DOE of the situation,
3. Perform a USQD and notify DOE/NNSA promptly of the results, and
4. Submit the *Evaluation of the Safety of the Situation* (ESS) to DOE/NNSA before removing any operational restrictions

The FOD must take actions, as appropriate, to place or maintain the facility in a safe condition.

The next step after placing the facility in a safe condition is to notify DOE/NNSA, which may be accomplished using the *Occurrence Reporting and Processing System* (ORPS), or notification to the NNSA Facility Representative. Timely declaration of a PISA is a DOE/NNSA requirement. DOE G 424.1-1B states:

It is appropriate to allow a short period of time (hours or days but not weeks) to investigate the conditions to confirm that a safety analysis is potentially inadequate before declaring a PISA.

A USQD must be prepared for all PISAs. The USQD is prepared retrospectively as if the identified condition were a proposed activity. This is referred to as a *backward-looking* USQD. DOE G 424.1-1B states:

When a potentially inadequate safety analysis finding arises from an as-found condition, the seven questions can be used in a backward-looking manner as if the current configuration were a proposed modification. If the USQD is found to be negative, the contractor could have approved the discrepant condition without DOE involvement. This would resolve the discrepancy and provide justification for the current configuration.

The outcome of the USQD must be completed and reported to DOE within 10 or fewer working days from the time of declaration of the PISA unless documented dispensation is obtained from DOE/NNSA approving additional time. An e-mail is considered adequate documentation.

The *Evaluation of the Safety of the Situation* is not a USQ determination, but it determines the safety of the discovered condition with the operational restrictions imposed. The ESS is performed by facility safety basis personnel with the appropriate input from the various safety disciplines. The ESS is the FOD's assessment of the relative risk of the situation and provides evidence to DOE/NNSA for the acceptability and/or removal of controls.

For a positive PISA-USQD, LANL management must submit the USQD and ESS to DOE/NNSA within 30 calendar days of the time of declaration of the PISA unless documented dispensation is obtained from DOE/NNSA approving additional time. An e-mail is considered adequate documentation.

Note: Per DOE G 424.1-1B,

...if the facility is placed in a TSR safe MODE (i.e., a MODE where the PISA condition no longer represents a hazard), there is no specific time limit for submittal of the ESS in this situation.

DOE approval of the ESS is required before removal of any compensatory actions or operational restrictions imposed pursuant to the discovery and declaration of the PISA. A Justification for Continued Operations (JCO) may be used to address this situation as appropriate (see Section 3.8.5).

For a negative PISA-USQD, no submittal deadline exists; however, an ESS must be submitted to DOE before removal of any compensatory actions or operational restrictions imposed pursuant to the discovery and declaration of the PISA.

See Attachment G, *Evaluation of Safety of the Situation (ESS) and Operability Determination*, for additional information on the ESS. Attachment G is guidance for preparing an ESS and Operability Determinations (as appropriate).

Note: The evaluation of the PISA-USQD and development of the ESS may occur simultaneously; however, the ESS must not be submitted until the USQD is completed. The ESS and the USQD can be submitted together.

3.8.5 Justification for Continued Operations

DOE G 424.1-1B states the following:

A JCO is a mechanism by which a contractor may request that DOE review and approve a temporary change to the facility safety basis that would allow the facility to continue operating in view of a specific and unexpected situation, the safety significance of the situation, and the compensatory measures being applied during this period. A JCO is associated only with situations where the PISA USQD is positive. However, as discussed in Section C.6.1, it is also appropriate to update the ESS in lieu of developing a JCO.

If the PISA arises from the situation where analytical errors in the DSA are identified or the analysis is otherwise inappropriate, a proposed DSA change should be prepared and submitted to DOE. However, if the DSA change cannot be submitted in a timely manner (e.g., within a month) and a strong programmatic need exists to continue operations, a JCO that defines specific operational restrictions or other compensatory measures that will be maintained should be submitted to DOE for approval.

When DOE approves such a JCO, the JCO and any DOE conditions of approval become temporary additions to the safety basis that would permit operations to continue under the conditions specified, including a defined termination point. DOE review of the JCO should follow a similar approach to approval review of the DSA and should be documented in a SER ... The approval authority for the DOE should be at the same level as the Safety Basis Approval Authority for the facility.

Section C.7 of DOE G 424.1-1 states:

A JCO is expected to define an appropriate set of temporary hazard controls (that is, compensatory measures) to be in effect during the life of the JCO. In some cases, these hazard controls might involve temporary changes to the facility technical safety requirements (TSRs).

A JCO should have a predefined, limited life only as may be necessary to perform the safety analysis of the unexpected situation, to identify and implement corrective actions, and to update the safety basis documents on a permanent basis. The JCO should define the termination point of the life of the JCO. In most cases, this would take the form of a functional point, such as the completion of turnover of a physical modification for routine operations, which would occur after implementing the modification, post-modification testing, updating critical documentation, and training of the operations staff. The contractor should take actions to resolve the conditions that require the JCO or modify the safety basis during the next annual update to make the JCO no longer necessary. JCOs should not continue past a required annual DSA update unless the JCO was submitted within three months of the submittal date of the annual update. In some rare cases, it may not be practical to achieve this goal of being within three months of the submittal date of the annual update. It is recommended that those changes be handled as soon as practicable. If this cannot be accomplished, the contractor should formally notify DOE of the reasons.

A JCO is not an appropriate means to request a change of the safety basis for a planned operation, a new experiment, a major modification, or new construction. In these cases, a request for a change to the facility safety basis should be prepared by the contractor and submitted to DOE for approval. Because the JCO is established in response to an unexpected condition, event, or new

information, it is inappropriate to use it in planning new activities. A JCO should not be used in place of an exemption to 10 CFR 830 requirements.

Attachment C of DOE G 424.1-1B also includes a recommended format for the content of a JCO. These include the following:

- Title
- Purpose of Document
- Discussion of Background
- Description of authorized operation
- Compensatory Measures
- Safety Assessment
- Planned Corrective Actions
- Termination of JCO

Note: A JCO is one of three possible methods for allowing continuing operations while unable to fulfill all the requirements of a DSA. The other two methods, submitting a DSA change or incorporating the information/request in the submitted ESS, might be more appropriate, depending on the complexity and severity of the proposed changes.

3.9 Actions Following Completion of a Categorical Exclusion, USQ Screening, and USQD, except PISAs

The facility management has the authority to implement proposed changes in accordance with the facility procedures in cases where the proposed change is

1. Categorically excluded,
2. Screened out, or
3. A negative USQD.

If the proposed change is implemented, it must be in accordance with the facility's configuration management process, which includes change control.

If the USQD concludes that the proposed change is a positive USQD (i.e., a USQ), the FOD determines whether to implement the proposed change as is, cancel the proposed change, or modify the proposed change and re-evaluate through the USQ process.

If the FOD decides to implement the proposed change, then:

1. The FOD approves the positive USQD.
2. The FOD prepares the supporting justification for the proposed change. The FOD should work with the facility's associated SB Group Leader to properly document the justification.
3. The SB-DL concurs with the supporting justification as appropriate for the proposed change.
4. The ADNHHO (or designee) reviews and transmits the justification documentation to DOE/NNSA, and
5. DOE/NNSA approval of the amendment to the safety basis must be obtained prior to implementing the change.

The FOD incorporates any permanent changes as a result of the SB amendment into the existing DSA during the next scheduled update after the change has been approved.

4.0 RESPONSIBILITIES

4.1 Associate Director, Nuclear and High Hazard Operations (ADNHOO)

- Transmits changes along with supporting safety analysis that resulted in a positive USQD to DOE/NNSA for review and approval.

4.2 Facility Operations Director (FOD)

- Ensures that the USQ process is implemented for the facility in accordance with this procedure.
- Prepares the annual facility USQD summaries for submittal to DOE/NNSA.
- Ensures that physical changes for proposed activities are not started and that procedure changes are not implemented until the USQ process is completed.
- Approves positive USQD evaluations.
- Ensures that changes that result in positive USQDs are not implemented before approval by DOE/NNSA.
- Ensures that records associated with the USQ process are maintained in accordance with 10 CFR 830.122, *Quality Assurance Program (QAP) (d) (2)*.
- Maintains a log of *Categorical Exclusions*, USQ screens, and USQ determinations.
- Approves facility-specific USQ training (if applicable).
- Identifies the page changes for the DSA annual update.
- Maintains a list of personnel who are qualified to prepare or review USQ documents, including Expert USQDs, at their facility.
- Completes and maintains proficiency on the USQ process.
- Reports non-conformance with the USQ procedure in accordance with P322-3, Rev. 2, *Improved Performance from Abnormal Events*, or successor document.

4.3 Safety Basis Division

- Ensures that the *USQ Procedure* is appropriately implemented; performs audits and assessments.
- Maintains a list of the current safety basis documentation for all Laboratory nuclear facilities, which is regularly verified and distributed.

4.4 SB-Technical Services (SB-TS)

- Develops and maintains the Laboratory's USQ procedure.
- Maintains knowledge of the USQ process throughout the DOE complex by attending activities such as meetings with DOE and contractor personnel, interacting with the Safety Analysis Working Group (SAWG) of the Energy Facility Contractors Group (EFCOG), and by attending industry-sponsored USQ training sessions.
- Implements and/or coordinates the USQ process at LANL related to institutional issues (e.g., aircraft over flights, requirement notices, etc.).
- Maintains a list of QEVs that are qualified to prepare and review USQ documents at LANL.
- Advises personnel on USQ issues.
- Provides oversight of the USQ process implementation that includes:

- Conducting regular meetings with representatives of the nuclear facilities to address improving quality, consistency, and appropriate technical completeness of USQDs;
- Conducting ongoing reviews of Categorical Exclusions, screenings, and negative USQDs sampled on a regular basis for nuclear facilities to assure proper application of the USQ process, consistency, and appropriate technical completeness. These reviews must be documented and kept on file.

4.5 USQ Preparers, Reviewers, and Approvers (Qualified Evaluators)

- Qualifies and maintains proficiency on the USQ process, including ensuring that USQ training and qualifications are current prior to performing USQ process steps.
- Maintains a thorough knowledge of the safety basis for the facilities to which he/she is assigned.
- Prepares and reviews *Categorical Exclusion Applications*, USQ screens, and USQDs in accordance with this procedure.

5.0 IMPLEMENTATION

This procedure will become effective after NNSA approval.

Some LANL facility-specific procedures may need to be changed to reflect the changes in this *USQ Procedure*.

This procedure will be implemented within 60 days after receipt of approval, unless another schedule is provided to the Los Alamos FO.

Implementation of this procedure, once approved by Los Alamos FO for NNSA, will be based on enhanced training, workshops, and a restructured QEV program that ensures individuals preparing or reviewing, as applicable, USQ Categorical Exclusions, USQ screens, and USQDs, have the knowledge, skills, and abilities to execute this procedure.

6.0 QUALIFICATION and TRAINING

Preparers, Reviewers, and Approvers of USQ documents must be trained and qualified to prepare, review, or approve, as applicable; USQ Categorical Exclusions, USQ screens, USQ Determinations (USQDs), and Expert USQDs. The responsible FOD, as described in Section 4.0, must designate the personnel in writing to prepare USQ documents at their facility.

Below are the minimum personnel qualifications and training requirements as implemented according to SBP 112-4 *USQ Qualified Evaluator Qualification Standard*. Requalification requirements apply to all positions below.

6.1 USQ Preparer

- Education: A Bachelor of Science degree in engineering or one of the physical sciences or equivalent experience;
- Experience: A minimum of two years of job related experience; and a minimum of one year of nuclear-related experience.
- Training: Successful completion of structured in-classroom training on the requirements pertaining to the USQ program, as detailed in SBP-112-4.
- Training: Successful completion of applicable training on the effective SB.

6.2 USQD Reviewer

- Education: A Bachelor of Science degree in engineering or one of the physical sciences or equivalent experience;
- Experience: A minimum of two years of job related experience; and a minimum of one year of nuclear-related experience.
- Training: Successful completion of structured in-classroom training on the requirements pertaining to the USQ program, as detailed in SBP-112-4.
- Training: Successful completion of applicable training on the effective SB.
- Designation as a QEV Reviewer by the SB Group Leader.

6.3 Expert QEV

- Education: A Bachelor of Science degree in engineering or one of the physical sciences or equivalent experience.
- Experience: A minimum of two years of job related experience; and a minimum of one year of nuclear-related experience.
- Experience: Shall have three years of experience in a nuclear facility, which includes preparation and review of USQDs.
- Experience: Shall have at least one year of experience in the nuclear facility for which they are deemed an Expert, including preparing and/or reviewing USQDs for that facility.
- Training: Successful completion of structured in-classroom training on the requirements pertaining to the USQ program, as detailed in SBP-112-4.
- Training: Successful completion of applicable training on the effective SB.
- Training: Shall receive documented training on the proper use of the Expert USQD process.

6.4 USQD Approvers

- Education: A Bachelor of Science degree in engineering or one of the physical sciences or equivalent experience.
- Experience: A minimum of two years of job related experience; and a minimum of one year of nuclear-related experience.
- Training: Successful completion of structured in-classroom training on the requirements pertaining to the USQ program, as detailed in SBP-112-4.

6.6 USQ Approved Personnel List

The SB-TS manager or designee for this procedure will maintain a list of approved QEV personnel at LANL. This list identifies who can prepare, review, or approve USQ documents for the Laboratory. The SB-TS manager or designee for this procedure may remove personnel from this list based on requests from the Safety Basis Division.

The FOD will ensure that a written list of approved QEV personnel, including Expert QEVs, for the facility is maintained. This list identifies who can prepare or review Categorical Exclusions, USQ screens, and USQDs.

The FOD with the supporting SB Group Leader decides whether the QEVs are assigned tasks within the scope of this procedure.

7.0 EXCEPTION OR VARIANCE

Exceptions or variances to this document can be approved only by NNSA.

8.0 DOCUMENTS AND RECORDS

The Safety Basis Division is the Laboratory Office of Record for this process and maintains the administrative record for USQ related procedures. Documents and records are maintained in accordance with institutional policies and procedures and in accordance with 10 CFR 830, Subpart A, *Quality Assurance Requirements*.

8.1 USQ Document Preparation and Retention

The results of the USQ process are documented as CatEx, USQ screens, and USQDs (Attachments A, D, or F), including appropriate signatures. A log of these documents must be maintained by the respective nuclear facility and include the nomenclature identified in Section 8.1.1.

8.1.1 USQ Document Numbering

Each CatEx application, USQ screen, and USQD must be identified by a unique number.

The following numbering scheme must be included in the document numbering nomenclature:

ORG-XX-YYY-Z

where

- ORG corresponds to the facility organization code or building number, (e.g., *TA-55, WETF*, -dashes will not be used in the facility organization code). *LANL* will be used for institutional USQ documents.
- XX corresponds to the last two digits of the calendar year in which the USQ document is assigned.
- YYY corresponds to the numerical order that the USQ document is assigned in that calendar year (or YYYY for those facilities that exceed 1000 USQ documents in a calendar year).
- Z corresponds to the type of the USQ document where
 - C stands for CatEx,
 - S stands for USQ screen, and
 - D stands for USQD.

For example, TA55-09-003-D corresponds to a USQD performed at TA-55, which was the third USQ document assigned in the 2009 calendar year.

8.1.2 USQ Document Title

The title of the USQ document should be descriptive of the change for which the USQ document is being prepared, and may include the system, hardware, procedure, or requirement to be changed, as appropriate.

8.1.3 USQ Document Forms

The application of Categorical Exclusions must be documented using the form in Attachment A, *Categorical Exclusion Form*. USQ screens and USQDs must be performed using the forms in Attachment D, *USQ Screening Form*, and Attachment F, *USQD Form*, respectively.

8.1.4 USQ Document Retention

USQ documents (CatExs, Screens, USQDs, and associated documentation necessary and sufficient for ensuring compliance with 10 CFR 830.203) are official records and are retained in accordance with 10 CFR 830.122, *Quality Assurance Program (QAP)* (d) Criterion 4 (2). DOE G 424.1-1B states:

The contractor needs to retain records of USQ actions taken pursuant to Section 830.203 for at least the full operational lifetime of the facility, including deactivation, long term surveillance and maintenance, and decommissioning until the facility is categorized as a below Hazard Category 3 nuclear facility. When the contractor operating a facility changes, the outgoing contractor needs to turn over all USQ records to the incoming contractor.

8.1.5 Annual Reporting

An annual summary or list of USQDs must be submitted to DOE. The annual USQD summary should be developed to support the annual update of the DSA.

9.0 DEFINITIONS AND ACRONYMS

9.1 Definitions

See LANL *Definition of Terms*.

Key USQ concepts are defined below. The brackets [] denote the source document for the basis of these definitions.

Administrative Document—Written information or instructions that have no association with the safety basis and cannot be used to conduct work in a nuclear facility. Administrative documents are not subject to the requirements of 10CFR830.203, *Unreviewed Safety Question Process*.

Categorical Exclusion (CatEx)—An exclusion from the requirements that USQDs be performed on proposed changes to a category of SSCs or procedures as a result of a determination that the category cannot credibly have the capability of creating a USQ if changed.[DOE G 424.1-1B, Section 3.2]

Change—For the purposes of this procedure, *change* means any change to procedures or equipment (including prior undocumented changes), any new tests or experiments, or any New Information that has the potential to invalidate the safety basis. [DOE G 424.1-1B, Appendix A]

Document—A document does not define or describe activities or controls over the conduct of work in a nuclear facility. Documents are not subject to the requirements of 10 CFR 830.203, *Unreviewed Safety Question Process*.

Documented Safety Analysis (DSA)—A documented analysis of the extent to which a nuclear facility can be operated safely with respect to workers, the public, and the environment, including a description of the conditions, safe boundaries, and hazard controls that provide the basis for ensuring safety. [10 CFR 830.3(a), *Definitions*]

Note: The term Safety Analysis Report (SAR) is an earlier term that is synonymous with and has been superseded by the term Documented Safety Analysis (DSA).

Engineered Equivalent—Involves replacing one component with another for which a facility engineer has evaluated and determined that the replacement item meets all the requirements pertinent to the specific application, including the service conditions. [DOE G 424.1-1B]

Equivalence—Determined by a facility engineer and approved in accordance with the Laboratory Engineered Equivalency Determination (EED) process.

Equipment Important to Safety—EITS should be understood to include any equipment whose function, malfunction, or failure can affect safety either directly or indirectly. This includes safety-class and safety-significant structures, systems, and components (SSCs), other systems that perform an important defense-in-depth function, equipment relied on for safe shutdown, and, in some cases, process equipment. Support systems to safety systems that are required for the safety function are also safety systems and should be included. [DOE G 424.1-1B]

Evaluation of the Safety of the Situation—An evaluation that demonstrates adequate safety of the existing situation, taking into account any operational restrictions that have been imposed to meet the requirements of 10 CFR 830.203, *Unreviewed Safety Question Process* (g)(1). Based on the results of the USQD and ESS, it may be possible to remove operational restrictions with the appropriate approval.

Exact Replacement—Involves replacing one component with an identical component (same manufacturer, model number, etc.). [DOE G 424.1-1B]

Functional Series Procedure—A type of local document that crosses directorate lines of authority to provide organizations, programs, facilities, or types of workers with greater detail. [P311-1] These types of documents are issued and controlled by specific organizations, and provide specific instructions on work processes. These types of procedures include, but are not limited to, Safety Basis Procedures or Engineering Administrative Procedures.

Institutional Procedure—“Applies to everyone in the institution, or to broad-cross organizational functions.” [PD311]

Justification for Continued Operations—A JCO is a mechanism by which a contractor may request that DOE review and approve a temporary change to the facility safety basis that would allow the facility to continue operating in view of a specific and unexpected situation, considering the safety significance of the situation, and the compensatory measures being applied during this period. [DOE G 424.1-1B]

Margin of Safety—A margin of safety is the range between two conditions of (1) the most adverse condition estimated or calculated in safety analyses to occur from an operational upset or family of related upsets, and (2) the worst-case value known to be safe, from an engineering perspective.

Potential Inadequacy of the Documented Safety Analysis (PISA)—A condition in which the safety basis may be inadequate or the physical condition may not be accurate because the safety analysis may not match the current physical configuration of the facility, or the safety analysis may be inappropriate or contain errors.

Procedure—Written information or instructions explicitly or implicitly referenced in the DSA for performing work in the nuclear facility or implementing DSA requirements. A procedure, as described in DOE G 424.1-1B, includes anything described in the documented safety analyses that defines or describes activities or controls over the conduct of work.

Qualified Evaluator—An individual qualified to prepare and review Categorical Exclusions, USQ screens, and USQ determinations required under 10 CFR 830.203.

Routine Maintenance—Routine Maintenance is that type of maintenance activity that does not create an interim or final state or condition that may adversely impact EITS or the safety basis by the introduction of materials, equipment, or processes. Routine maintenance includes those maintenance activities which already are enveloped by the current safety basis as identified in the hazards analysis of the DSA.

Safety Basis (SB)—The DSA and hazard controls that provide reasonable assurance that a DOE nuclear facility can be operated safely in a manner that adequately protects workers, the public, and the environment. [10 CFR 830.203, *Unreviewed Safety Question Process (a)*]

The SB includes conditions of approval in Safety Evaluation Reports (SERs), facility-specific commitments to NNSA, and any revisions to the DSA as a result of negative USQDs.

Safety Basis Review—A specific review or evaluation, conducted as part of the change control process, of an activity, change, and others, by an individual knowledgeable of the facility's safety basis, who is not required to be a QEV, that establishes the safety, technical adequacy, and compliance with existing requirements (e.g., institutional policies, facility-specific TSRs, etc.). A Safety Basis Review is not a part of the USQ process and must occur on proposed changes prior to entering the USQ process.

Safety Evaluation Report (SER)—The report prepared by DOE to document (1) the sufficiency of the documented safety analysis for a hazard category 1, 2, or 3 DOE nuclear facility; (2) the extent to which a contractor has satisfied the requirements of Subpart B of this part; and (3) the basis for approval by DOE of the safety basis for the facility, including any conditions for approval. [10 CFR 830.3(a), *Definitions*]

Shift Order—A document that describes the operational activities, within the existing DSA, presented to operations personnel for execution on a shift basis. A shift order does not contain actual steps for performing work.

Technical Safety Requirements (TSR)—The limits, controls, and related actions that establish the specific parameters and requisite actions for the safe operation of a nuclear facility and include, as appropriate for the work and the hazards identified in the DSA for the facility: safety limits, operating limits, surveillance requirements, administrative and management controls, use and application provisions, and design features, as well as a bases appendix. [10 CFR 830.3(a), *Definitions*]

Unreviewed Safety Question (USQ)—A situation where (1) the probability of the occurrence or the consequences of an accident or the malfunction of equipment important to safety previously evaluated in the documented safety analysis could be increased; (2) the possibility of an accident or malfunction of a different type than any evaluated previously in the documented safety analysis could be created; (3) a margin of safety could be reduced; or (4) the documented safety analysis may not be bounding or may be otherwise inadequate.

USQ Determination (USQD)—The evaluation of a proposed activity, as required by 10 CFR 830.203, to ensure that a potential or proposed change to the facility or procedures as described in the existing (approved) DSA either (1) does not involve a USQ, which is the result of a negative determination, and the contractor is the approval authority for the proposed activity (In this instance there is no change to the existing DSA) or (2) does involve a USQ, which is the result of a positive determination, and NNSA is required to approve the change prior to implementation.

The USQD is required to be documented in an official record such that the rationale for the determination is consistent with the existing DSA and is sufficient to justify the determination of approval authority for the proposed activity.

USQ Documents—USQ documents include Categorical Exclusions, USQ screens, USQ determinations, and Expert USQ determinations, including any attachments.

USQ Process—The mechanism for keeping a safety basis current by reviewing potential *Unreviewed Safety Questions*, reporting *Unreviewed Safety Questions* to DOE, and obtaining approval from DOE prior to taking any action that involves an *Unreviewed Safety Question*. [10 CFR 830.3(a), *Definitions*]

Work—The performance of activities, operations, and processes authorized by the nuclear facility safety basis. Work is performed using approved procedures (e.g., detailed operating procedures, work orders, integrated work documents, etc.) Authorized activities, operations, and processes include operating nuclear facility equipment, performing maintenance activities that require manipulation of SSCs, operating process equipment, and performing activities in accordance with hazard control requirements and conditions (e.g., Safety Management Programs, TSRs, and other controls credited in the DSA as necessary to ensure adequate protection).

| | | |
|-------|--------------|--|
| 9.2 | | Associate Director of Nuclear and High Hazard Operations |
| | AcronymsADNH | |
| HO | | |
| CatEx | | Categorical Exclusion |
| CC | | Change control |
| CM | | Configuration management |
| CSE | | Criticality Safety Evaluations |
| CSLA | | Criticality Safety Limit Approval |
| DOE | | Department of Energy |
| DOP | | Detailed Operating Procedure |
| DSA | | Documented Safety Analysis |
| EED | | Engineered Equivalent Determination |
| EFCOG | | Energy Facility Contractors Group |
| EITS | | Equipment Important to Safety |
| ESS | | Evaluation of Safety of the Situation |
| FO | | Los Alamos Field Office |
| FOD | | Facility Operations Director |
| HC | | Hazard Category |
| IA | | Issuing Authority |
| JCO | | Justification for Continued Operation |
| LANL | | Los Alamos National Laboratory |
| NCR | | Nonconformance Report |
| NI | | New Information |
| NNSA | | National Nuclear Security Administration |
| ORPS | | Occurrence Reporting and Processing System |
| PAFD | | Process Accountability Flow Diagrams |
| PDSA | | Preliminary Documented Safety Analysis |
| PISA | | Potentially Inadequate Safety Analysis |
| QA | | Quality Assurance |
| QEV | | Qualified Evaluator |
| RM | | Responsible Manager |
| RO | | Responsible Office |
| SAWG | | Safety Analysis Working Group |
| SB | | Safety Basis |
| SBD | | Safety Basis Division |
| SB-DL | | Safety Basis Division Leader |
| SB-TS | | Safety Basis Technical Services |
| SDD | | System Design Description |
| SER | | Safety Evaluation Report |
| SSC | | Structures, Systems, and Components |
| TSR | | Technical Safety Requirement |
| USQ | | Unreviewed Safety Question |
| USQD | | Unreviewed Safety Question Determination |
| WI | | Work Instruction |

10.0 REFERENCES

Prime Contract (current or successor document):

- 10 CFR 830, *Nuclear Safety Management*
- 10 CFR 830.203, *Unreviewed Safety Question Process DOE G 424.1-1B, Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*
- DOE O 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*
- DOE-STD-1073-2003, *Configuration Management*
- DOE-STD-3009-94, CN3, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*

Other (current or successor document):

- AP-341-516, *Operability Determination and Functionality Assessment*
- AP-341-503, *Technical Evaluation of Replacement Items*
- P311-1, *Creating, Revising, and Cancelling Institutional Documents*
- P322-3, *Performance Improvement from Abnormal Events*
- PD311, *Requirements System and Hierarchy*
- SBP112-5, *New Information Process*
- SD330, *Los Alamos National Laboratory Quality Assurance Program*

11.0 FORMS

See Attachments B, D, and F.

12.0 ATTACHMENTS / ADDENDUM

Attachment A. *Categorical Exclusions*

Attachment B. *Categorical Exclusion Instructions and Form*

Attachment C. *Instructions for USQ Screening Form*

Attachment D. *USQ Screening Form*

Attachment E. *Instructions for the Unreviewed Safety Question Determination (USQD)*

Attachment F. *USQD Form*

Attachment G. *Evaluation of Safety of the Situation (ESS) and Operability Determination*

Addendum 1. *Expert USQ Screen Pilot*

13.0 CONTACT

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Attachment A. Categorical Exclusions

A. Non-Technical Changes to Procedures

The following types of non-technical changes, including editorial, are exempt from further USQ processing:

- Correction of typographical, spelling, punctuation, or grammatical errors, provided the meaning or intent does not change.
- Changes to acronyms, definitions, references, or procedure title/ID number.
- Updates to position titles, individual names, organizational names, and contact information to reflect current responsibilities; changes to identified position titles with similar qualifications.
- Format changes including repagination, step or section number changes, multiple action steps separated into single action steps, splitting one procedure into multiple procedures, combining procedures, conversion to another procedure format (e.g., procedure format change such as converting an Integrated Work Document [IWD] and/or a Work Instruction [WI] into a Detailed Operating Procedure [DOP]) and replacing drawings or graphs with more legible versions).
- Addition of clarifying text or notes to provide additional information or improve the procedure's readability (e.g., procedure readability such as adding descriptive language or examples, deleting extraneous text, removing redundant text) as long as the work process is not technically changed.
- Deactivation or cancellation of a procedure rendered obsolete because of its incorporation into (or replacement with) another procedure that is required to be evaluated through the USQ process.
- Deactivation or cancellation of a procedure that has become obsolete because of the completion of the task or mission for which it was created.
- Periodic review without revision of the technical content or application.

Examples of technical changes that are not covered by this Categorical Exclusion include changes to the purpose/ scope, rearranging or removing process steps, the addition/ modification of processes or equipment, the addition of new hazards (or increases to existing hazards), changes to controls, physical relocations of a process, the removal of regulatory requirements, and eliminating required reviews.

Justification:

As allowed by DOE G 424.1-1B, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*, changes to procedures that have been shown to have no impact on nuclear safety (or the safety basis) may be exempted from further USQ processing. The types of changes listed above have no potential to adversely impact the safety basis because they do not involve any technical changes to nuclear facility processes or work steps.

B. Like-for-Like or Equivalent Replacements

This CatEx applies to any replacement of an SSC with a documented Like-for-Like or Equivalent replacement. Like-for-like and Equivalent replacements must be documented in accordance with the LANL Conduct of Engineering procedure AP-341-503, *Technical Evaluation of Replacement Items*, or successor document. The interim state of the replacement process, including any equipment outages, must be reviewed by a USQ QEV to ensure it remains within the safety basis.

Justification:

Those parts determined to be like-for-like or equivalent parts in accordance with the Laboratory Conduct of Engineering process do not require further evaluation under 10 CFR 830.203, *Unreviewed Safety Question Process*. For equivalent parts, the Laboratory Conduct of Engineering process for equivalent replacements is used to determine and ensure that a replacement part is at least equal to the original item. An equivalent part exhibits the same form, fit, function, and failure modes as the item it replaces, but it is not an exact replacement and does not adversely affect the safety basis.

C. Modifications

Modifications explicitly require review under 10 CFR 830.203, *Unreviewed Safety Question Process*. The only modifications exempt are those listed below. This CatEx cannot be applied in situations where modification activities could cause *changes to the facility* during execution.

1. Changes for which a nuclear grade change control process is not warranted.¹
 - a. Changes that are physically confined to offices and administrative areas.
 - b. Changes that do not introduce new hazards and for which common commercial practices would suffice (e.g., changing fixtures for fluorescent lighting in a control room of the facility).
 - c. Changes that are physically confined outside the nuclear facility's building structure that cannot affect the building structure, cannot affect outside SSCs (e.g., utilities, fire suppression system backup water supplies, emergency diesel generators) relied upon by the nuclear facility, do not create any interaction potentials with the nuclear facility, and for which common commercial practices would suffice.

¹ DOE G 424.1-1B, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*, Section 3.2.
SBP-112-3-R1.1

Attachment B. Categorical Exclusion Form

General Instructions

The Categorical Exclusion Application Form, Form 1985, will be completed electronically as follows:

1. The Preparer will indicate the affected facility/facilities in the Facility Identification space.
2. The Preparer will add in the appropriate spaces, the Facility-Specific USQ Number, the Specific CatEx Applied (Identification No. (e.g., "C.1.a") and Title), and a description of why the CatEx applies. The Description may be in the form of a sentence or two in the provided space or may refer to an attached red-lined copy of the procedure that has been changed.
3. If a QEV Trainee has applied the CatEx to the change, the QEV Trainee completes the QEV Trainee name, signature, and date spaces on the Form 1985 and forwards the form to a QEV Preparer.
 - a. The QEV Preparer reviews and discusses the form with the QEV Trainee.
 - b. If the QEV Preparer concurs with the CatEx application, the QEV Preparer completes the QEV Preparer name, signature, and date spaces on the Form 1985 and forwards the form to a QEV Reviewer.
 - c. If the QEV Preparer does not concur, the QEV Trainee and Preparer either revise the Form 1985 prior to forwarding it to a QEV Reviewer or prepare a USQ Screen or Determination for the change.
4. When there is no QEV Trainee, the Preparer completes the QEV Preparer name, signature, and date spaces on the Form 1985 and forwards the form to a QEV Reviewer.
5. If the QEV Reviewer concurs with the conclusion, the QEV Reviewer completes the QEV Reviewer name, signature, and date spaces on the Form 1985. Whenever the QEV Reviewer disagrees with the CatEx application, the QEV Reviewer returns the Form 1985 with comments to the QEV Preparer for resolution. If these comments cannot be resolved, perform a USQ Screen or USQD.

Note: No QEV Reviewer shall serve as the Preparer of the same document.

Categorical Exclusions will be documented as defined in Sections 3.4 and 8.1.

The form in Figure B-1 may be attached to the paperwork entering the USQ process or embedded in it, such as included in a *Document Traveler* or procedure or work package cover page. In the latter case, any accompanying explanatory text is not part of the CatEx; it is only an implementation aid to assist Preparers in determining if documentation of a CatEx is required.

Categorical Exclusions are USQ documents. As such, the form in Figure B-1 shall be used only for documenting CatExs; it should not be used as a signature block for non-USQ purposes. **Note:** CatExs are also subject to the document retention requirements of 10 CFR 830, *Nuclear Safety Management*.

Figure B-1 Categorical Exclusion Form

USQ Process Categorical Exclusion

Facility Identification: _____

Facility-Specific USQ No.: _____

Specific CatEx Applied: _____

Change Number: _____

Title: _____

QEV Trainee Signature: _____

QEV Preparer Signature: _____

QEV Reviewer Signature: _____

Date: _____

Basis for Cat Ex: _____

Derivative Classifier: _____

Unclassified Official Use Only (OUO)

Unclassified Controlled Nuclear Information (UCNI)

List all guidance used: _____

Attachment C. Instructions for the USQ Screening Form

C.1 Introduction

At LANL, USQ screening involves considering if the change is enveloped by a previous USQD and then, if needed, comparing the proposed modification to the three conditions as defined in 10 CFR 830.203, *Unreviewed Safety Question Process* (d). If the change is enveloped by a previous USQD or all three questions based on the conditions can be answered "No," a USQD is not required.

USQ screening is intended to be a simple decision-making step. Answering any of the seven USQD questions is inappropriate for the screening step, because it involves only non-evaluative criteria. 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 content intrinsic to the 7 questions. An affirmative response to one or more of the screening questions requires the preparation of a USQD in accordance with Section 3.6.

C.2 General Instructions

A USQ screen is optional, and proposed changes may proceed directly to a USQD, if desired. Otherwise, a USQ screen will be performed using Form 1986 in Attachment D, *USQ Screening Form*, as follows:

1. Form 1986 will be completed electronically. Continuation sheet(s) will be attached if the space provided is not adequate. The Facility-Specific USQ Number, Rev., Date, and *Page X of Y* will be indicated on each page of the USQ Screening Form.
2. The Preparer will indicate the affected facility/facilities in the Facility Identification space.
3. The Preparer will add the Facility-Specific USQ Number (Section 8.1.1), revision number (Rev. starting at zero), Change Number, Date, and Title in the appropriate spaces.
4. The Preparer will provide a brief description of the proposed change in the *Description of Proposed Change* space. The description will be factual only, not evaluative.
5. The proposed change can be screened if it is covered by a previous USQD. Any location differences must be considered to ensure that they do not invalidate the assumptions of the prior USQD.
 - a. If the proposed change is covered by a previous USQD, identify the applicable USQD by number and approval date. Check both the YES box and "The issue does not require a USQD" box. Proceed to Step 7.
 - b. If the proposed change is not covered by a previous USQD, check the NO box and proceed to Step 6.
6. The Preparer will answer *Yes* or *No* to questions 1, 2, and 3 of the *USQ Screening Form*.

When answering the three screening questions, follow the guidance in Section C.3.

- a. If the responses to questions 1, 2, and 3 are *No*, then *The issue does not require a USQD* block shall be checked. Proceed to Step 7.
 - b. If one or more of the responses to questions 1, 2, and 3 are *Yes*, then either
 - Check the *The issue does require a USQD* block and Proceed to Step 7.
7. A brief, non-evaluative basis in support of the conclusion reached in Step 5 for a prior negative USQD or questions 1, 2, and 3 in Step 6 shall be provided in Basis.
8. The references associated with the review shall be documented. At a minimum, two types of references are to be considered. These include the existing DSA (inclusive of a SER) and TSRs. The references cited are limited to those actually used in preparing the USQ Screen.
9. If a QEV Trainee has prepared the USQ Screen, the QEV Trainee completes the QEV Trainee name, signature, and date spaces on Form 1986 and forwards the form to a QEV Preparer.
 - a. The QEV Preparer reviews and discusses the form with the QEV Trainee.

- b. If the QEV Preparer concurs with the USQ Screen, the QEV Preparer completes the QEV Preparer name, signature, and date spaces on Form 1986 and forwards the form to a QEV Reviewer.
 - c. If the QEV Preparer does not concur, the QEV Trainee and Preparer either revise Form 1986 prior to forwarding it to a QEV Reviewer or prepare a USQ Determination for the proposed change.
10. When there is no QEV Trainee, the Preparer completes the QEV Preparer name, signature, and date spaces on Form 1986 and forwards the form to a QEV Reviewer.
- a. If the QEV Reviewer concurs with the conclusion, the QEV Reviewer completes the QEV Reviewer name, signature, and date spaces on Form 1986. The QEV Reviewer returns Form 1986 to the Preparer.
 - b. Whenever the QEV Reviewer disagrees with the CatEx application, the QEV Reviewer returns Form 1986 with comments to the QEV Preparer for resolution. If these comments cannot be resolved, perform a USQD, No QEV Reviewer shall serve as the Preparer of the same document.
11. The Preparer has the classification review completed and forwards the completed USQ Screen in accordance with facility procedures.

C.3 Guidance for Answering the Questions

1. Does the proposed activity involve a temporary or permanent change in the facility as described in the existing documented safety analysis?

Based on DOE Guide 424.1-1B, a structure, system, or component (SSC) would be considered changed if any of the following were altered: (1) the function(s), (2) the method of performing those functions, or (3) the design configuration.

Other considerations for determining whether an SSC has been changed include:

- A change in the conditions under which the SSC may perform its safety function,
- Introduction of other components or factors that may compromise or challenge normal operation of the SSC (e.g., a two-over-one issue), and
- Does the proposed activity involve a temporary or permanent change in the facility as described in the existing documented safety analysis?

2. Does the proposed activity involve a temporary or permanent change in the procedures as described in the existing documented safety analysis?

For those procedures that are either explicitly or implicitly described in the DSA, the procedure would be considered changed for the purposes of the screen, if any of the following were to be altered:

- a. The role or mission (how the procedure functions) of the procedure,
- b. The method of performing the role or mission (e.g., how the procedure is executed or performed), or
- c. The formula, scheme, or strategy of the procedure (the procedure's strategy that represents whether the work control is effective).

The procedure formula, scheme, or strategy includes but is not limited to the following:

- The order of steps in the procedure,
- The completeness (no missing steps),
- Assurance that proper execution of the procedural steps results in the expected outcome or control,

- How the procedure addresses the interim condition (the manner in which the procedure controls the manipulation, loss of an SSC, lockout / tagout, and restoration of the system), and related or other affected SSCs,
- Assurance that the conditions established by the procedural steps are consistent with the design performance and operational requirements of the safety SSCs, and
- Assurance that no new equipment or materials or processes are introduced that could adversely affect the design, performance, or operation of safety SSCs.

3. Does the proposed activity involve a new test or experiment not described in the existing documented safety analysis?

If the proposed activity is a new test or experiment, check the Yes box and perform a USQD.

If any of these three questions of the USQ Screening Form was answered *Yes*, then *The issue requires a USQ determination* block must be checked, and a USQD shall be performed in accordance with Attachment E, *Instructions for the USQD Worksheet*, prior to proceeding with the change.

If the responses to questions 1, 2, and 3 are *No*, then *The issue does not require a USQ determination* block shall be checked. Proceed to Step 6.

Attachment E. Instructions for the USQD Worksheet

Guidance for Answering USQ Determination Criteria Questions

E.1 Introduction

Many changes in a facility affect equipment important to safety in ways that are not immediately apparent. For example, changes may introduce new failure modes in support and auxiliary systems, place new kinetic energy sources (e.g., compressed gas) near safety systems, and alter seismic response characteristics. These instructions provide guidance for identifying physical and procedural changes and tests, experiments or operations that may be implemented without prior DOE approval if the proposed change is within the existing safety basis. The determination process in these instructions focuses on explicit or implicit effects on the facility's DSA. Preparers and Reviewers will consider possible direct and indirect effects on the facility's DSA.

E.2 General Instructions

A USQD may be performed without a USQ screen, even if a USQ screen indicates the USQD is not required or it is apparent that a USQ screen would require completion of a USQD. When a USQD is required, the USQD Worksheet (Appendix F) will be filled out by a QEV Preparer to document the USQD as follows:

1. The form will be completed electronically. Continuation sheet(s) will be attached if the space provided is not adequate. The Preparer, Reviewer, and Approver will sign the completed form. The USQD number, Rev., Date, and *Page X of Y* will be indicated on each page of the USQD.
2. The Preparer will indicate the affected facility /facilities in the facility Identification space.
3. The Preparer will add the Facility-Specific USQD number (Section 8.1.1), revision number (Rev., starting at zero), Change Number, Date, and Title.
4. The Preparer will complete a Description of the Change in Section 1 before answering the seven questions.

In Section 1, the Preparer will describe the change. This includes the aspects of the change being evaluated and any pertinent parameters potentially affected by the change. The description should identify phases of the proposed process(es), including construction, start-up, normal operation, and post maintenance testing as appropriate; and provide reference to technical documents as needed to later support responses to the USQD questions. The description of the proposed change should be concise, but should provide sufficient information to support the responses to the USQD questions. Optionally, it is acceptable to identify parameters (e.g. Material-at-Risk, significant chemicals, energy sources, and other significant hazards) as appropriate to avoid reiteration of such information in multiple question responses, however detail and analysis associated with such parameters should be reserved for the responses to the questions.

The description should also include the identification of any temporary or interim configurations and respective TSR ACTION statements; however, the impact of these should also be reserved for the responses to the determination questions.

5. In Section 2, the Preparer will list the references used for the USQD. This will include a list of:
 - a. All documents that describe the situation being considered and any technical evaluations thereof,
 - b. Documents in the current safety basis for the facility/process that were used in this USQD,
 - c. Hazard, safety, or impact analyses related to the situation being considered that were used in this USQD, and
 - d. Any other references used in this USQD.

The references cited are limited to those actually used in preparing the USQD.

6. The Preparer will complete Section 3 Unreviewed Safety Question Determination (USQD). This requires answering the seven questions with either a *Yes* or *No* and providing an explanation of the response. The Preparer should refer to Section E.3 of this attachment for guidance in answering the seven questions.

If the Preparer answered each of the questions as *No*, this indicates an unreviewed safety question does not exist (i.e., a negative USQD) for the proposed change and may be approved by LANL.

A *Yes* answer to any question indicates that an unreviewed safety question may exist for the proposed change. This is a positive USQD.

7. The Preparer will complete the Summary on the first page of the USQD by checking the appropriate block or blocks.
8. If a QEV Trainee has prepared the USQD, the QEV Trainee completes the QEV Trainee name, signature, and date spaces on Form 1987 and forwards the form to a QEV Preparer.
 - a. The QEV Preparer reviews and discusses the form with the QEV Trainee.
 - b. If the QEV Preparer concurs with the USQD, the QEV Preparer completes the QEV Preparer name, signature, and date spaces on Form 1987 and forwards it to a QEV Reviewer.
 - c. If the QEV Preparer does not concur, the QEV Trainee and Preparer revise Form 1987 prior to forwarding it to a QEV Reviewer.
9. When there is no QEV Trainee, the Preparer completes the QEV Preparer name, signature, and date spaces on Form 1987 and forwards it to a QEV Reviewer. The Preparer and Reviewer will not be the same person.
10. If the QEV Reviewer concurs with the Preparer's conclusion, the QEV Reviewer indicates agreement by completing the QEV Reviewer name, signature, and date spaces on the Form 1987, and that signature constitutes approval of the USQD if it is negative. The QEV Reviewer then forwards the USQD to the Preparer. Whenever the QEV Reviewer disagrees with the conclusion of the Preparer, the QEV Reviewer returns the USQD with comments to the Preparer for resolution. If these comments cannot be resolved, the Preparer so indicates on the form and forwards it to the Facility Operations Director (FOD) for review and disposition. The FOD will either resolve the disagreement and sign as the QEV Preparer or the QEV Reviewer, or will assign a new QEV Reviewer or Preparer for the document. (The FOD can only sign as a QEV Preparer or Reviewer if all of the requirements in Section 6.1.2 are met.)
11. If the change does not involve a positive USQD, the Approver so indicates and forwards the Form 1987 back to the Preparer for implementation of the change without the need for prior DOE approval.
12. If a positive USQD is involved, the FOD's signature is required for approval. The FOD completes the FOD Approval name, signature, and date spaces on the Form 1987 and forwards Form 1987 back to the Preparer. (The FOD can only sign as a QEV Preparer or Reviewer if all of the requirements in Section 6.1.2 are met.)

Note: A determination that a change involves a positive USQD does not mean the change cannot be performed in a safe manner. It means that the proposed activity or situation is not consistent with the current DSA and that NNSA, therefore, has not previously reviewed the safety implications of the change. Thus, NNSA approval is required prior to implementation. Conversely, a determination that a change does not involve a positive USQD does not mean there are no safety implications associated with the change. It means that any accidents or malfunctions associated with the change are bounded by the DSA previously reviewed and approved by NNSA, and thus prior NNSA approval is not required.

13. The Preparer forwards Form 1987 for derivative classification review. The Derivative Classifier (DC)/Unclassified Controlled Nuclear Information (UCNI) Reviewing Official completes the

Reviewed for Classification portion of the form. Completion of the form includes checking appropriate boxes, adding name and organization, signing and dating the form, listing reference guidance, and adding any required markings to the form. Form 1987 is returned to the Preparer.

Note: The completed USQD documentation shall be sufficient to support the conclusion so that an independent Reviewer familiar with the facility and DSA can follow the reasoning and arrive at the same conclusion.

DOE G 424.1-1B states:

In performing USQ determinations of a proposed change, documented justification for the USQ determination should be developed. Consistent with the intent of Section 830.203, this documentation should be complete in the sense that a qualified independent reviewer could draw the same conclusion.

The importance of the documentation is emphasized by the fact that experience and engineering knowledge, rather than models and experimental data, are frequently relied on to make the USQ determination. Since an important goal of the USQ determination is to demonstrate that the safety basis is being maintained, the items considered by the evaluator should be clearly stated.

Documentation of the effects considered will enable the independent reviewers to assess the adequacy of the USQ determination and its conclusions.

E.3 Guidance for Answering USQ Determination Criteria Questions

In answering the questions, it is important to consider the direction of the change. DOE G 424.1-1B states:

It is the direction that the change has on probability, consequences, or margin of safety not the magnitude that is important.

For example, if the wall thickness of a pressure vessel is going to be increased or the reaction time of a relay in a safety system is shortened, it is likely that the change is in the direction of increased safety. If changes are in the opposite direction, safety is likely to be decreased. Potential increases should be clearly discernible on a qualitative basis. It is important to recognize that the bounding accidents for workers may be (and probably are) different from bounding accidents for the public.

Consistent with DOE G 424.1-1B, the phrase *an accident previously evaluated in the facility's safety basis* is understood to include the hazard analysis as well as the accident analysis. The hazard analysis should always be assessed to verify that the change under consideration does not alter the DSA's accident selection (relative to public consequence), introduce a new accident not covered by the hazard analysis (resulting in the identification of new controls or controls at a higher classification level), or increase the worker or public risk profile of an already covered accident, as determined by qualitative judgment at a level consistent with that originally used to develop the hazard analysis. This activity may be denoted in USQDs by a statement such as *all the accidents analyzed in the DSA were reviewed for potential impact...* Individual scenarios or line entries from the hazard analysis need be cited only to the degree specific clarification of potential impact is deemed necessary.

A change may include several distinct phases, such as construction/installation, testing, and operation that may be necessary to plan and accomplish work effectively and provide for an adequate USQ review. This may mean that the USQ process for change evaluation would be done in phases; therefore, more than one USQ document may be completed. This is especially true if the change is made over an extended period of time. In these cases, it is essential that the scope of each phase be clearly defined. Changes must be evaluated for the potential impact on the safety function of affected SSCs. Within the USQ process for a phased change, one of the USQ evaluations must evaluate the overall or integrated change of all of the phases to determine whether DOE approval is required. This is usually, but not always, the final USQ review in the

series. Related USQ documents should be identified. When performing USQ reviews for a series of phased changes, no new control that is not already identified in the DSA can be credited prior to DOE approval through a positive USQD.

1. Could the proposed change increase the probability of occurrence of an accident previously evaluated in the facility's existing DSA?

DOE G 424.1-1B, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*, states:

To understand how the probability of an accident occurring could be increased, it is important to understand how the term "accident" is applied: the term "accident" refers to the anticipated operational transients and postulated accident scenarios considered in the DSA.

In answering this question, the first step is to determine the accident scenarios, which have been evaluated in the previously approved safety analysis that may be affected by the proposed change. By focusing on the initiators of the previously evaluated accident scenarios, it can be determined whether there is increased likelihood that a given accident would occur. The following questions may provide a useful approach in making this determination.

- a. *Will the proposed change meet the design (including safety functional requirements as described in the DSA), material, and construction standards applicable to the structures, systems, and components (SSCs) being modified? If the answer is "yes," this aspect of the proposed change might be considered not to increase the likelihood of the occurrence of an accident, but the aspects of question b, following, are also considered. If the answer is "no" to any of the items, either a justification for saying there is no increase in the likelihood of the occurrence of an accident will need to be developed or it is concluded that the likelihood of the occurrence of an accident is increased.*
- b. *Could the proposed change affect overall SSC performance in a manner that could increase the probability of a previously analyzed accident? Possible questions to ask are—*
 1. *Could the proposed change use instrumentation with accuracies or response characteristics that are different from those of existing instrumentation and could make an accident more likely to occur?*
 2. *Could the proposed change cause SSCs to be operated outside their design or testing limits? Examples include the following: overloading electrical systems, over pressurizing a piping system, or operating a motor outside its rated voltage and amperage.*
 3. *Could the proposed change cause system vibration, water hammer, fatigue, corrosion, thermal cycling, or degradation of the environment for SSCs that would exceed the design limits?*
 4. *Could the proposed change cause a change to any SSC interface in a way that could increase the likelihood of an accident?*

The determination of a probability increase is based on a qualitative assessment, which uses engineering evaluations consistent with the original safety analysis assumptions. For the purpose of a USQD, changes result in an increase in the probability of an accident only if there is a clearly discernible increasing trend. A discernible increase is any quantifiable or measurable increase, even if the increase does not result in an increase in frequency bin in the hazard evaluation.

The USQD does not require quantification of probabilities but must offer defensible arguments that support the claim that the probabilities will not change. For example, if a change involves new equipment designed and procured to the same requirements as the components being replaced, and which will be functionally identical to the original components (e.g., EED process), a statement to this effect (with supporting references) would be adequate to support the claim that no change in the probability of accidents associated with the equipment would be expected. DOE G 424.1-1B states:

If, as a result of a proposed change, additional protective measures (either administrative or hardware-related) are warranted during a postulated accident situation to ensure adequate protection of the public

or to provide worker safety, the USQD should be found to be positive on the basis that the change will result in either an increase in probability or an increase in consequences of an accident absent additional protective measures. A proposed change should not be defined as including additional protective measures to reduce exposures such as those related to ALARA (as low as reasonably achievable) levels and not related to potential accidents. DOE wants to be involved for several reasons. First, to verify that the degree of protection is adequate. Second, to ensure that the safety basis is properly revised to include the additional protective measures. Third, to verify that hardware involved is properly classified (for example, as a safety class or safety significant SSC) and will receive appropriate surveillance and maintenance.

2. Could the proposed change increase the consequences of an accident previously evaluated in the facility's existing DSA?

DOE G 424.1-1B states:

In answering this question, the first step is to determine which accidents evaluated in the safety analyses may have their radiological and hazardous material consequences altered as a direct result of the change. The next step is to determine whether the change could in fact increase the consequences of any of the accidents evaluated in the existing safety analyses. Consequences to workers (in-facility, outside, or collocated) and the public is to be considered. Examples of questions that assist in this determination are as follows:

- a. *Could the proposed change degrade or prevent safety functions described or assumed in the existing safety analyses?*
- b. *Could the proposed change alter any assumptions previously made in evaluating the radiological and hazardous material consequences in the existing safety analyses?*
- c. *Could the proposed change play a direct role in mitigating the radiological or hazardous material consequences assumed in the existing safety analyses?*
- d. *Could the proposed change affect the integrity or function of any fission product barrier or any radioactive or hazardous material barriers?*

Furthermore, DOE G 424.1-1B states:

When evaluating "increased potential consequences" of an accident, if the previously bounding case for that family of accidents is unchanged, then generally there is no increase in the consequences within the USQ process. It is important that the family of accidents be related (the same type, fires, for example) and uses the same set of preventative measures and mitigation. While this is appropriate for public safety, adequate protection of workers necessitates further evaluation. Each change is evaluated for increases in the consequences to workers. Further, when considering a new scenario within a family of accidents, the probability of an accident in that family would be expected to increase.

3. Could the proposed change increase the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the facility's existing DSA?

DOE G 424.1-1B states:

The safety analyses for the facility assume the proper functioning of equipment important to safety in demonstrating the adequacy of design. The proper functioning of other systems, including support systems, is generally assumed. The scope of the USQ determination should include these other systems. For example, a change that does either of the following is a change that increases the probability of a malfunction of equipment important to safety:

- degrades the performance of equipment important to safety, assumed to function in the accident analysis, to below the performance level assumed in the existing safety analyses; or
- increases the challenge to equipment important to safety assumed to function in the accident analysis (for example, more rapid pressure rise), degrading performance to a level below that assumed in the existing safety analyses.

In answering this question, the first step is to determine what SSCs could be affected by the proposed change. Then the effects of this change on equipment important to safety are evaluated, including both direct and indirect effects. Direct effects are those in which the change affects the equipment (for example, a motor change on a pump). Indirect effects are those in which the change affects one piece of equipment, which in turn can affect equipment important to safety. An example of indirect effects would be one piece of equipment falling on safety equipment.

After the impact of the change on equipment important to safety is identified, a determination is made whether an increase in the probability of a malfunction of the SSCs has occurred. The following are examples of questions that can be used in making this determination.

- a. *Will the proposed change meet the original design specifications for materials and construction practices when the following questions are considered?*
 - (1) *Are the seismic specifications met (for example, use of proper supports, proper lugging at terminals, and isolation of lifted leads)?*
 - (2) *Are separation criteria met (for example, minimum distance between circuits in separate divisions, channels in the same division, and jumpers run in conduit)?*
 - (3) *Are the environmental criteria met (for example, use of materials suitable for the radiation or thermal environment in which they will be used)?*
- b. *Will the proposed change degrade equipment important to safety reliability by—*
 - (1) *Imposing additional loads not analyzed in the design?*
 - (2) *Deleting or reducing system or equipment protection features?*
 - (3) *Downgrading the support system performance necessary for reliable operation of the equipment?*
 - (4) *Reducing system or equipment redundancy or independence?*
 - (5) *Increasing the frequency of operation of systems/equipment?*
 - (6) *Imposing increased or more severe testing requirements on systems or equipment?*

If the change adversely affects the equipment important to safety, the likelihood of equipment malfunction may be increased. A “no” answer to any question in paragraph 3a or a “yes” answer to any question in paragraph 3b in the immediately preceding examples may not mean that there is a negative impact on safety. It would indicate, however, the existence of a USQ and the need for further analyses.

The USQD does not require quantification of probabilities but does require defensible discussion that can be made to support the claim that probabilities will not change.

4. Could the proposed change increase the consequences of a malfunction of equipment important to safety previously evaluated in the facility’s existing DSA?

DOE G 424.1-1B states:

This question asks whether, assuming a malfunction of equipment important to safety, the change would result in increased hazardous-material or radiological consequences. For example, consider a change that caused a valve in a safety system to fail in the closed position where previously it was assumed to fail in the open position. If this change results in an increase in consequences of an accident, it indicates the change involves a USQ. In some situations, such as a loss of a preferred failure mode, the change might not lead to an increase in the calculated consequences but should be considered within the context of a possible reduction in a margin of safety.

5. Could the proposed change create the possibility of an accident of a different type than any previously evaluated in the facility’s existing DSA?

DOE G 424.1-1B states:

An accident or malfunction that involves an initiator or failure not considered in the nuclear facility's existing safety analyses is potentially an accident or malfunction of a different type. An example would be turbine missiles from a gas turbine added as an alternate power source. Certain accidents or malfunctions are not treated in the nuclear facility's existing safety analyses because their effects are bounded by similar events with the same control set that are analyzed.

A seismic-induced failure of a component designed to appropriate seismic criteria will not cause a malfunction of a different type. However, a change that increases the probability of an accident previously thought to be beyond extremely unlikely, so that it is in the credible range, creates a possible accident of a different type.

In answering this question, the first step is to determine the types of accidents evaluated in the existing safety analyses. The types of credible accidents that the change could create can then be identified and listed. Evaluating the differences between the two lists will determine the answer to the question. The accidents evaluated in the existing safety analyses are generally chosen to be bounding for a broad class of credible accidents. Thus, comparison of a new accident to the existing analyses may require referral to the underlying hazard analyses.

6. Could the proposed change create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the facility's existing DSA?

DOE G 424.1-1B states:

To answer this question, the types of failure modes of equipment important to safety that have been previously evaluated in the existing safety analyses and that would be affected by the change are identified. Then the types of failure modes that the change could create need to be identified. Comparing the two lists can provide an answer to the question. An example of a change that might create a malfunction of a different type is the relocation of equipment so that it becomes susceptible to flooding; another example is the replacement of a mechanical control system with a digital control system that could fail in a different mode.

A malfunction that involves an initiator or failure not considered in the facility safety basis is potentially a malfunction of a different type. A possible malfunction of a different type could be created by a change that adds a different type or more likely failure path than previously identified. Certain malfunctions are not treated in the safety basis because their effects are bounded by other related events that are analyzed. If the proposed activity introduces a malfunction that is bounded by other similar events in the safety basis, that activity shall not be considered a malfunction of a different type.

If additional controls not in the approved safety basis are essential to meet the performance criteria of equipment important to safety or to mitigate/prevent an accident that is in the approved safety basis to the same probability that is in the approved DSA, then this could constitute a positive USQD.

7. Could the proposed change reduce a margin of safety?

DOE G 424.1-1B states:

This section deals with margins of safety related to DOE-approved hazard control documents. These controls may be technical safety requirements (TSRs), or they may be in another form, as permitted in Section 830.205 for certain environmental restoration activities.

For purposes of performing the USQ determination, a margin of safety is defined by the range between two conditions. The first is the most adverse condition estimated or calculated in safety analyses to occur from an operational upset or family of related upsets. The second condition is the worst-case value known to be safe, from an engineering perspective. This value would be expected to be related to the condition at which some accident prevention or mitigation action is taken in response to the upset or accident, not the actual predicted failure point of some component.

Hazard control documents set forth the minimum acceptable limits for operation under normal and specified failure conditions; they ensure that the available safety equipment and operating conditions meet the assumptions in the existing safety analyses. They distill those aspects of the safety analyses that are required to ensure the performance of safety SSCs and personnel as relied on and defined in the safety analyses.

The bases for a hazard control should define the margin of safety. If the bases of a hazard control do not specifically identify a margin of safety, the DSA and other appropriate safety basis documents should be reviewed to determine whether the proposed change, test or experiment, or new information has or would result in a reduction in a margin of safety. The judgment on whether the margin is reduced should be based on physical parameters or conditions that can be observed or calculated.

Unclassified

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| Facility-Specific USQ Number | Rev. | Date |
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Signatures

| | | |
|--------------------------|-----------|------|
| QEV Trainee (print name) | Signature | Date |
|--------------------------|-----------|------|

| | | |
|---------------------------|-----------|------|
| QEV Preparer (print name) | Signature | Date |
|---------------------------|-----------|------|

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| QEV Reviewer (print name) | Signature | Date |
|---------------------------|-----------|------|

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| FOD Approval (Signature is only required for a positive USQ) | Signature | Date |
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Section 1. Detailed Description of Change

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Section 2. References

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| 2.1 List all documents that describe the situation being considered and any technical evaluations thereof. |
| 2.2 List documents in the current SB for the facility/process that were used in this USQD. |
| 2.3 List hazard, safety, or impact analyses related to the situation being considered that were used in this USQD. |
| 2.4 List any other references used in this USQD. |

Note: *If applicable and if a hazard (or safety) and impact analysis have not been provided, the change should be returned to change control to develop such an analysis.*

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| Facility-Specific USQ Number | Rev. | Date |
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Section 3. Unreviewed Safety Question Determination (USQD)

| | | |
|---|------------------------------|-----------------------------|
| 1. Could the proposed change increase the probability of occurrence of an accident previously evaluated in the facility's existing documented safety analysis (DSA)? Explain your answer below and list pertinent reference documents. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2. Could the proposed change increase the consequences of an accident previously evaluated in the facility's existing DSA? Explain your answer below and list pertinent reference documents. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 3. Could the proposed change increase the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the facility's existing DSA? Explain your answer below and list pertinent reference documents. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 4. Could the proposed change increase the consequences of a malfunction of equipment important to safety previously evaluated in the facility's existing DSA? Explain your answer below and list pertinent reference documents. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 5. Could the proposed change create the possibility of an accident of a different type than any previously evaluated in the facility's existing DSA? Explain your answer below and list pertinent reference documents. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 6. Could the proposed change create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the facility's existing DSA? Explain your answer below and list pertinent reference documents. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 7. Could the proposed change reduce a margin of safety? Explain your answer below and list pertinent reference documents. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

Complete the summary on the cover sheet.

Attachment G. Evaluation of Safety of the Situation (ESS) and Operability Determination

G.1 Evaluation of Safety of the Situation (ESS)

Section C.6.1 of DOE G 424.1-1B states:

10 CFR 830.203(g) requires contractors to submit an ESS to DOE “prior to removing any operational restrictions.” The contractor should develop an ESS following completion of the PISA USQD, since input from the USQD analysis is useful in developing the ESS. ...

The timing of the ESS is a function of whether the USQD is positive or negative. The ESS associated with positive USQDs should be developed within a short period of time following completion of the USQD (as soon as practicable and should not take more than a month) taking into account the safety risk presented by the situation and the effectiveness of operational restrictions imposed. However, if the facility is placed in a TSR safe MODE (i.e., a MODE where the PISA condition no longer represents a hazard), there is no specific time limit for submittal of the ESS in this situation. Also, there is no specific time limit for submittal of an ESS for a negative PISA USQD because the condition of the facility is such that DOE approval would not have been needed (per the USQ requirements) if the facility was intentionally put in this condition. However, in accordance with 10 CFR 830.203(g), the ESS must be submitted prior to lifting any operational restrictions. Further, it is a good practice to address the cause of the PISA (e.g., correct discrepant conditions and/or update safety basis) and return the facility to normal operations (i.e., lift operational restrictions) as soon as practicable. No DOE approval of the ESS is needed for the negative PISA USQD.

In situations of a positive USQD and if operations are to continue for an extended period of time (i.e., greater than a month) under the restricted conditions of other than a TSR safe MODE, then the contractor should evaluate whether further (more detailed) analysis may be appropriate to justify that continuance. This may take the form of a Justification for Continued Operation (JCO) (see Section C.7). Alternatively, it is appropriate for the contractor to update the ESS to include a more detailed analysis.”

Section C.6.2 of DOE G 424.1-1B states:

If the PISA USQD is negative, the ESS should document the assessment of the safety of the situation, and provide evidence that the immediate controls placed on the facility or activity to ensure a safe condition are not required and can be removed. If the PISA USQD is positive, the ESS should document the assessment of the safety of the situation, and provides the basis for how the actions taken (including implementation of operational restrictions), and/or planned actions, ensure safety.

If the USQD is positive, then DOE approval is required for any proposed resolution, including the removal of interim restrictions. Often this is also the situation that a JCO is prepared.

Section C.6.2 of DOE G 424.1-1B also states:

The following is a recommended format and content for an ESS:

- *Title*
- *Description of occurrence or discovery and immediate compensatory actions taken (i.e., operational restrictions). Date PISA was discovered and ORPS report number.*
- *Results of immediate safety assessment (including discussion of probability and consequence risk factors) and of USQD (positive/negative). Reference relevant documents.*
- *Results of any subsequent safety analysis developed to further support conclusions as to safety of the facility with and/or without operational restrictions/compensatory measures.*
- *Path forward. Discuss if additional work is to be performed to resolve the issue, and anticipated completion date.*

Additional appropriate content for an ESS in the case of a positive USQD could include:

- *Current operational status of the facility.*
- *Clear identification of all operational restrictions needed to maintain the facility in a safe condition.*

Analysis that addresses the safety impact of the PISA with the operational restrictions removed (or with the operational restrictions in place if their removal is not proposed).

- *Path forward for restoring the facility into compliance with the DSA (e.g., by revising the DSA or by correcting the discrepant condition).*
- *Summary of recommendations and conclusions.*

The safety analysis should be bounding and the level of detail sufficient to provide confidence that the facility is being maintained in a safe condition.

G.2 Operability Determination

It is sometimes appropriate to prepare an Operability Determination to support an ESS. An Operability Determination needs to cover the topics listed in DOE G 424.1-1B, Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements

Operability Determinations are performed by the cognizant system engineer in accordance with engineering procedures (AP-341-516 or successor). For EITS equipment, coordination between the cognizant system engineer and appropriate SB personnel is recommended in developing any associated operability determination and ESS. It is often appropriate to leverage the operability determination in specification of additional operating restrictions as necessary (e.g., compensatory measures, additional engineering analysis by a certain date), and specification of restoration actions.

DOE G 424.1-1B also indicates that:

Restoration actions for the degraded or nonconforming condition are to be developed by the facility and scheduled at the first available opportunity commensurate with the safety significance and extent of restoration actions in an integrated manner with other facility commitments and resources. The final operability determination may be included as part of the evaluation of the safety of the situation required to be submitted to DOE before removal of any operational restrictions.

Addendum 1. Expert USQ Determination

A. Purpose

The Expert USQD is a process based upon the Expert USQD process implemented at Y-12 (Y74-809) with the approval of DOE (D'Agostino Memorandum, June 2, 2010) and discussed in Section 1 of the NNSA Technical Bulletin 2010-2. The description of the expert USQD process contained in the NNSA Technical Bulletin 2010-2 states:

The expert-based process allows very experienced technical staff members who have significant experience with the nuclear facility and its safety basis to review proposed activities and make determinations that a full USQD is or is not required. If a full USQD is not required, the process allows the expert evaluator to use a streamlined approach to address pertinent USQD questions along with a brief justification of why it is readily apparent that a USQ is not a concern.

This initiative is intended to optimize the USQ process by eliminating the need to create excessive documentation for changes which cannot be screened or excluded, but obviously cannot adversely affect the applicable safety basis. Examples of such changes are administrative constraints that are more restrictive or conservative, changes to the facility that are more robust or responsive, and facility changes. This process is being implemented as part of a governance reform initiative.

The Expert USQD complies with the intent of 10 CFR 830 Subpart B *Safety Basis Requirements*. Refer to Section 1.0 of this document for additional detail.

B. Authority and Applicability**B.1 Authority**

The authority for this addendum is identical to that of SBP-112-3. Refer to Section 2.1 of SBP-112-3.

B.2 Applicability

The Expert USQD process may be applied to any changes for which SBP-112-3 is applicable that cannot be categorically excluded or screened out. The *Expert USQD* will be performed by the specific personnel identified as having the breadth of experience to be considered Expert QEVs and designated as qualified by SB-TS and the facility-specific FOD. Refer to Section 2.2 of SBP-112-3 for general applicability of the USQ process.

B.2.1 Scope

The Expert USQD may be applied to any facility change which cannot be categorically excluded or screened out for which it is obvious that the change can have no adverse effect on the safety basis or for which it is readily apparent that a USQ is not a concern. This process can only be performed by those QEVs specifically identified as Expert QEVs.

C. Expert USQD Process Methodology

The Expert USQD process is a proposed alternative to performing a full USQD when a change cannot be categorically excluded or screened, but for which it is obvious to any qualified independent Reviewer that the change cannot adversely affect the facility safety basis. Figure 3 shows how the Expert USQD process fits into the LANL USQ process.

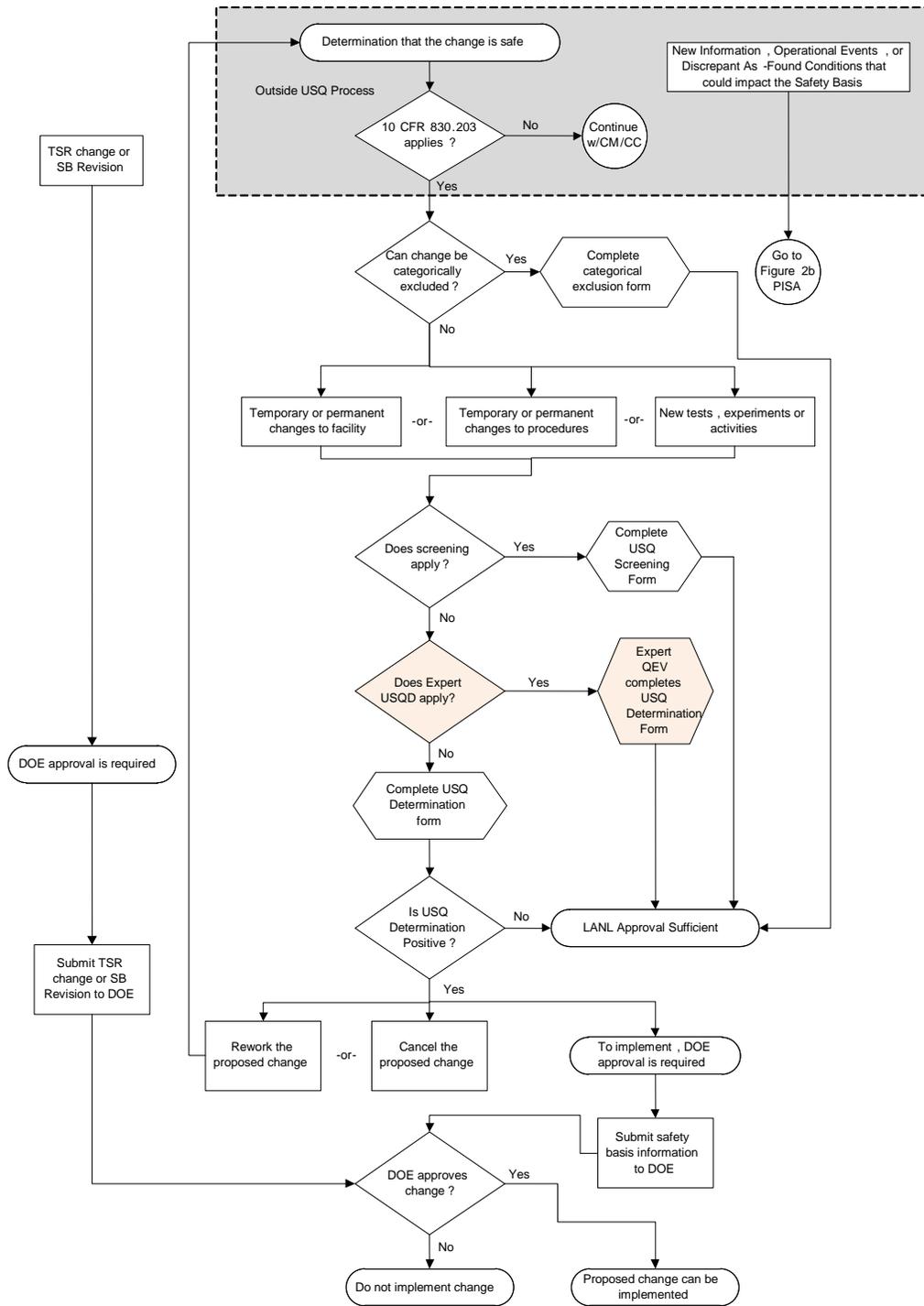


Figure 3. USQ Process Flowchart with Expert USQD Process

D. Implementation

The Expert USQD process is a proposed alternative to performing a full USQD when a change cannot be categorically excluded or screened, but for which it is obvious to any qualified independent Reviewer that the change cannot adversely affect the facility safety basis. **Note:** An Expert USQD can only be performed on a proposed change. It is not to be used for PISA situations.

The following guidance is provided for the *Expert USQD Worksheet*.

The expert based USQD worksheet provides guidelines for a qualified Expert USQD Preparer to review and determine when a proposed change does not adversely affect a facility's Safety Basis and precludes a USQ. The applicability of this type of USQD is limited to those simple proposed changes where the decision that a USQ does not exist is readily apparent to both the Expert Preparer and reviewer. The term "readily apparent" is intended to convey that, after compiling and reading the change documentation and providing the description on the Expert USQD worksheet, the change is obviously not complex and the USQ determination can be accomplished in a short amount of time. Brief reviews of SB or other documents may be required to confirm the change has no SB association or adverse impact. The need for additional meetings, analysis, or in-depth review signifies the Standard USQD should be applied. The training requirements in SBP112-4, QEV Training and Qualification Program will help ensure Expert USQD Preparers are limited to those who are thoroughly familiar with the USQ Process as described in 10 CFR 830.203, and can concisely articulate why a change could not be a USQ.

General Instructions:

- Complete the information title blocks.
- Provide a description of the proposed change including the scope, rationale, and adequate detail and references so that someone familiar with the facility can understand the change.
- Use guidance below to answer the question (yes or no): Relative to the DSA, is it readily apparent, based on expert knowledge and experience, that the proposed change (including interim changes if applicable) could:
 1. Increase the probability of occurrence of an accident previously evaluated in the facility's existing documented safety analysis (DSA)?
 2. Increase the consequences of an accident previously evaluated in the facility's existing DSA?
 3. Increase the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the facility's existing DSA?
 4. Increase the consequence of a malfunction of equipment important to safety previously evaluated in the facility's existing DSA?
 5. Create the possibility of an accident of a different type than any previously evaluated in the facility's existing DSA?
 6. Create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the facility's existing DSA?
 7. Reduce a margin of safety?

- Overall, the response to the question should be readily apparent from documents provided with the proposed change and not require additional evaluation. Proposed changes requiring such additional evaluation should not apply an Expert USQD.
- If the response to the question is negative, a USQ does not exist and the Expert USQD may be completed. Provide a brief rationale why the change does not create a USQ. The rationale should be brief (1 to 2 paragraphs).
- If the response is positive, a standard USQD or LAFO approval is required and the Expert USQD Worksheet may be discarded.

Expert USQ Determination Worksheet

| | | |
|---|-------------------------------|--------|
|  | EXPERT USQD WORKSHEET | |
| Facility Identification: | Facility-Specific USQ Number: | Rev: 0 |
| Change Number: | Date: | |
| Title: | | |
| Summary - Based on the evaluation presented in this worksheet, the: | | |
| <input type="checkbox"/> Change does not constitute a USQ based on a negative USQD. <input type="checkbox"/> Change constitutes a USQ and DOE/NNSA approval is required prior to implementation. <input type="checkbox"/> DSA update required | | |
| REVIEWED for CLASSIFICATION - Unclassified <i>If the documents are classified, follow the requirements contained in the Classified Matter Protection and Control Handbook, P204-2.</i> This document was reviewed to ensure proper classification and is unclassified. | | |
| Name of Derivative Classifier/Organization (printed or typed) | | Date |
| Signature | | Date |
| Note: If this document is OUO or UCNI, add the appropriate markings, distribution limitation statement, and guidance data block(s). | | |
| Official Use Only - May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552). Department of Energy review required before public release. Exemption number and category: | | |
| Name/Organization | | Date |
| Signature | | Date |
| List exclusions and/or guidance used (if applicable): | | |
| Unclassified Controlled Nuclear Information (UCNI) - Not for public dissemination. Unauthorized dissemination subject to civil and criminal sanctions under section 148 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2168). UCNI Reviewing Official | | |
| Name | | Date |
| Signature | | Date |
| List all UCNI guidance used: | | |

Retain original copy per facility records management procedures.

| | |
|---|-----------------------|
|  | EXPERT USQD WORKSHEET |
| USQ Number: | Date: |

SECTION 1. Description

Describe the aspects of the change being evaluated.

SECTION 2. References

SECTION 3. Determination Criteria

1. Could the proposed change increase the probability of occurrence of an accident previously evaluated in the facility's existing documented safety analysis (DSA)?
2. Could the proposed change increase the consequences of an accident previously evaluated in the facility's existing DSA?
3. Could the proposed change increase the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the facility's existing DSA?
4. Could the proposed change increase the consequence of a malfunction of equipment important to safety previously evaluated in the facility's existing DSA?
5. Could the proposed change create the possibility of an accident of a different type than any previously evaluated in the facility's existing DSA?
6. Could the proposed change create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the facility's existing DSA?
7. Could the proposed change reduce a margin of safety?

YES NO

SECTION 4. Basis for Conclusion

Provide a brief rationale why the change is not a USQ, otherwise prepare a standard USQD or request NNSA approval.

| | | |
|--------------------------|-----------|------|
| PREPARED BY (Expert QEV) | | |
| Name (printed or typed) | Signature | Date |
| REVIEWED BY (Expert QEV) | | |
| Name (printed or typed) | Signature | Date |

E. References

Refer to Section 11.0 of SBP11-2-3 for the general USQ process references. The references unique to the EUSQS process are listed below.

Y74-809, B&W Y-12 Procedure, *Unreviewed Safety Question Determinations*, Babcock & Wilcox Technical Services Y-12, LLC Management Requirements, May 6, 2010

DOE Memorandum, *Expert-Based Unreviewed Safety Question Determination Procedure*, from Thomas P. D'Agostino to Theodore D. Sherry, manager, Y-12 Site Office, June 2, 2010

NNSA Technical Bulletin 2010-2, Section 1, Technical Articles, *Expert Based USQDs Update on the USQ Process*, Jim Goss, Y-12 Site Office, June 2010

LLNL-CONF-428154, *Status of Efforts to Improve Efficiency of the USQ Process and Status of Efforts to Improve Efficiency of the USQ Process Expert USQ Panel*, April 20, 2010

NEI 96-07, Revision 1, *Guidelines for 10 CFR 50.59 Implementation*, November 2000

SB-IMP-11-001-R0, *LANL Expert Screening Implementation Plan*