

WP 02-AR3001

Revision 8

Unreviewed Safety Question Determination

Management Control Procedure

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DOE Approval: Revision 8 of this procedure does not require DOE approval.
Changes were editorial nature.

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1.0 PURPOSE

In accordance with Title 10 *Code of Federal Regulations* (CFR), Part 830 (10 CFR Part 830), Section 830.3, the Unreviewed Safety Question (USQ) process is the mechanism for keeping a safety basis current by reviewing proposed changes, tests and experiments to determine if the proposed change constitutes a USQ, reporting USQs to the U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO), and obtaining approval from the DOE prior to taking any action that involves a positive unreviewed safety question determination (USQD).

The USQ process permits Washington TRU Solutions LLC (WTS) to make physical and procedural changes to the Waste Isolation Pilot Plant (WIPP), a category 2 nuclear facility, and to conduct tests and experiments without prior DOE approval, provided these changes do not explicitly or implicitly affect the WIPP safety basis. The USQ process provides WTS with the flexibility needed to conduct day-to-day operations by requiring that only those changes and tests with a potential to impact the safety basis (and therefore the safety of WIPP) be approved by the DOE. This allows the DOE to focus its review of those changes significant to safety.

The USQ process is an important tool for keeping the safety basis current by ensuring that changes are appropriately reviewed and incorporated into the safety basis. The USQ process also specifies required actions if a potentially inadequate safety analysis (PISA) is discovered. The process provides a method for WTS to determine if a USQ is involved and the actions to take if the situation involves a positive USQD.

This procedure establishes the requirements for the WIPP USQ process and is approved by the DOE in accordance with 10 CFR §830.203(b). Editorial changes to this procedure without DOE approval are permitted provided the changes do not alter the basic requirements or actions identified in this procedure.

2.0 SCOPE

This management control procedure and the USQ process apply to any proposed change (temporary or permanent), test, or experiment at WIPP. Change is defined in Appendix A, Definitions.

Documents that are listed in a facility safety basis compliance matrix may not be excluded from the USQ process using this section as a basis.

3.0 REQUIREMENTS

3.1 Situations Requiring the Implementation of the USQ Process

#	Requirement	Source
1.	The USQ process shall be implemented in situations where there is a: <ol style="list-style-type: none"> Temporary or permanent change in the facility as described in the existing safety basis; Temporary or permanent change in the procedures as described in the existing DSA; Test or experiment not described in the existing DSA; or PISA because the safety basis may not be bounding or may be otherwise inadequate. 	10 CFR §830.203(d)
2.	If a USQD is required, it must be completed before implementing a proposed activity (facility change, procedure change, test, or experiment). This means that, for procedures, the USQD is completed before the procedure change is released for use. For modifications, the USQD is completed before the modification document is released to perform work in modifying plant equipment. If the proposed activity involves a positive USQD, DOE approval must be obtained before implementing the proposed activity. If the proposed activity does not involve a positive USQD, the proposed activity may be implemented without DOE approval.	10 CFR §830.203(e)

3.2 Actions Required for Potential Inadequacies in DSA Process

#	Requirement	Source
1.	If the facility management discovers or is made aware and has reason to believe that there is a PISA, facility management must: <ol style="list-style-type: none"> Take action, as appropriate, to place or maintain the facility in a safe condition until an evaluation of safety of the situation is completed; Notify the DOE of the situation; Perform a USQD and notify the DOE promptly of the results; Submit the evaluation of safety of the situation to the DOE prior to removing any operational restrictions initiated to place or maintain the facility in a safe condition. Appendix A provides the definition for the evaluation of safety. 	10 CFR §830.203(g)
2.	If a USQ condition is present, DOE approval is required before the operational restrictions are removed.	DOE G 424.1-1A, Section 2.4

3.3 USQ Process Training and Qualification Requirements

#	Requirement	Source
1.	Individuals responsible for performing, reviewing, or approving USQ screenings (USQSSs) and USQDs shall receive training on this process, the facility safety basis, and USQ process implementing documentation, and changes thereto.	DOE G 424.1-1A, Section 3.5
2.	The Chief Nuclear Engineer shall establish the personnel qualifications needed to perform the USQ process. These include required educational background, work experience, knowledge of the facility, understanding the facility safety basis, required training and maintenance of proficiency and qualification	DOE G 424.1-1A, Section 3.5

3.	Qualification and Proficiency	DOE G
3.1	<p>Qualification</p> <p>USQDs shall be completed by qualified personnel with knowledge of the WIPP safety basis. Each screener and evaluator shall possess the following qualifications. The Manager of Nuclear Safety shall determine if the equivalency requirements of 3.1.a and 3.1.b are met.</p> <ul style="list-style-type: none"> a. Baccalaureate degree in a physical science or engineering field or an equivalent combination of education and experience. b. One year of nuclear experience at the facility where the USQ process is to be performed, or equivalent combination of experience at the facility and nuclear experience elsewhere. c. Successful initial completion of formal USQ training (SAF-106, <i>WIPP Documented Safety Analysis</i>; and SAF-634, <i>Unreviewed Safety Question Determination</i>). d. Successful completion of annual USQ refresher training (SAF-634A), following 3.1.c, above. 	424.1-1A, Section 3.5
3.2	<p>Proficiency</p> <p>In addition to successful completion of the annual refresher, USQ evaluators shall maintain proficiency on the USQ process. The following are minimum expectations:</p> <ul style="list-style-type: none"> a. Individuals assigned to complete USQs, maintain their proficiency by performing at least five USQs during the annual requalification period. b. Individuals assigned to complete USQDs, maintain their proficiency by performing at least two USQDs during the annual requalification period. c. When an individual is designated to perform both USQs and USQDs, the individual maintains proficiency in both areas, as described above. d. If an individual has maintained proficiency in the USQ process through using the process, as described above, the individual becomes eligible for USQ annual refresher training and examination. If the person has not maintained proficiency, the individual is not eligible for annual refresher and must, instead, repeat the initial USQ qualification process. 	
4.	<p>Nuclear Review Board (NRB) members review positive USQDs and must have current USQ training (SAF-634 or SAF-634A) and have completed SAF-106. The responsibilities of the NRB are detailed in WTS Management Charter (MC) 9.5.</p>	

3.4 Line Management Responsibility

#	Requirement	Source
1.	<p>The Executive Manager responsible for WIPP facility operations shall establish specific implementation documentation that:</p> <ul style="list-style-type: none"> a. Identifies the safety basis for WIPP; b. Specifies physical boundaries and activities for which the facility USQ process does apply; c. Documents any facility-specific categorical exclusions and requires a review to identify any necessary changes in the facility-specific categorical exclusions whenever a safety basis change is made that requires DOE approval; d. Provides a mechanism to identify a USQ or its revision with the associated 	DOE G 424.1-1A, Section 3.5

#	Requirement	Source
	<p>change document(s).</p> <p>e. Requires that the change document identifies any categorical exclusion used;</p> <p>f. Defines and lists all change control procedures and processes of physical and procedural changes, tests and experiments that can affect the facility safety basis consistent with Section 2.0, Scope, of this procedure;</p> <p>g. Integrates the WIPP USQ process into change control and work control processes, such as design, engineering, maintenance, inspection, and operation. (The change and/or work control procedures or processes must contain clear reference to the USQ process as a required step prior to implementing any change including changes to procedures prepared outside the WIPP facility).</p> <p>h. Identifies the facility specific training/qualification requirements for personnel completing USQ documents;</p> <p>i. Requires training on changes to the USQ process, and it contains a method to ensure that training on changes is implemented;</p> <p>j. Requires that a USQ Screening Form be used to perform a USQS;</p> <p>k. Requires that a USQ Determination Form be used to perform a USQD;</p> <p>l. Requires that a PISA Determination Form be used when performing a PISA determination;</p> <p>m. Requires review by a second qualified person of each USQS, USQD, or PISA determination form;</p> <p>n. Requires approval of changes that require USQDs so that management is informed of the evaluation results;</p> <p>o. Requires that when a concern is raised about the adequacy of the safety analyses to the Executive Manager responsible for WIPP facility operations or identified representatives, the facility management shall confirm or refute the reasonableness of the potential for having an inadequate safety analysis as soon as possible. This time should be minimized and shall take no longer than five working days without reporting a PISA;</p> <p>p. Requires a review of the Occurrence Reports filed under the categories listed in Attachment 1, Group 3, of WP 12-ES3918, Reporting Occurrences in Accordance with DOE Order 232.1A, annotated with "(USQ)" as a minimum, for PISAs;</p> <p>q. Requires a periodic assessment of the USQ process;</p>	
	<p>r. Requires maintaining records as shown in Section 5.0;</p> <p>s. Requires that each categorical exclusion must receive a USQD, must be approved by facility management, must identify the qualification level of the personnel that approve application of the categorical exclusion (USQ evaluator, USQ screener or other), and must be documented in the facility specific implementing documentation;</p> <p>t. Specifies NRB USQ responsibilities; and</p> <p>u. Specifies NRB qualifications and quorum requirements.</p>	

3.5 Justification for Continued Operations

#	Requirement	Source
1.	The specific purpose of a JCO is to document the bases for continuing to operate	DOE G

	<p>before the ultimate resolution of the PISA that involves a USQ, or to permit resumption of activities that were suspended when the USQ was determined. The JCO temporarily amends the facility safety basis upon DOE approval for the interim operations. Evaluations of proposed activities against a JCO are required to ensure that the JCO controls are not affected. Caution must be used to ensure that the facility safety basis is not expanded to the point that a USQ would exist when the JCO expires/terminates. Modifications to the facility safety basis acceptance limits allowed by JCO only apply to the specific conditions addressed by the JCO. The JCO acceptance limits shall not be used to authorize additional activities outside the scope of the JCO, since the JCO does not constitute a permanent change to the safety basis. See Appendix D, Instructions for Justifications for Continued Operations, for information on completing a JCO.</p>	424.1-1A, Section 2.4
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3.6 Report and Record Requirements

#	Requirement	Source
1.	Nuclear Safety shall submit to the DOE an annual summary of the USQDs performed since the prior submission. A grace period of three months, to facilitate the concurrent submittals, is allowed for both of these submittals as long as the anniversary date is not changed.	10 CFR §830.203(f)
2.	The Facility Manager Designee (FMD) shall maintain the DSA and update annually.	DOE G 424.1-1A, Section 3.4
3.	USQS and USQD records shall be maintained for the operational life of the facility (i.e., until the facility is reclassified as less than hazard category 3, and transferred to any subsequent contractor before or at the same time the responsibility for the facility is transferred).	DOE G 424.1-1A, Section 3.4
4.	New and revised WIPP-specific categorical exclusions and the supporting USQD shall also be provided to the DOE organization with programmatic responsibility for the Authorization Basis for approval before implementation. Submittal by electronic mail (e-mail) is acceptable.	DOE G 424.1-1A, Section 3.2

3.7 Performing USQ Screenings

#	Requirement	Source
1.	<p>Prior to completing a USQS, an initial screening is completed to determine if the proposed activity does not require the performance of a documented USQS or USQD. The only two types of prescreening are:</p> <ul style="list-style-type: none"> <li data-bbox="253 1507 1211 1780">a. For proposed activities that result in safety basis changes that must be submitted to the DOE and do not require the performance of USQDs to determine if submittal to the DOE is required. Examples include major modifications, TSR changes and hazard categorization changes. In addition, the USQ process does not apply to the process of upgrading documented safety analyses as it relates to responding to new requirements or to the use of new or different analytical tools during the upgrade process. However, the USQ process does apply when there is reason to believe that the current safety basis might be in error or otherwise inadequate. <li data-bbox="253 1801 1211 1974">b. For types of changes approved as categorical exclusions, Appendix C, Categorical Exclusions, lists categorical exclusions that are applicable to WIPP. Appendix C also provides guidance for developing categorical exclusions. Each categorical exclusion must receive a USQD, must be approved by facility management, must identify the qualification level of the personnel that approve the application of the categorical exclusion, and must 	DOE G 424.1-1A, Section 3.2

	be documented in the implementing documentation. Personnel approving application of categorical exclusions must be qualified in accordance with the specific categorical exclusion and knowledgeable of the bases of the categorical exclusion.	
2.	Personnel approving application of categorical exclusions must be knowledgeable of the bases of the categorical exclusions used. The change document must identify the categorical exclusion used.	DOE G 424.1-1A, Section 3.2
3.	USQs shall use the USQS form, example shown in Attachment 1, to document responses to the following questions: <ol style="list-style-type: none"> a. Does the proposed activity represent a change to the facility or procedures as described in the safety basis? b. Does the proposed activity represent conditions (e.g., new or changed hazards) that have not been analyzed in the existing safety basis? c. Does the proposed activity represent a test or experiment not described in the safety basis? 	DOE G 424.1-1A, Section 3.2, Appendix B, Section B.11
4.	USQDs shall be performed for all changes that cannot be screened from the USQ process and shall use USQD form (example shown in Attachment 2).	DOE G 424.1-1A, Section 3.2 Appendix B, Section B.11
5.	Concurrence of two qualified USQ evaluators is required for a USQS.	DOE G 424.1-1A, Section 3.1

3.8 Identifying a Potential Inadequacy in the Safety Analysis

#	Requirement	Source
1.	A PISA determination and a USQD are required when a situation indicates that the safety analysis that supports the DOE-approved safety basis may not be bounding or may be otherwise inadequate.	DOE G 424-1.1A, Section 2.4
2.	If a PISA is determined to exist, the FMD shall: <ul style="list-style-type: none"> • Take appropriate action to place or maintain the facility into a safe condition, • Notify DOE when the information is discovered, • Perform a USQD, and • Complete an evaluation of safety and submit to DOE prior to removing any operational restrictions implemented to compensate for the discrepancy. 	DOE G 424-1.1A, Section 2.4
3	Initial notification of a PISA allows reasonable time on the order of hours or days.	DOE G 424-1.1A, Section 2.4
4	The time frame after the initial notification of DOE until submittal of the results of the USQD should be on the order of hours or days, not weeks or months.	DOE G 424-1.1A, Section 2.4

3.9 Performing a USQ Determination

#	Requirement	Source
1.	A proposed activity or a PISA involves a USQ if: <ol style="list-style-type: none"> a. The probability of the occurrence or the consequences of an accident or the malfunction of equipment important to safety (ITS) previously evaluated in the safety basis could be increased; b. The possibility of an accident or malfunction of equipment ITS of a different type than any evaluated previously in the safety basis could be created; c. A margin of safety could be reduced; or d. The safety basis may not be bounding or may be otherwise inadequate. 	
2.	The USQD shall address the above conditions by answering the following questions as a minimum: <ol style="list-style-type: none"> a. Does the proposed activity or PISA increase the probability of occurrence of an accident previously evaluated in the existing safety basis? b. Does the proposed activity of PISA increase the consequences of an accident previously evaluated in the existing safety basis? c. Does the proposed activity or PISA increase the probability of occurrence of a malfunction of equipment ITS previously evaluated in the existing safety basis? d. Does the proposed activity or PISA increase the consequence of a malfunction of equipment ITS previously evaluated in the existing safety basis? 	DOE G 424.1-1A, Section 3.3
	e. Does the proposed activity or PISA create the possibility of an accident of a different type than any previously evaluated in the existing safety basis?	

#	Requirement	Source
	f. Does the proposed activity or PISA create the possibility of a malfunction of equipment ITS of a different type than any previously evaluated in the existing safety basis? g. Does the proposed activity or PISA reduce the margin of safety? NOTE: Unless the answer to all questions above by both evaluators is "no," the situation involves a USQ.	
3.	The USQD is completed by a qualified evaluator and reviewed by a second qualified evaluator who was not involved in the initial preparation of the USQD. It records the scope of the evaluation and the logic for determining whether or not a USQ exists. A defensible explanation must be documented for the answer to each of the above questions.	DOE G 424.1-1A, Section 3.3
4.	If a proposed activity involves a USQ, obtain DOE approval prior to implementation. If the proposed activity does not involve a USQ, the proposed activity may be implemented and the safety basis changed without DOE approval.	10 CFR §830.203(e)
5.	Incorporate changes in the safety basis by the next annual update as appropriate.	DOE G 424.1-1A, Section 3.4

4.0 PERFORMANCE

4.1 Process for Proposed Activities

4.1.1 Qualified Evaluator, determine if the proposed change can be screened out using the initial screening questions on the USQS form (example shown in Attachment 1).

- If the proposed change can not be screened out, go to Step 4.1.2
- If the proposed change can be screened out, complete approvals on the form and exit this procedure.

4.1.2 Qualified Evaluator, determine if a categorical exclusion of the proposed activity is applicable, as provided in Appendix C.

- If a categorical exclusion does not apply, go to Step 4.1.3.
- If a categorical exclusion applies, document the categorical exclusion as appropriate.

4.1.3 Qualified Evaluator, screen the proposed activity to determine whether a USQD is required. Perform USQs in accordance with Appendix F, Instructions for USQ Screening, and document on USQS form. An example USQS form is shown in Attachment 1.

- If a USQD is required, go to Step 4.1.4.
- If a USQD is not required, complete USQS form, and exit this procedure.

4.1.4 First Qualified Evaluator, perform one of the following:

- If the proposed activity is encompassed within a comprehensive USQD, document the USQD identification number as appropriate and go to Step 4.1.8.
- If the proposed activity is NOT encompassed within a comprehensive USQD, perform a USQD in accordance with Appendix G, Instructions for USQDs, and document on USQD form. An example USQD form is shown in Attachment 2.

4.1.5 Second Qualified Evaluator, review the USQD, if the proposed activity is NOT a positive USQD, go to Step 4.1.8.

- If the proposed activity is a positive USQD, forward signed USQD form to the NRB Chairperson.

4.1.6 NRB, if a proposed activity involves a positive USQD, complete NRB review section of USQD form, and select one of the following courses of action:

- If additional information is required, provide specific information and action request to the First Evaluator, return to Step 4.1.4.
- Modify the proposed activity and return USQD form to First Evaluator (Step 4.1.4).
- Cancel the proposed activity.
- Forward completed USQD form to Chief Nuclear Engineer.

4.1.7 Chief Nuclear Engineer, obtain DOE approval of the proposed activity and any necessary safety basis changes in accordance with WP 12-NS.01, Changes to the WIPP Documented Safety Analyses.

4.1.8 Cognizant line manager, implement the proposed activity.

4.2 Process for PISAs

NOTE

The purpose of the PISA process is to determine whether there is a situation of concern where facility management has information that gives reason to believe that there is the potential that the current safety basis may not be bounding or the approved safety basis may be otherwise inadequate. Facility management retains the authority to declare that a PISA exists without completing the PISA determination form.

NOTE

The discovery of a PISA should be the point at which there is an indication or a potential inadequacy which starts the clock (i.e., durations identified in the process steps below). For operational occurrences that would be the time of occurrence, for new information or as-found discrepancies, it would be the point at which it was recognized by the Operations Manager that the condition was potentially outside the safety basis. DOE notifications (initial and updates) will be made in occurrence reports.

- 4.2.1 Facility Manager or FMD, impose operational restrictions, as appropriate, to place and maintain the facility in a safe condition. If possible, implement temporary hazard controls to maintain the facility within the analyzed conditions of the safety basis.
- 4.2.2 Executive Manager responsible for WIPP facility operations or designee, determine whether the (1) discovery of a discrepant as-found condition (including prior undocumented changes), (2) an operational event or incident, or (3) new information, including discovery of an error, from an internal or external source or omission requires further evaluation to determine if a PISA may exist.
- If a PISA determination is necessary, go to Step 4.2.3.
 - If no further evaluation is necessary to determine that a PISA does not exist, no further action is necessary under the USQ process.
- 4.2.3 Qualified Evaluator, within five working days, make a determination of the event, new information, or discrepant as-found condition to determine whether a PISA exists in accordance with Appendix B. Document on PISA determination form. An example PISA determination form is shown in Attachment 3.

If the PISA determination is not complete within five working days, notify the Executive Manager responsible for WIPP facility operations or designee to declare a PISA exists.

4.2.4 Second Qualified Evaluator, review the PISA determination, and perform one of the following.

- If the event or condition is a positive PISA determination, go to Step 4.2.55.
- If the event or condition is NOT a PISA, no further USQ process action is required, document on PISA determination form and notify Facility Manager or designee that a PISA does not exist.

4.2.5 NRB, review the positive PISA determination, and perform one of the following:

- If the NRB agrees with the positive PISA determination, go to Step 4.2.6.
- If the NRB does NOT agree with the PISA determination, document reasoning on PISA determination form and in NRB minutes.

NOTE

When a PISA results in a positive USQD, DOE approval is required to remove operational restrictions.

4.2.6 Qualified Evaluator, perform a USQD.

4.2.7 Second Qualified Evaluator, review the USQD.

- If the event or condition is a positive USQD, notify Nuclear Safety that a JCO is required.
- If the event or condition is NOT a positive USQD, notify the Facility Manager or designee.

4.2.8 Nuclear Safety, develop JCO in accordance with Appendix D, and forward to the NRB.

4.2.9 NRB, review positive USQD and JCO.

- If the NRB concurs with the positive USQD and JCO, go to Step 4.2.104.2.10.
- If the NRB is not in agreement with the positive USQD or JCO, make changes as necessary. Document conclusions in NRB meeting minutes.

4.2.10 Chief Nuclear Engineer, obtain DOE approval of the JCO or safety basis change if needed to resolve the positive USQD.

5.0 RECORD IDENTIFICATION

Performance of this procedure generates the following records:

- Unreviewed Safety Question Screening form
- Unreviewed Safety Question Determination form
- PISA Determination form

These records are maintained in accordance with WP 15-PR, WIPP Records Management Program. USQS and USQD records shall be maintained for the operational life of WIPP (i.e., until WIPP is reclassified as less than hazard category 3), and transferred to any subsequent contractor before or at the same time the responsibility for the facility is transferred.

Records Capture Table

Name of Document	Submittal Responsibility	Retention Responsibility
USQ Screening forms USQ Determination forms PISA Determination forms	USQ Screeners and Evaluators	Nuclear Safety
Training records related to USQ process	Trainers	WIPP Technical Training

6.0 REFERENCES

BASELINE DOCUMENTS

- DOE G 424.1.1A, Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements
- Title 10 Code of Federal Regulations, Part 830 (10 CFR 830), "Nuclear Safety Management"
- DOE-STD-3009-94, Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis Reports
- WP 09-CN3024, Configuration Management Board/Engineering Change Proposal
- WP 10-WC3011, Maintenance Process
- WP 15-PS3002, WTS Controlled Document Processing

REFERENCED DOCUMENTS

- DOE/CBFO-08-3385, *Safety Evaluation Report of the Waste Isolation Pilot Plant Documented Safety Analysis and Technical Safety Requirements*
- DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*
- DOE/WIPP-07-3373, *Waste Isolation Pilot Plant Technical Safety Requirements*
- WP 09-CN3007, Engineering and Design Document Preparation and Change Control
- WP 12-ES3918, Reporting Occurrences in Accordance with DOE Order 232.1A
- WP 12-NS.01, Changes to the WIPP Documented Safety Analyses
- WP 15-PR, WIPP Records Management Program
- WIPP SAF-106, WIPP Documented Safety Analysis
- WIPP SAF-634, Unreviewed Safety Question Determination
- WIPP SAF-634A, Unreviewed Safety Question Determination Annual Refresher
- MC 9.5, Nuclear Review Board

Appendix A - Definitions

Accident Analyses - Those bounding analyses selected for inclusion in the safety basis. Currently, accidents are described in the WIPP DSA. The WIPP accident analyses are a follow-on effort to the hazard analysis and documents the basis for assignment to a given likelihood of occurrence range in hazard analysis and performance of a formally documented consequence analysis. Consequences are compared with the Evaluation Guideline to identify safety-class structures, systems, and components.

Administrative Controls (ACs) - Provisions relating to organization and management procedures, record keeping, assessment, and reporting necessary to ensure the safe operation of a facility.

Categorical Exclusion - A screening method that defines a category or categories of items or procedures that may be excluded from the USQ process. WIPP categorical exclusions are identified in Appendix C.

Change - Activity or document modification that alters the design, the function, the method of performing the function of the structures, systems, or components (SSCs), or the failure mode or controls over conduct of work as described in the safety analyses.

Cognizant Design Authority - Means the Design Authority for the SSCs affected by the proposed activity or document change.

Comprehensive USQ Determination (USQD) - A single USQD that is performed on a modification that consists of several minor modifications. The comprehensive USQD encompasses (replaces) the several USQDs that would have to be performed for each minor modification.

Defense-in-Depth - A term used to identify the layers of defense against the abnormal and accidental release of radiological and nonradiological hazardous materials. The WIPP approach provides three layers of defense, which include (1) conservative design of the facility's SSCs and operator training; (2) protection against anticipated operational occurrences and unlikely events; and (3) confinement and emergency response.

Design Basis - The set of requirements that bound the design of SSCs within the facility. These design requirements include consideration of safety, facility availability, efficiency, reliability, and maintainability. System Design Descriptions (SDDs) contain the design basis for WIPP.

Discernible Increase - An increase in probability that accounts for uncertainty of analysis and is based on sound engineering judgment that can withstand critical review.

Equipment Important to Safety - For the purpose of the USQ process, "equipment important to safety" includes any equipment whose function can affect safety either directly or indirectly. This includes safety class and safety significant SSCs, and other systems that perform an important defense-in-depth safety function, equipment relied on for safe shutdown and, in some cases, process equipment. The equipment ITS

Appendix A - Definitions

features are identified in the approved safety basis or the associated DOE issued Safety Evaluation Report (SER).

Evaluation of safety - A qualitative discussion of why it is safe to remove the operational restrictions that were put into place as a result of a PISA. It demonstrates that the risk the DOE has accepted has not increased or provides a safety basis change for DOE approval. It identifies the protection that the operational restrictions provided, and the evidence that the potential increased risk is not a valid concern. A suggested content of the evaluation of safety includes:

- Summary of PISA determination
- Listing of interim operational restrictions and their purposes
- Results of USQD including comparison with the safety basis
- Description of safety actions taken
- Conclusion of safety review
- Statement of disposition of operational restrictions

Evaluator - A person, with the required qualifications and training, who performs USQ screenings or evaluations.

- First Evaluator performs the initial USQD or USQS.
- Second Evaluator, not involved in the initial USQD, reviews the initial USQD. This person is the independent reviewer of a USQD.

Facility Operations Manager - The WIPP manager responsible for day to day operations of the WIPP site.

Justification for Continued Operation (JCO) - A formal document that the DOE approves to amend the current, approved safety basis for defined, discrete periods of time when the current, approved safety basis requirements cannot be fully met. JCOs may include requirements for partial curtailment of activities, compensating administrative steps, or other provisions that ensure safety of nuclear facility workers and the public.

Limiting Condition for Operation (LCO) - The lowest functional capability or performance levels of safety-related SSCs, and their support systems required for normal, safe operation of the facility.

Margin of Safety – For purposes of performing USQDs, a margin of safety is defined by the range between two conditions. The first is the most adverse condition presented in the safety basis to occur from an operational upset (or family of upsets). The second condition is the worst-case value known to be safe from an engineering perspective. See Appendix G for a detailed discussion on where margin of safety is defined (in the safety basis) and detailed guidance to address the USQD question.

Appendix A - Definitions

Potentially Inadequate Safety Analysis - A deficiency in the safety analyses that support the DOE-approved safety basis, which indicates that the safety analysis is not bounding or may be otherwise inadequate. A PISA may arise from a discrepant as-found condition between the facility physical configuration and the safety basis documentation, an operational event or incident, or new information, including discovery of an error.

Proposed Change/Issue - Any proposed change to procedures (including cancellations) or equipment, and any proposed new procedures, equipment, tests (including post modification testing), operations, or experiments. Any planned or proposed, temporary or permanent, change to a facility or the way it is operated, including planned tests or experiments.

Requestor - Person proposing a temporary or permanent change to a facility, procedure, or test or experiment at WIPP.

Safety Analysis - A documented process (1) to provide systematic identification of hazards within a given DOE operation; (2) to describe and analyze the adequacy of the measures taken to eliminate, control, or mitigate identified hazards; and, (3) to analyze and evaluate potential accidents and their associated risks. (DOE-STD-3009-94)

- Safety Basis - The safety basis 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. The WIPP safety basis is defined on the Nuclear Safety web page.

Safety Class SSCs - Structures, systems, or components including portions of process systems, whose preventive and mitigative function is necessary to limit radioactive hazardous material exposure to the public, as determined from the safety analyses.

Safety Evaluation - A safety evaluation is the supporting documentation included with the USQ determination. The safety evaluation records the scope of the evaluation and the logic for determining whether or not a USQ exists.

Safety Significant SSCs - Structures, systems, and components which are not designated as safety-class but whose preventive or mitigative function is a major contributor to defense in depth and/or worker safety as determined from safety analyses. Safety-significant SSC designations based on worker safety are limited to those SSCs whose failure is estimated to result in a prompt worker fatality or serious injuries or significant radiological or chemical exposures to workers. The term, serious injuries, as used in this definition, refers to medical treatment for immediately life-threatening or permanently disabling injuries (e.g., loss of eye, loss of limb).

Specific Administrative Controls (SACs) - An administrative control is designated as a SAC if (1) it is identified in the documented safety analysis as a control needed to prevent or mitigate an accident scenario, and (2) it has a safety function that would be safety significant or safety-class if the function were provided by an SSC.

Appendix A - Definitions

Technical Change – For the purpose of applying a GXC, a technical change means that:

- Creates or change functional or performance requirements;
- Changes facility hazard controls;
- Changes analytical parameters used in the safety basis;
- Introduces a new hazard;
- Changes the material at risk (MAR) in the nuclear facility;
- Changes the maintenance or surveillance frequencies;
- Changes procedural steps that direct manipulation of plant equipment such as manipulation of valves, instrumentation and/or controller set point changes, starting or stopping of electrical equipment, and energizing or de-energizing of electrical equipment; or
- Alters documentation of plant conditions/configurations, such as operator readings or observations or their intervals.

Temporary Change – For the purpose of applying a GXC, a temporary change means those changes to the facility SSCs or introduction of hazards that were not considered within the safety basis of the facility.

Technical Safety Requirements - The limits, controls, and related actions that establish the specific parameters and requisite actions for the safe operation of a nuclear facility. The TSRs for WIPP are defined in DOE/WIPP-07-3373.

Unreviewed Safety Question - A situation at a nuclear facility where the probability of the occurrence or the consequences of an accident or the malfunction of equipment ITS previously evaluated in the safety basis could be increased; the possibility of an accident or malfunction of a different type than any evaluated previously in the safety basis could be created; a margin of safety could be reduced; or the safety basis may not be bounding or may otherwise be inadequate.

Appendix B – Instructions for PISA Determination and Nuclear Review Board

Identifying a Potential Inadequacy of the Documented Safety Analysis

Facility implementing procedures should set up systematic methods for determining whether new information, as found discrepancies and events indicate a PISA. Typical sources include, Occurrence Reports, facility inspections, management assessments, engineering and safety analysis reviews, evaluation of deficiencies, vendor disclosures on SSC deficiencies, code and handbook error notifications, technical questions, etc. Generically, these items are known as occurrences, which are defined, in part, as an event or condition which may have an impact on safety.

In general, it is possible for a potentially inadequate safety analysis to arise from three entry conditions: (1) a discrepant as-found condition, (2) an operational event or incident, or (3) 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 of the facility, 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 result from using incorrect input values, using invalid assumptions, an improper model, or calculation errors.

1. Discrepant as-found conditions mean the DSA description, assumptions, or controls do not match or the analysis is inappropriate for the current physical configuration of the facility. Typically, the USQ process is used in a "backward-looking" manner for these conditions. It is necessary to think back in time and consider that physical configuration as if it were a proposed modification.
2. An operational event or incident is reviewed to determine if it is treated in the safety basis. The causes and responses of the facility should be compared to those analyzed in the hazards analyses and accident analyses. This may require reviewing calculation notes for facility response assumptions.
3. New information can originate from many sources including facility personnel, safety analysts, inspectors, reviewers, vendors, code and standard authors, and researchers. This information may be identification of errors in computer codes, standards, or the safety basis; advances in technology pertinent to the facility; changes in expected performance or failure modes of SSCs; and, in some cases, imposition of a new nuclear safety requirement. New information may require performing limited analysis of existing information and comparing the results with the existing hazards analyses and accident analyses. New analysis is not appropriate during the PISA determination unless it is very simple and can be done during the PISA determination time limit.

The Chief Nuclear Engineer identifies the list of personnel trained on the safety basis who can make a PISA determination. Issues, concerns, and occurrences that may question the adequacy of the safety basis should be presented to one of these personnel to facilitate completion of the determination as soon as possible. If it cannot be completed within five working days, a PISA is reported.

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A PISA determination ([Section 4.2](#)) is performed for the event or condition to determine whether the event or condition indicates a PISA. Completing a PISA determination is not required in all cases ([Step 4.2.2](#)). For example, in many cases a person who has a question concerning one of the inputs to this process would first approach a co-worker more knowledgeable in that area (e.g., safety engineer, cognizant engineer). If that person can demonstrate to the originator that the issue is not a safety basis issue, this can be the end of the process. It may still be appropriate for an update to the safety basis or other documents to avoid further questions.

When a PISA determination form is completed, an event, new information, or discrepant as-found condition is determined not to be a PISA when a PISA determination is negative. The determination of whether an event, new information, or discrepant as-found condition is a PISA should be completed as soon as possible and must not exceed five working days. If the PISA determination cannot be completed in five working days, the DOE should be notified by an occurrence report that a PISA exists and is being USQ evaluated. The Executive Manager responsible for WIPP facility operations may want to involve the NRB in the determination that an event, new information, or discrepant as-found condition is a PISA since the short time frame allowed for PISA determination may not always allow complete examination of all relevant information by those performing the PISA determination. If a positive PISA determination of an event, new information, or discrepant as-found condition is determined not to be a PISA, the reasoning should be documented as part of the PISA determination and in the NRB minutes. The Executive Manager responsible for WIPP facility operations should retain the option to make the determination independently if needed to expedite the process.

The PISA determination form has four questions used to facilitate determination whether a PISA exists. Determining whether a PISA exists requires special considerations.

Occurrences (events and conditions) of the types identified in WP 12-ES3918 are considered to search for new information that could indicate a PISA and potentially lead to a USQ. New information may reveal a systemic problem that allowed the condition/event to occur and thus potentially represent a PISA or USQ.

In the review of events, it is the cause(s) of the event and responses of the facility that should be the primary focus of the USQ process. Further, the event needs to be reviewed against the safety analysis to determine if the event, the facility response, the likelihood and type of equipment failure or other event initiator, and the consequences were within the bounds of the previously analyzed events. In a backward looking manner, if it were proposed to change the facility or the way it is operated from that assumed in the safety basis to duplicate the event, would this change result in a positive PISA determination? If the PISA determination is positive, the NRB should be consulted to determine whether to report a PISA.

In the review of conditions (including technical questions), the main consideration is to find out if the analysis does not match the current physical configuration of the facility, or

Appendix B – Instructions for PISA Determination and Nuclear Review Board

if the analysis is inappropriate or contains errors. The backward-looking PISA determination or USQD is the best way to review discrepancies between the safety basis and the physical configuration. If the analysis is suspected to be inappropriate or to contain errors, the facility management and NRB should be consulted to determine whether to report a PISA. Review of this concern may require substantial time in performing new analyses before the USQD can be completed.

In summary, occurrences and other sources of new information may indicate PISAs exist. Examples are:

- Operating conditions that differ from those defined in the safety basis.
- Facility response to an event was not consistent with the analyzed events.
- Consequences of an event were not within the bounds of the analyzed events.
- Facility physical features that depart from the facility design reflected in the safety basis.
- The original construction did not conform to design.
- Unauthorized modifications had been made.
- Effects of aging and deterioration had proceeded beyond design allowances.
- Facility SSC interaction not treated in the DSA.
- Facility SSC material degradation is more pervasive, is beyond that analyzed for, or is more likely to occur.
- Other events altered SSCs so that they no longer conform to design.
- Design errors that could affect safety.
- There was failure to invoke prescribed codes or standards.
- There were errors in specifications.
- The safety classification designation of a component or system was found to need revision.
- The facility design departed from basic safety criteria in effect at the time of design.
- There was a failure to implement upgraded safety requirements mandated by the DOE.

Appendix B – Instructions for PISA Determination and Nuclear Review Board

- Errors or omissions in safety analyses.
- Identification of errors in computer codes or analysis standards.
- Errors in the bases for requirements in technical safety requirements.
- Reevaluations, improved analyses, results of technological advances, or other new information.
- New insight that increases the estimate of accident probability or consequences.
- Discovery that a new postulated event or accident that results in exceeding the bounding analysis or probabilities.
- Vendor notifications regarding potential performance problems with equipment.
- Margin of safety is less than that assumed in the safety basis.
- Facility SSC can fail in a different mode than what is treated in the DSA.
- Analytical errors, such as incorrect input values, using invalid assumptions, using an improper model, or calculation errors.

Occurrences are only one way that information may arise that requires determining whether a PISA exists. Other sources of information that may require determination of whether a PISA exists include:

- Discrepant conditions identified during maintenance,
- Discrepant conditions identified during audits, surveillances, or management assessments,
- New hazards analyses,
- Nonconformance reports, and
- New technical reports.

New analysis performed during the development of a new or revised safety basis do not require evaluation for PISA unless the information obtained indicates the current conditions may be unsafe or there may be errors in the existing analysis. Furthermore, changing requirements promulgated by the DOE or through regulators do not require review to determine if the current conditions constitute a PISA.

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The following are the four questions on that form and instructions to be used in answering these questions:

1. Does the discrepant as-found condition, operational event, or new information indicate that the system, structure, or component may not be fully capable of performing the safety function as described in the safety basis?

The PISA determination should identify all potentially affected SSC that are explicitly or implicitly identified as performing a safety function in the safety basis and associated supporting documents. The explicit or implicit safety function for each of these SSC is then identified. The discrepant as-found condition, operational event, or new information is then evaluated for each of these potentially affected safety functions. This evaluation should evaluate whether the safety function specified may be degraded. If the safety function may be degraded, the "Yes/Maybe" block is marked, otherwise the "No" block is marked.

The "No" block should also be checked if there are no SSC potentially affected by the discrepant as-found condition, operational event, or new information, and the basis for determining that no SSC are potentially affected should be described.

2. **Does the discrepant as-found condition, operational event, or new information indicate that parameters used or assumed in safety basis calculations or in calculations in supporting documents referenced in the safety basis may not be conservative with respect to consequence or frequency?**

The PISA determination should identify any potentially affected assumptions or calculations that exist in the safety basis or in supporting documents including the fire hazards analyses and criticality safety analyses. The PISA determination should then evaluate each of the potentially affected assumptions or calculations and determine whether the discrepant as-found condition, operational event, or new information could alter the affected assumptions or calculations in a non-conservative manner (e.g., the safety basis or hazard analysis does not protect an assumption of the analysis from being non-conservatively altered by a discrepant as-found condition).

Example: The safety basis identifies and controls a hazardous condition assumed to exist only while the facility is in its material storage mode. This hazardous condition is found to exist during the operations mode, but a hazard control equivalent to that imposed during the material storage mode is not established for the operations mode. The situation would call for a "Yes/Maybe" response to this question.

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If the parameter would be changed in a non-conservative manner with respect to either frequency or consequence, the "Yes/Maybe" block is marked, otherwise the "No" block is marked.

The "No" block should also be checked if there are no safety basis or supporting document calculations potentially affected by the discrepant as-found condition, operational event, or new information, and the basis for determining that there are no safety basis or supporting calculations that are potentially affected should be described.

3. **Does the discrepant as-found condition, operational event, or new information indicate there is a hazardous condition not considered in the safety basis that has the potential for significant impact to workers, the public, or the environment?**

The PISA determination should evaluate all potentially affected facility hazards analyses, criticality analyses, and fire hazards analyses and their summaries identified in the safety basis. The PISA determination should identify any potentially relevant hazards already analyzed implicitly or explicitly. The PISA determination should evaluate whether the discrepant as-found condition, operational event, or new information may represent a new hazardous conditions that has the potential for significant impact to workers, the public, or the environment. The PISA determination should also evaluate whether the as-found condition, operational event, or new information would likely alter the earlier assessment of hazards identified in these facility hazards analyses in a non-conservative manner. If the discrepant as-found condition, operational event, or new information may not have been considered in existing hazards analyses or the summaries provided in the documented safety analyses, or the conclusions of that hazards analysis could be altered in a non-conservative manner by the new information, the "Yes/Maybe" block is checked, otherwise the "No" block is checked.

4. **Does the discrepant as-found condition, operational event, or new information indicate the existing hazard controls may not provide the mitigation or prevention credit assigned to them within the safety basis?**

The PISA determination should evaluate hazard controls specified in the documented safety analyses, associated hazards analyses, and potentially affected supporting documents such as the fire hazards analyses or criticality safety evaluations. The PISA determination should identify potentially affected hazards controls. For the potentially affected hazards controls, the PISA determination should evaluate whether the discrepant as-found condition, operational event, or new information indicates that the specified hazard control would be discernibly degraded in the ability to perform the explicit or implicit prevention or mitigation function. If the hazard controls implicit or explicit preventive or mitigative function may be degraded, the "Yes/Maybe" block should be marked; otherwise the "No" block should be marked.

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The "No" block should also be checked if there are no existing hazard controls potentially affected by the discrepant as-found condition, operational event, or new information, and the basis for determining that there are no existing hazard controls that are potentially affected should be described.

If a PISA is determined to exist, a USQD is required and the DOE is notified with an ORPS. Operational restrictions and/or temporary hazard controls, as necessary, are implemented. The ORPS is used to identify the initial operational restrictions and temporary hazard controls imposed. Informally provide a copy of the operational restrictions and temporary hazard controls (ORPS) to the DOE Facility Representative, DOE Safety Representative, and DOE Engineering Representative. A USQD and an evaluation of safety must be submitted to the DOE before removing the operational restrictions. If the USQ condition still exists, it should be accompanied by proposed safety basis and/or facility changes. If the USQ condition has been eliminated, the operational restrictions may be removed after submittal of the evaluation of safety and the USQD(s) to the DOE.

The DOE Facility Representative should be informed on the progress of USQDs for PISAs. If a USQD will not be completed in two weeks, and if the facility cannot be maintained in a safe condition within the safety basis, a written plan and schedule for the evaluation activities should be provided to the DOE by two weeks from the PISA determination.

Nuclear Review Board

The NRB consists of multi-discipline experts to advise the Executive Manager responsible for WIPP facility operations on implementation of the USQ process.

1. Quorum and USQ qualification for the NRB members:
 - a. The minimum NRB quorum members shall be defined as Operations, Engineering, and Nuclear Safety. The NRB Chairman may be in one of those organizations or a separate individual.
 - b. All NRB quorum members must receive USQ evaluator training, but need not be qualified to perform USQs. All other nonvoting or non-quorum NRB members need not be trained in the USQ process.
2. Suggested duties for the NRB are:
 - a. Review major changes to the facility-specific implementing documentation,
 - b. Review safety basis changes requiring DOE approval,
 - c. Review any facility-specific categorical exclusion (see Appendix C) to USQDs,

Appendix B – Instructions for PISA Determination and Nuclear Review Board

- d. Review positive USQDs and advise the Executive Manager responsible for WIPP facility operations,
- e. Support the Facility Operations Manager in the determination of PISAs, and
- f. Overview the implementation of the facility USQ process.

NOTE: *If a NRB review or any other action results in the conclusion that a USQD should be reversed, the USQD must be revised and signed by two qualified evaluators, and the original USQD must be retained as a record copy.*

Appendix C – Categorical Exclusions

A categorical exclusion is an initial screening method that defines a category or categories of items, procedures or activities for which changes may be excluded from the remainder of the USQ process. The facility-specific categorical exclusion is based on a USQD that demonstrates that changes within the scope of the categorical exclusion will not involve a USQ. While the USQ process is necessary for assuring the integrity of the safety basis, it places a considerable load on engineering, maintenance, and other functions. Therefore, the process is planned and implemented to assure that it properly evaluates proposed facility changes without being unnecessarily complex or difficult to apply.

The first step in the USQ process is separating those changes which must be screened and/or evaluated from those which do not. This is done by comparing the change in question to the categorical exclusion scope and justification. If the change is included within the scope of the categorical exclusion, neither a USQS nor USQD is required; however, the categorical exclusion used is identified in the change document, in Q&MIS (the WIPP electronic document processing system), or on the ECO. Therefore, categorical exclusion scopes and justifications must be well thought out and understood by those who apply them. The categorical exclusion scope and justification should clearly define the boundaries or limits of applicability so that personnel that were not involved with their development will be able to properly apply them. If the scope and boundaries or limits of applicability of a categorical exclusion are complex or could be considered to be less than clearly defined, the categorical exclusion must identify that a USQ screener or evaluator is required to approve applications to proposed activities. Participation in categorical exclusion development should be sought from maintenance, planning, engineering, nuclear safety, and other functions, as appropriate.

Identification of certain activities where exclusion from performing a USQS or a USQD is appropriate may prove beneficial. These defined categories may include activities, documents, systems, or equipment. If categorical exclusions by activities are identified, procedures and other work documents could be excluded based on the activity they control. Another possible approach is exclusion of specific systems. Procedures and work documents would then be excluded based on the system(s) they affect. If the system approach is used the system must be clearly bounded. The exclusion is written for the specific system and is based on the system's relationship to the safety basis.

A categorical exclusion may be written for specific construction and/or modification activities that are shown by a USQD to not affect the existing facility safety basis with certain restrictions that are necessary to ensure compliance with the safety basis. Restrictions may include physical separation from existing facility SSCs, work on facility SSCs that cannot affect the safety basis, and work on SSCs that are isolated and will remain isolated until evaluated against an approved safety basis covering the modification. Construction and/or modification activities can include changes to the design such as those documented by an ECO per WP 09-CN3007, Engineering and Design Document Preparation and Change Control, as long as the conditions of the categorical exclusion are met. The advantage of a categorical exclusion over a comprehensive USQD is that design changes covered by the conditions of the categorical exclusion do not need a revision to the USQD. The completed modification

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is USQ evaluated against the approved safety basis before the restrictions are removed to put the modification into service.

The necessity to distinguish between changes (modifications) and routine maintenance activities is an important consideration in developing categorical exclusions. Routine maintenance activities do not generally require a USQD and therefore are good candidates for a categorical exclusion. However, there are some "maintenance" activities that may constitute permanent or temporary changes, such as plant heat exchanger tube plugging where limits are not specified, or removing and taking a fire door to the shop to replace a latch.

A modification is any physical or functional change to a facility SSC, including dimensions, location, arrangement, materials, and interfaces. Whereas, maintenance is the exact replacement of an SSC with a new SSC satisfying the original design specification in every detail (like-for-like replacement). Maintenance activities also include cleaning, adjustment, calibration, lubrication, tuning, testing, and inspection to approved maintenance procedures. A maintenance activity is not considered a facility modification.

The facility may have a TSR limitation on maintenance activities which limits the number of SSCs that can be taken out of service at one time, or which specifies allowable outage times for these SSCs. SSCs removed from service for maintenance should be covered by the TSR for allowable outage times, permissible mode conditions, and permitted reduction in redundancy. A USQD may not be needed for these activities. However, for SSCs that are included in safety analyses for the nuclear facility, and for which allowed outage times are not included in the TSRs, a USQD should be completed.

Exclusions based on safety functional classification (such as excluding all General Service (GS) systems, or excluding a system simply because it is GS) are not acceptable. However, changes to SSCs that have no nuclear safety impact may be candidates for a categorical exclusion; however, the use of such a categorical exclusion may require approval by a USQ screener or evaluator. Nuclear safety means those aspects of activities and facilities that prevent or mitigate radioactive and fissionable material hazards exposure to the public, the workers, or the environment. This may necessitate identifying specific types of equipment such that the changes excluded can be shown to not affect the safety basis. Again, the justification for exclusion cannot be based on safety functional classification and must be clearly bounded.

Exclusions may be described by topical area. If a list of topics is used without listing specific procedures, the topics should be clearly defined and the method for tying a specific procedure to the exclusion should be described. Topical areas may be appropriate, for example, where the facility's procedures are clearly grouped by topic (accountability, nuclear safety, radiation protection, etc.) with minimal overlap. WIPP document exclusions may be based on the WIPP topical areas; that is, all changes, additions or deletions in selected topical areas may be excluded based on a USQD.

Appendix C – Categorical Exclusions

The development of categorical exclusions should ensure that the justification for the categorical exclusion defines the bases, criteria, or conditions required for the exclusion to be valid. Once the categorical exclusion is defined a USQD (not USQS) must be performed for each categorical exclusion. Categorical exclusions should also be authorized by the NRB before they become effective.

Categorical exclusions must be reviewed whenever a safety basis change, requiring DOE approval, is being prepared to determine if the change will invalidate the bases for the categorical exclusions.

- Personnel approving application of categorical exclusions must be knowledgeable of the bases of the categorical exclusions used and qualified per the categorical exclusions requirements.
- See paragraph 4.1.2 for documenting categorical exclusions and recording their use.

The following categorical exclusions may be used for proposed activities that meet the conditions and limitations specified within the categorical exclusion description and in conformance with any additional specific limitations or restrictions. See Appendix A for definitions of terms bolded and underlined in these categorical exclusions.

Appendix C – Categorical Exclusions

GCX-1**TITLE: Categorical Exclusion for Document Changes that Implement Safety Basis****MINIMUM QUALIFICATION TO APPLY: Qualified USQ Evaluator****CATEGORICAL EXCLUSION:**

Changes to existing, and issuance of new, procedures; technical documents; administrative documents; drawings; Engineering Change Orders (ECOs); and other supporting documents to implement a new or revised DOE approved safety basis are excluded from review in the USQ process.

PREREQUISITES:

The accuracy of the proposed **technical changes** has been verified.

CATEGORICAL EXCLUSION SCOPE AND BOUNDARIES:

This categorical exclusion applies only to changes made to initially implement a new or revised safety basis as approved by the DOE, provided the changes are effective with or following the implementation of the safety basis.

This categorical exclusion **does not apply** to:

- Changes to documents unrelated to initial implementation of DOE-approved safety basis requirements,
- Implementation of changes to documents prior to the effective date of the safety basis, or
- **Work instructions** that implement ECOs.

JUSTIFICATION SUMMARY:

This GCX excludes proposed activities that have been approved by the DOE. Since the DOE has approved these activities, no further USQ review is required and these activities cannot represent a positive USQD.

The scope of changes under this categorical exclusion is limited such that excluded changes cannot represent a positive USQD. The changes excluded by this categorical exclusion are limited to those necessary to initially implement a new or revised DOE approved safety basis.

Appendix C – Categorical Exclusions

GCX-2**TITLE: Categorical Exclusion for Editorial Changes to Existing Documents****MINIMUM QUALIFICATION TO APPLY: Qualified USQ Evaluator****CATEGORICAL EXCLUSION:**

Editorial changes to existing procedures, technical documents, administrative documents, drawings, ECOs, **Work Instructions** (and other technical instructions associated with work packages) and other supporting documents are excluded from further review in the USQ process.

PREREQUISITES: The accuracy of the proposed change has been verified by the qualified screener.

CATEGORICAL EXCLUSION SCOPE AND BOUNDARIES:**Editorial changes to existing documents are those that:**

- Correction of grammatical, typographical, or spelling errors that:
 - Do not affect numbers other than page, table, figure title numbers, or obvious and demonstrable typographical errors. (Changes in decimal points, units of measure or nameplate information/data are not editorial changes);
 - Do not affect units of measure other than obvious and demonstrable typographical errors;
 - Do not affect acceptance criteria other than obvious and demonstrable typographical errors;
 - That did not translate correctly from the original source document, due to software issues;
- Updating position or organization names or titles;
- Reword phrases, sentences, and paragraphs;
- Change the format of the document (for example, rearrange unnumbered lists of items, rescale items, move details to new sheets, pagination, table, or figure title number changes);
- Add/update document references (provided changes to the references have already been appropriately USQ reviewed); or

Appendix C – Categorical Exclusions

- Add, change, delete or clarify notes or cautions that do not direct operator actions,

AND

Provided the editorial changes do not:

- Make any technical changes,
- Change the meaning, overall scope, or purpose of the existing document or drawings,
- Create a new procedure, document, or drawing, or
- Change a Technical Safety Requirement (TSR) or its bases.

JUSTIFICATION SUMMARY:

Editorial changes under this categorical exclusion do not make **technical changes** to the facility or its procedures; therefore, these changes cannot lead to a condition that could be a USQ.

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GCX-3**TITLE: Categorical Exclusion for Maintenance Activities****MINIMUM QUALIFICATION TO APPLY: Qualified USQ Evaluator****CATEGORICAL EXCLUSION:**

Work instructions and associated technical information to perform **periodic maintenance** or **corrective maintenance** and that meet the prerequisites and conditions of this categorical exclusion are excluded from review under the USQ process.

Work packages, in which all the **work instructions** are included in previously approved technical work procedures, preventative maintenance activity records, and other technical work documents that have been reviewed in the USQ process, can record that USQ review number or previously assigned CX on the document and do not have to apply this GCX to repetitive performances of the same activity.

PREREQUISITES:

- A. Compliance with TSRs and other safety basis requirements is maintained during the course of the activity, including allowable outage times specified in the TSRs,
- B. **Work instructions** have been reviewed to identify interaction with safety class SSC, safety significant SSC, or other equipment identified as ITS. Where the review has indicated such an interaction, it is identified in the **work instructions** and subjected to a USQS or USQD.
- C. **Temporary changes** to the facility necessary to perform the **work instructions** are identified by written directions that have been subjected to the USQ process (USQ reviewed or covered by another categorical exclusion).
- D. Troubleshoot and repair **work instructions** must contain directions specifying restrictions and plant conditions for the work.
- E. Application of this GCX must be re-evaluated for each change to the technical work procedures, technical portions of the preventative maintenance activity records, and **work instructions**.

Appendix C – Categorical Exclusions

CATEGORICAL EXCLUSION SCOPE AND BOUNDARIES:

Work instructions (including changes) are excluded from the USQ process provided:

- Physical **modifications** (other than **temporary changes**) and software changes are not included,
- SSC replacements will meet the design media and perform the required safety functions ("like for like"),
- SSCs will be removed from service, restored and verified to meet any safety basis operability requirements, and
- **Temporary changes** and interactions with safety SSCs necessary to perform the **work instructions** are addressed by written directions that have been subjected to the USQ process (USQ reviewed or covered by another categorical exclusion).

JUSTIFICATION SUMMARY:

Activities excluded by this categorical exclusion, allow no **permanent changes** to the facility or any software changes. **Temporary changes** to the facility, if needed, will be covered by written directions that have been subjected to the USQ process. These activities will return the plant to the exact same condition it was in prior to performing the **work instructions** and compliance to the safety basis is maintained at all times during the work.

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GCX-4**TITLE: Categorical Exclusion for Cancellation of Procedures Associated with Equipment Permanently Removed from Service****MINIMUM QUALIFICATION TO APPLY: Qualified USQ Evaluator****CATEGORICAL EXCLUSION:**

Procedures that are associated with equipment that has been permanently removed from service may be cancelled without further USQ review.

PREREQUISITES:

Confirm that the associated SSC has been permanently removed from service (e.g., the equipment is no longer installed, or has been declared "permanently removed from service," including successful completion of a USQ review of the permanent removal of the SSC from service).

The procedure to be cancelled may include manipulation or operation of interfacing equipment that was used to operate equipment removed from service. Verify that cancellation of the procedure can not adversely affect the interfacing equipment.

CATEGORICAL EXCLUSION SCOPE AND BOUNDARIES:

This categorical exclusion applies only to procedure cancellations that are performed because the equipment that the procedure was associated with will no longer be used and removal from service has already been USQ reviewed.

JUSTIFICATION SUMMARY:

An SSC permanently removed from service, can no longer be used and no procedures are required for its use.

Facility configuration management programs control the removal of equipment from service prior to its physical removal from facilities. The safety basis implications of the permanent removal and isolation of equipment from service must have been considered separately and explicitly prior to the actual permanent removal of the equipment from service.

Based on this, when an SSC has been permanently removed from service, the procedures that were associated with that equipment are no longer required. If the procedures can no longer be used because the equipment is no longer in service, the cancellation of the procedure cannot create an unreviewed safety question. Based on this, the cancellation of procedures associated with equipment permanently removed from service may be categorically excluded from further consideration of whether a USQ exists.

Appendix C – Categorical Exclusions

GCX-5

TITLE: Categorical exclusion for Minor Changes to Existing Technical and Administrative Procedures or Work Instructions in Work Packages.

MINIMUM QUALIFICATION TO APPLY: Qualified USQ Evaluator

CATEGORICAL EXCLUSION:

The following changes to technical and administrative procedures or work instructions in work packages are excluded from further review under the USQ process:

- Re-sequencing work steps,
- Small changes in the method of work performance, and
- Administrative changes.

Where these changes cause:

- No change to a hazard control as a result the new change;
- No need for any new hazard control as a result of the new change,
- No new hazard of any type is introduced by the new change,
- No change to any TSR implementation activity (e.g., work instructions or procedure steps that implement a TSR), and
- No change to any safety-related SSC or equipment ITS.

Thus, in the opinion of a qualified USQ evaluator a new USQS would not be positive and the description section of the original USQS or USQD would not have changed.

PREREQUISITES:

The technical or administrative procedures or work instructions in work packages have been subjected to the USQ process.

CATEGORICAL EXCLUSION SCOPE AND BOUNDARIES:

This categorical exclusion may be applied to any technical procedure, administrative procedure, work instruction in work package, recovery plan, or any other work controlling document that has already been reviewed under the USQ process (Screen or Evaluation, not GCX or CX) and the results have been negative.

Appendix C – Categorical Exclusions

JUSTIFICATION SUMMARY:

The work-controlling documents were determined to not require DOE approval and were within the WIPP safety basis. The change being considered is 'minor,' only being small changes in methods of work that meet all five conditions for this categorical exclusion. Therefore any USQ if performed would be a screen with no positive responses to the questions.

The nature of the changes allowed under this GCX is minor and bounded, and within the boundary these changes could not create a circumstance wherein the decision reached under the original USQS or USQD would be reversed.

Because of the more complex nature of the boundary conditions specified, a USQ evaluator is required to apply this GCX.

Appendix C – Categorical Exclusions

FCX-1**TITLE: Categorical Exclusion for Maintenance Activities on Mining Equipment****MINIMUM QUALIFICATION TO APPLY: Qualified USQ Evaluator****CATEGORICAL EXCLUSION:**

Maintenance activities and associated technical information required to perform **periodic maintenance**, predictive maintenance, and **corrective maintenance** on mining equipment that meet the prerequisites and conditions of this categorical exclusion are excluded from review under the USQ process.

PREREQUISITES:

- A. Compliance with the WIPP TSRs and safety basis documents is maintained during the course of the activity.
- B. The maintenance activity does not introduce hazardous materials or new energy sources during the maintenance evolution.
- C. Except as allowed in Prerequisite A, the cognizant engineer shall verify that the maintenance evolution does not involve interactions (temporary or permanent) with safety class SSCs, safety significant SSCs, or equipment important to safety.
 - Qualified USQ evaluator determines if FCX-1 is applicable.
 - Document categorical exclusion as appropriate in the change document, electronic document processing system, or on an engineering change order (ECO).
- D. The maintenance activity does not include equipment that is functionally classified as safety class or safety significant in accordance with established WTS procedures.

CATEGORICAL EXCLUSION SCOPE AND BOUNDARIES:

Maintenance activities on mining equipment are excluded from the USQ process provided:

- The activity does not involve the addition of new SSCs to WIPP;
- The activity does not modify the mining equipment from the approved design media;
- If the maintenance evolution is conducted in multiple work packages, the cognizant engineer has reviewed and approved each work instruction to

Appendix C – Categorical Exclusions

evaluate temporary and interim facility configurations prior to applying FCX-1;
and

- Temporary **modifications** to the facility necessary to perform the maintenance activity are documented in accordance with established WTS procedures and controlled. The documents governing the temporary **modifications** are subject to the USQ process.

JUSTIFICATION SUMMARY:

Maintenance activities on mining equipment that meets the prerequisites have no potential to adversely affect the approved WIPP safety bases. Maintenance activities performed on mining equipment are typically performed in areas away from waste that is stored, being transported, or disposed. If maintenance activities are required when the equipment is located near the waste face, the existing hazard commitments and controls in the WIPP DSA and TSRs are adequate to protect the workers, public, and the environment.

Temporary **modifications** to the facility needed to perform the maintenance activity, will be documented and controlled. Documents governing the temporary **modifications** will be subject to the USQ process.

The maintenance activities will return the equipment to the same condition it was prior to performing the activity and compliance to the safety basis is maintained at all times during the work.

Appendix C – Categorical Exclusions

FCX-2**TITLE: Categorical Exclusion for Maintenance Activities Surface Electrical Distribution Systems****MINIMUM QUALIFICATION TO APPLY: Qualified USQ Evaluator****CATEGORICAL EXCLUSION:**

Maintenance activities and associated technical information required to perform **periodic maintenance**, predictive maintenance, and **corrective maintenance** on surface electrical distribution systems that meet the prerequisites and conditions of this categorical exclusion are excluded from review under the USQ process.

PREREQUISITES:

- A. Compliance with the WIPP TSRs and other safety basis requirements is maintained during the course of the activity.
- B. The maintenance activity does not introduce hazardous materials or new energy sources during the maintenance evolution.
- C. Except as allowed in Prerequisite A, the cognizant engineer shall verify that the maintenance evolution does not involve interactions (temporary or permanent) with safety class SSCs, safety significant SSCs, or equipment important to safety.
 - Qualified USQ evaluator determines if FCX-2 is applicable.
 - Document categorical exclusion as appropriate in the change document, electronic document processing system, or on an engineering change order (ECO).
- D. The maintenance activity does not include equipment that is functionally classified as safety class or safety significant in accordance with established WTS procedures.

CATEGORICAL EXCLUSION SCOPE AND BOUNDARIES:

Maintenance activities on surface electrical distribution systems are excluded from the USQ process provided:

- The activity does not involve the addition of new SSCs to WIPP;
- The activity does not modify the electrical equipment from the approved design media;
- If the maintenance evolution is conducted in multiple work packages, the cognizant engineer has reviewed and approved each work instruction to

Appendix C – Categorical Exclusions

evaluate temporary and interim facility configurations prior to applying FCX-2;
and

- Temporary **modifications** to the facility necessary to perform the maintenance activity are documented in accordance with established WTS procedures and controlled. The documents governing the temporary **modifications** are subject to the USQ process.

JUSTIFICATION SUMMARY:

Maintenance activities on surface electrical distribution systems that meet the prerequisites have no potential to adversely affect the approved WIPP safety bases. Maintenance activities performed on surface electrical distribution systems are typically performed during planned outages at a time or in a location that has no impact on waste handling activities. Loss of power to surface electrical distribution systems equipment is not an accident initiator. During a loss of power on the surface, waste handling can simply be stopped until power is restored. If maintenance activities are required on surface electrical distribution systems equipment located near waste, the existing hazard commitments and controls in the WIPP DSA and TSRs are adequate to protect the workers, public, and the environment.

Temporary **modifications** to the facility needed to perform the maintenance activity, will be documented and controlled. Documents governing the temporary **modifications** will be subject to the USQ process.

The maintenance activities will return the equipment to the same condition it was prior to performing the activity and compliance to the safety basis is maintained at all times during the work.

Appendix C – Categorical Exclusions

FCX-3**TITLE: Categorical Exclusion for Maintenance Activities on Underground Electrical Distribution Systems****MINIMUM QUALIFICATION TO APPLY: Qualified USQ Evaluator****CATEGORICAL EXCLUSION:**

Maintenance activities and associated technical information required to perform **periodic maintenance**, predictive maintenance, and **corrective maintenance** on underground electrical distribution systems that meet the prerequisites and conditions of this categorical exclusion are excluded from review under the USQ process.

PREREQUISITES:

- A. Compliance with the WIPP TSRs and safety basis documents is maintained during the course of the activity.
- B. The maintenance activity does not introduce hazardous materials or new energy sources during the maintenance evolution.
- C. Except as allowed by Prerequisite A, the cognizant engineer shall verify that the maintenance evolution does not involve interactions (temporary or permanent) with safety class SSCs, safety significant SSCs, or equipment important to safety.
 - Qualified USQ evaluator determines if FCX-3 is applicable.
 - Document categorical exclusion as appropriate in the change document, electronic document processing system, or on an engineering change order (ECO).
- D. The maintenance activity does not include equipment that is functionally classified as safety class or safety significant in accordance with established WTS procedures.

Appendix C – Categorical Exclusions

CATEGORICAL EXCLUSION SCOPE AND BOUNDARIES:

Maintenance activities on underground electrical distribution systems are excluded from the USQ process provided:

- The activity does not involve the addition of new SSCs to WIPP;
- The activity does not modify the underground electrical distribution systems from the approved design media;
- If the maintenance evolution is conducted in multiple work packages, the cognizant engineer has reviewed and approved each work instruction to evaluate temporary and interim facility configurations prior to applying FCX-3; and
- Temporary **modifications** to the facility necessary to perform the maintenance activity are documented in accordance with established WTS procedures and controlled. The documents governing the temporary **modifications** are subject to the USQ process.

JUSTIFICATION SUMMARY:

Maintenance activities on underground electrical distribution systems that meet the prerequisites have no potential to adversely affect the approved WIPP safety bases. Maintenance activities performed on underground electrical distribution systems are typically performed during planned outages when waste handling activities are not in progress or away from areas where waste is disposed. Loss of power to underground electrical distribution systems equipment is not an accident initiator. During a loss of power in the underground, waste handling can simply be stopped until power is restored. If maintenance activities are required on underground electrical distribution systems equipment when the equipment is located near waste, the existing hazard commitments and controls in the WIPP DSA and TSRs are adequate to protect the workers, public, and the environment.

Temporary **modifications** to the facility needed to perform the maintenance activity, will be documented and controlled. Documents governing the temporary **modifications** will be subject to the USQ process.

The maintenance activities will return the equipment to the same condition it was prior to performing the activity and compliance to the safety basis is maintained at all times during the work.

Appendix C – Categorical Exclusions

FCX-4**TITLE: Categorical Exclusion for Maintenance Activities on Miscellaneous Mobile Equipment****MINIMUM QUALIFICATION TO APPLY: Qualified USQ Evaluator****CATEGORICAL EXCLUSION:**

The miscellaneous mobile equipment included in this FCX includes golf carts, scissor lifts, floor sweepers, general use forklifts and earth moving equipment, portable diesel generators, bucket trucks, boom trucks, and mobile cranes.

Maintenance activities and associated technical information required to perform **periodic maintenance**, predictive maintenance, and **corrective maintenance** on miscellaneous mobile equipment that meet the prerequisites and conditions of this categorical exclusion are excluded from review under the USQ process.

PREREQUISITES:

- A. Compliance with the WIPP TSRs and safety basis documents is maintained during the course of the activity.
- B. The maintenance activity does not introduce hazardous materials or new energy sources during the maintenance evolution.
- C. Except as allowed in Prerequisite A, the cognizant engineer shall verify that the maintenance evolution does not involve interactions (temporary or permanent) with safety class SSCs, safety significant SSCs, or equipment important to safety.
 - Qualified USQ evaluator determines if FCX-4 is applicable.
 - Document categorical exclusion as appropriate in the change document, electronic document processing system, or on an engineering change order (ECO).
- D. The maintenance activity does not include equipment that is functionally classified as safety class or safety significant in accordance with established WTS procedures.

Appendix C – Categorical Exclusions

CATEGORICAL EXCLUSION SCOPE AND BOUNDARIES:

Maintenance activities on miscellaneous mobile equipment are excluded from the USQ process provided:

- The activity does not involve the addition of new SSCs to WIPP;
- The activity does not modify the mobile equipment from the approved design media;
- If the maintenance evolution is conducted in multiple work packages, the cognizant engineer has reviewed and approved each work instruction to evaluate temporary and interim facility configurations prior to applying FCX-4; and
- Temporary **modifications** to the facility necessary to perform the maintenance activity are documented in accordance with established WTS procedures and controlled. The documents governing the temporary **modifications** are subject to the USQ process.

JUSTIFICATION SUMMARY:

Maintenance activities on miscellaneous mobile equipment that meet the prerequisites have no potential to adversely affect the approved WIPP safety bases. Maintenance activities performed on miscellaneous mobile equipment are typically performed in areas away from waste that is stored, being transported, or disposed. If maintenance activities are required when the equipment is located near waste, the existing hazard commitments and controls in the WIPP DSA and TSRs are adequate to protect the workers, public, and the environment.

Temporary **modifications** to the facility needed to perform the maintenance activity, will be documented and controlled. Documents governing the temporary **modifications** will be subject to the USQ process.

The maintenance activities will return the equipment to the same condition it was prior to performing the activity and compliance to the safety basis is maintained at all times during the work.

Appendix C – Categorical Exclusions

FCX-5**TITLE: Categorical Exclusion for Maintenance Activities on General Use Facilities and Buildings****MINIMUM QUALIFICATION TO APPLY: Qualified USQ Evaluator****CATEGORICAL EXCLUSION:**

General use facilities and buildings includes trailers, maintenance shops, warehouses, engineering building, safety and emergency services facility, training building, guard and security building, compressor buildings, AIS and salt hoist houses, connexes, sheds, and hazardous materials storage area.

Maintenance activities and associated technical information required to perform **periodic maintenance**, predictive maintenance, and **corrective maintenance** on general use facilities and buildings that meet the prerequisites and conditions of this categorical exclusion are excluded from review under the USQ process.

PREREQUISITES:

- A. Compliance with the WIPP TSRs and safety basis documents is maintained during the course of the activity.
- B. The maintenance activity does not introduce hazardous materials or new energy sources during the maintenance evolution.
- C. Except as allowed in Prerequisite A, the cognizant engineer shall verify that the maintenance evolution does not involve interactions (temporary or permanent) with safety class SSCs, safety significant SSCs, or equipment important to safety.
 - Qualified USQ evaluator determines if FCX-5 is applicable.
 - Document categorical exclusion as appropriate in the change document, electronic document processing system, or on an engineering change order (ECO).
- D. The maintenance activity does not include equipment that is functionally classified as safety class or safety significant in accordance with established WTS procedures.

Appendix C – Categorical Exclusions

CATEGORICAL EXCLUSION SCOPE AND BOUNDARIES:

Maintenance activities on general use facilities and buildings are excluded from the USQ process provided:

- The activity does not involve the addition of new SSCs to WIPP;
- The activity does not modify the general use facilities and buildings from the approved design media;
- If the maintenance evolution is conducted in multiple work packages, the cognizant engineer has reviewed and approved each work instruction to evaluate temporary and interim facility configurations prior to applying FCX-5; and
- Temporary **modifications** to the facility necessary to perform the maintenance activity are documented in accordance with established WTS procedures and controlled. The documents governing the temporary **modifications** are subject to the USQ process.

JUSTIFICATION SUMMARY:

Maintenance activities on general use facilities and buildings that meet the prerequisites have no potential to adversely affect the approved WIPP safety bases. General use facilities and buildings have no effect on waste handling activities, or on waste that is stored or disposed. General use facilities and buildings do not include the waste handling building, support building, exhaust filter building, or pump house, and as such, have no effect on equipment that provides a safety function credited in the DSA.

Temporary **modifications** to the facility needed to perform the maintenance activity, will be documented and controlled. Documents governing the temporary **modifications** will be subject to the USQ process.

The maintenance activities will return the equipment to the same condition it was prior to performing the activity and compliance to the safety basis is maintained at all times during the work.

Appendix C – Categorical Exclusions

FCX-6**TITLE: Categorical Exclusion for Maintenance Activities on Infrastructure Systems****MINIMUM QUALIFICATION TO APPLY: Qualified USQ Evaluator****CATEGORICAL EXCLUSION:**

Infrastructure systems refer to systems including domestic (potable) water, compressed air, vacuum, roads, fences and cattle grates, ventilation systems in general use buildings, temporary ventilation fans and support equipment associated with mining activities in the mining/construction portion of the mine.

Maintenance activities and associated technical information required to perform **periodic maintenance**, predictive maintenance, and **corrective maintenance** on infrastructure systems that meet the prerequisites and conditions of this categorical exclusion are excluded from review under the USQ process.

PREREQUISITES:

- A. Compliance with the WIPP TSRs and safety basis documents is maintained during the course of the activity.
- B. The maintenance activity does not introduce hazardous materials or new energy sources during the maintenance evolution.
- C. Except as allowed in Prerequisite A, the cognizant engineer shall verify that the maintenance evolution does not involve interactions (temporary or permanent) with safety class SSCs, safety significant SSCs, or equipment important to safety.
 - Qualified USQ evaluator determines if FCX-6 is applicable.
 - Document categorical exclusion as appropriate in the change document, electronic document processing system, or on an engineering change order (ECO).
- D. The maintenance activity does not include equipment that is functionally classified as safety class or safety significant in accordance with established WTS procedures.

Appendix C – Categorical Exclusions

CATEGORICAL EXCLUSION SCOPE AND BOUNDARIES:

Maintenance activities on infrastructure systems are excluded from the USQ process provided:

- The activity does not involve the addition of new SSCs to WIPP;
- The activity does not modify the mining equipment from the approved design media;
- If the maintenance evolution is conducted in multiple work packages, the cognizant engineer has reviewed and approved each work instruction to evaluate temporary and interim facility configurations prior to applying FCX-6; and
- Temporary **modifications** to the facility necessary to perform the maintenance activity are documented in accordance with established WTS procedures and controlled. The documents governing the temporary **modifications** are subject to the USQ process.

JUSTIFICATION SUMMARY:

Maintenance activities on infrastructure systems that meet the prerequisites have no potential to adversely affect the approved WIPP safety bases. Infrastructure systems have no affect on the waste handling process, waste storage, or waste disposal. Infrastructure systems are not typically located near waste. If the maintenance is performed on systems such as compressed air and vacuum that could be near waste, the existing hazard commitments and controls in the WIPP DSA and TSRs are adequate to protect the workers, public, and the environment.

Temporary **modifications** to the facility needed to perform the maintenance activity, will be documented and controlled. Documents governing the temporary **modifications** will be subject to the USQ process.

The maintenance activities will return the equipment to the same condition it was prior to performing the activity and compliance to the safety basis is maintained at all times during the work.

Appendix D – Instructions for Justification for Continued Operations

INTRODUCTION

When Continuing Operations is Justifiable

In cases in which the USQD of an event or condition leads to the identification of a USQ, the Executive Manager responsible for WIPP facility operations has the inherent responsibility for ensuring that the plant is in a known-safe status. In some cases, this may require facility shutdown.

However, there are cases in which safe facility operation can be ensured despite the existence of a USQ. Also, there are facilities (for example, underground storage tanks) for which the concept and implications of a shutdown are nebulous.

In some of these cases, shutdown should be interpreted as cessation of all activities except for those that clearly could not result in events or risk that has not been accepted by the DOE in the safety basis. Some or all of the secured activities might later be shown to be appropriate, and therefore resumed with proper precautions and DOE approval.

What a Justification for Continued Operations Shows

The many different situations that may lead to a JCO make it impossible to provide detailed instructions for preparing the document itself. But, in each case in which safe interim operations may be requested, the objective of the justification is to document the basis for the conclusion that safe operations may continue.

The justification should convincingly demonstrate that temporary risk acceptance by the DOE can be recommended or that the increase in risk has sufficient quantification for the DOE to evaluate for acceptance. Otherwise, the JCO should show the incremental risk of continued operation or conduct of the activity is small compared to the risk previously accepted in the safety basis.

Use of Justifications for Continued Operations

The specific purpose of a JCO is to document the bases for continuing to operate facilities before the ultimate resolution of the safety issue associated with a USQ or to permit resumption of specific activities suspended when the USQ safety question was determined.

The JCO temporarily amends the safety basis (upon DOE approval) until it is terminated.

Appendix D – Instructions for Justification for Continued Operations

PREPARING JUSTIFICATIONS FOR CONTINUED OPERATIONS

Address the Safety Question

The declaration of a USQ following a PISA means the facility or operation is outside the facility-identified safety basis. The JCO should convincingly demonstrate the proposed activity (continuation or resumption of an operation or activity) is consistent with the requirement that all activities and operations represent acceptable public and onsite safety risk.

CONTENT OF A JUSTIFICATION FOR CONTINUED OPERATIONS

The JCO content should include:

1. A description of the issue determined to involve a USQ.
2. The interim controls and/or restrictions based on the best available information, analysis, and engineering judgment; including any restriction on the use of the JCO to authorize additional work or activity. This may simply be the operational restrictions and temporary hazard controls identified as a result of a PISA declaration, with associated justification that they are adequate.
3. An estimate of the risk associated with the interim operation. However, significant new analysis such as would be appropriate for a safety basis change should not be performed.
4. A description of the margins of safety to be maintained.
5. A description of how existing controls/restrictions maintain safe conditions.
6. A description of the additional controls needed and how they ensure safe conditions.
7. The date or event that will permit closure or termination of the JCO. The JCO may remain in effect until the safety basis has been updated and approved by the DOE, or the discovered condition that initiated the USQ and JCO has been eliminated.

Show that Overall Risk is Acceptable

For example, if a failure to satisfy seismic design requirements (generally established on the basis of many years of facility operation) is discovered, a USQ would be determined if the PISA significantly increases the accident consequences or chance of occurring. But continued operations for a short period before correcting the deficiency (hours, days, perhaps even months) may well be acceptable if the chance of some minimum-severity seismic event can be shown to be adequately remote. The justification is that the period of exposure to an event is very low and so the risk (probability times consequence) is also very low, and is therefore acceptable to the DOE.

Appendix D – Instructions for Justification for Continued Operations

Place Limits on the Operations

It may be possible to bound (restrict) the operations so that the increased likelihood of an accident is acceptable. Process limitations can be imposed to regain the previously acceptable low-accident consequence or probability.

For example, a reduction in allowed radioactive material inventory may provide an acceptable basis for continued operation, even if exhaust filter efficiency was inaccurately used in the safety analyses. Here the justification is that operating restrictions can be used to make the design basis accident less severe compared to as analyzed in the final safety analysis (based on the worst case initial conditions for the accident).

Additional Administrative Controls

Special administrative steps can sometimes be specified to avert a potential hazard. For example, continuous operator surveillance for a short period may be shown to be an adequate substitute for an annunciator assumed to trigger operator response in the final safety basis. Here the justification is that the critical function (alerting the operator) can be maintained in the presence of the failed component.

Additional Analyses

Reanalyzing the accident may show a capability for safe operation when credit is taken for design features that were not used in the original analysis of an accident. These features may be shown to equal or even outweigh the effects of a discovered deficiency. Here, the justification is made by showing operation is within the safety basis. Credit may also be taken for current measured parameters rather than the conservatively assumed values in the safety analyses (e.g., measured versus assumed concrete strength). Caution should be taken that any reanalysis is limited. Extensive re-analysis should be considered a revision to the safety basis.

The annual reports to the DOE summarizing all situations requiring a USQD are submitted along with the annual updates to the facility safety basis (or a letter stating there were no changes to the WIPP DSA).

Appendix E - Instructions for Annual USQ Summary Report

Summarize each USQD performed since the last annual summary and provide the following:

- Identifying number of the USQD and/or change.
- Title of the USQD.
- Date of the USQD.
- Summary of the change or issue that created the need for the USQD and any pertinent basis information, such as any analysis performed in support of the USQD. Identify the part of the safety basis that was changed, if any.
- Results of the USQD.

NOTE: Any positive USQDs should have already been resolved separately from the annual submittal.

The submittal may, if requested by the DOE, also include USQDs of all changes incorporated into the annual DSA update.

Appendix F – Instructions for USQ Screenings

USQ screening is used to determine if it is necessary to perform a USQ determination. When screening eliminates an item, rationale should be well supported, documented and retained. USQS is intended to be a simple go/no go decision-making step without evaluative consideration. Additional discussion is provided in the discussion below to indicate when a USQS is not appropriate and a USQD must be performed.

Additional questions have been added to the USQS form for consistency in identifying and documenting those changes that do not need to enter the USQ process.

The following are the screening questions from the USQS form:

1. Does the proposed activity represent a change to the facility or procedures as described in the safety basis?
2. Does the propose activity represent conditions (e.g., new or changed hazards) that have not been analyzed in the safety basis?
3. Does the proposed activity represent a test or experiment not described in the safety basis?

As-Described Can Be implicit or Explicit

The following considerations are important when completing a USQS. Deciding if there is "a change to the facility or procedures as described in the safety basis" requires an understanding of how "as described" can be implicit or explicit. Understanding the term "change" as it applies to modes of operation or facility processes is also important.

Temporary or Permanent Changes in the Facility

USQDs are required for changes to a category 1, 2, or 3 nuclear facility that alter an SSCs design, function, or method of performance as described in the existing documented safety analyses by test, drawing or other information relied on as the safety basis. These changes include those which cause a SSC to affect the potential initiation of an accident or the course of an accident or cause a SSC to affect the ability of a safety-related SSC to perform its intended function. Examples of facility change processes are:

- Physical modifications,
- Nonconformance Reports: disposition repair or accept-as-is,
- SSC functional modifications such as set point changes,
- Construction projects,
- Maintenance (temporary changes), and
- Site facility allocation or site boundary changes.

The safety analyses include descriptions of many SSCs, but 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

Appendix F – Instructions for USQ Screenings

to SSCs that are not explicitly discussed in the safety basis should not be excluded from the USQ process, since changes to these SSCs may have the potential for altering the function of a SSC that is explicitly described in the safety analysis.

The recommended approach for deciding whether a modification involves a change to the nuclear facility, as described in the safety basis, is to consider the effect of the change on the SSC of which the SSC being modified may be a part, or which the SSC being modified may support. If the change alters the design, the function, the method of performing the function of the SSC, or the failure mode as described in the safety analyses, a USQD is required. Also, a change to a SSC that is not equipment ITS may affect the potential initiation of an accident or the course of an accident. For modifications planned in accordance with WP 09-CN3007, review of any changes to the hazard or accident analyses developed will help identify the effects of the modification.

Temporary changes to the nuclear facility are also evaluated to determine whether a USQ exists. Examples of temporary modifications include jumper and lifted leads, temporary lead shielding on pipes and equipment, temporary blocks and bypasses, temporary supports, and equipment used on a temporary basis.

Temporary or Permanent Changes in the Procedures

Changes to procedures "as described" in the safety basis must have a USQD prepared in accordance with 10 CFR Part 830. The description of a procedure in the safety basis may be explicit or implicit. Procedures are not limited to those items specifically identified as procedure types (e.g., operating, chemistry, system, test, surveillance, and emergency plan) but could include anything described in the safety basis that defines or describes activities or controls over the conduct of work.

If the safety basis outlines, summarizes, or otherwise describes the content of a procedure, that procedure content is considered to be "as described" in the safety basis. A change to this procedure that results in a required change to the content of the safety basis requires A USQD.

Similarly, if elements of a process or program are relied on for safe operation (i.e., the process or program elements are credited in the safety analysis with performing a preventive or mitigative safety function), changes to the implementation of the process or program elements may not be screened but must be evaluated in a USQD.

For example, a DSA may credit elements of the Fire Protection Program for reduction in the probability of an analyzed fire accident. Changes to the document defining the Fire Protection Program that affect its credited safety function should screen positive indicating a need for a USQD. Changes to these activities or controls qualify as changes to procedures as described in the DSA, and therefore must be evaluated. However, a commitment to implement a program, such as a Safety Management Program (SMP) does not necessarily indicate a reliance on the specific elements of the program to ensure safe operation if those elements are not outlined, summarized or

Appendix F – Instructions for USQ Screenings

otherwise described in the safety basis. In this case, change to the implementing procedures may be screened so long as the content of the safety basis remains appropriate, complete, and valid.

Explicitly and implicitly described procedures are treated identically. Implicitly described procedures may include: (1) the procedures that implement a SMP described in the safety basis, or (2) operating, testing, surveillance, and maintenance procedures for equipment ITS (refer to the previous section for the types of changes to SSC that would screen positive). If the characteristics of the SMP or function of equipment ITS as described in the safety basis remain appropriate, complete, and valid, a USQS may be appropriate for the proposed change.

Changes to procedures include both revising and canceling an existing procedure and creating a new procedure. For the case of a new procedure, the question becomes, if the DSA were to be prepared (or updated) after the new procedure has been approved, is the new procedure of a type that would be described (explicitly or implicitly) in the DSA. If so, the new procedure should have a USQD.

In summary, procedures can be anything described in the DSA that defines or describes activities or controls over the conduct of work, implied directly by the name of a topic in the safety basis (including the TSRs), and are not limited to those items specifically identified as procedure types (for example, operating, chemistry, system, test surveillance, and emergency plan). Examples are:

- Facility procedures,
- WIPP documents,
- Implied activities or diesel fuel delivery at WIPP,

Tests or Experiments Not Described in the Safety Basis

USQDs are required for tests or experiments not described in the existing safety basis. The intent of 10 CFR §830.203 is to require USQDs of tests and experiments that might affect safe operations but are not described in the existing safety analyses. This includes new activities if they are not identified by other screening questions. For preoperational tests, surveillance tests, functional tests, and startup tests that are performed regularly, USQDs are not required because they are described explicitly or implicitly in the DSA. However, one-of-a-kind tests used to measure the effectiveness of new techniques or a new system configuration that might affect safety SSCs will require a USQD before they can be conducted.

Post modification testing should be considered and included in the USQS for the modification.

The following questions will help in completing the USQS. These instructions should not be considered all-inclusive; additional factors may need to be considered depending on the nature of the proposed activity.

Appendix F – Instructions for USQ Screenings

Does the proposed activity accomplish the following:

1. Modify, add, or delete a safety function of a SSC stated in the safety basis?
2. Alter the design of a SSC as described in the safety basis?
3. Modify, add, or delete the description of operation, operating environment, or analyses of any SSC described in the safety basis?
4. Modify, add, delete or conflict with any of the design bases stated in the safety basis?
5. Conflict with the principle or general design criteria stated in the safety basis?
6. Modify, add, or delete any plant design features described in the safety basis?
7. Modify, add, or delete a flow diagram or facility drawing provided in the safety basis?
8. Create the potential for new SSC interactions not described in the safety basis (e.g., seismic, electrical breaker coordination)?

USQS Revision

Qualified USQ screeners or evaluators, if the circumstances that caused the USQ to be performed have changed, a new or a revised USQ may need to be performed. Revision of an existing USQ can be used for changes that do not change (1) the answers to the USQS/USQD questions (such as changing a "Yes" to a "No" or vice versa), or (2) the substantial content of the bases to any USQS/USQD question. If any answer would change, or there is a substantial content change of the bases to any USQ question, a new USQ with new USQ tracking number must be initiated. The revised USQ:

- Identifies in the description section of the form that the USQS/USQD is a revision to an existing USQS.
- Identifies in the description section of the form the modifications or revisions being made, and their bases (e.g., direction from NRB). The scope statement of the USQS form must identify what each revision of the USQS includes/adds.
- Preserves the original scope or intent of the USQS/USQD when revisions are made. If it is not possible to preserve the original scope or intent, a new USQ tracking number shall be obtained.
- Must preserve all previous revisions of a USQS revision. Therefore, all documents listed in a USQS/USQD are carried into the next revision.

Signatures (revised USQs carry signatures of the first and second reviewers) on a revised USQS indicate concurrence with all statements carried over from all previous revisions.

Appendix F – Instructions for USQ Screenings

NOTE: If the safety basis has in any way changed since the last USQS, all documents identified within the scope of the screening/evaluation (i.e., carried from previous revisions) must be reviewed against the current safety basis. The USQD is not a safety analysis; it merely serves as a benchmark for whether the safety basis is being preserved. In many cases a safety analysis is required prior to performing the USQD. A safety analysis may show that a proposed activity is safe, yet the USQD may find that the activity is a USQ and hence requires DOE approval prior to implementation.

Appendix G – Instructions for USQ Determinations

Evaluating Proposed Activities

USQDs are performed for proposed activities if the prescreening shows that the USQ process is applicable and the USQS results are positive. However the NRB may choose to cancel or to modify the proposed activity and restart the process. This may be done to cause a negative USQD.

The Executive Manager responsible for WIPP facility operations and USQ evaluators may use the NRB to provide advice on the proposed activity, the USQD and/or the proposed safety basis change. The USQD record will document the results determined by the evaluators.

If the proposed activity involves a USQ, DOE approval will be required before implementing the activity. If the proposed activity does not involve a USQ, it may be implemented.

Evaluating PISAs or Occurrences

An Occurrence Report normally informs the DOE of a PISA that is being evaluated. While performing the USQD, the facility is maintained in a safe condition. If the USQD shows the occurrence does not involve a USQ, Executive Manager responsible for WIPP facility operations may remove the operational restrictions after the evaluation of safety is submitted to the DOE.

If the occurrence does involve a USQ, the Executive Manager responsible for WIPP facility operations has the option of processing a change to the safety basis and/or modifying the facility (physically or operationally) to resolve the inadequacy. In the interim, the Executive Manager responsible for WIPP facility operations may prepare a JCO per Appendix D and submit it to the DOE for approval.

Once it has been determined that a USQD is required, the USQD can be approached by providing an answer to each of the seven questions identified using the USQD process. If any of the questions is answered "yes," the activity is considered a USQ. An appropriate justification for each answer should be recorded including a list of references relied upon to reach these conclusions. The justification should be provided, in a clear and concise fashion, to establish a basis for each response to the USQD questions.

The scope of the USQD should clearly identify what is covered. It should identify:

- The change documentation or other issue invoking the USQ process,
- The specific equipment, systems, parameters, functions, or processes affected,
- Related safety basis issues, USQs, JCOs, new potential events, affects on SSCs, impact to TSRs, and
- For modifications, whether only the end state and/or the temporary (intermediate configurations) states during installation are also covered.

Appendix G – Instructions for USQ Determinations

Enter a description of the proposed activity that contains adequate detail to support the conclusions reached in the USQD. For USQDs of PISAs, enter a description of the as-found error, omission or inadequacy.

A JCO temporarily amends the facility safety basis upon DOE approval. Evaluate the proposed activity against any JCO to ensure that the JCO controls are not affected. Caution is necessary to ensure that the facility safety basis is not expanded by the proposed activity such that a USQ will exist when the JCO is terminated. Modifications to the facility safety basis acceptance limits allowed by JCO only apply to the specific conditions addressed by the JCO. The JCO acceptance limits are not used to authorize additional activities outside the scope of the JCO.

Discernible Increase

When determining if there is an increase in the probability or consequence of an accident or malfunction of equipment ITS, sound engineering judgment is applied to determine both the effect and significance of the propose change. Potential increases should be clearly discernible, at least on a qualitative basis. This only applies to accidents and malfunctions previously analyzed, and does not extend to new accidents.

If, as a result of a proposed change, additional protective measures (either administrative or hardware-related) are needed during a postulated accident situation to ensure that no increase in probability or in consequences of an accident results, these additional measure must be approved by the DOE.

The basis for each USQD question should provide a good technical justification, based on the application of sound engineering judgment, to determine if probability or consequence could be increased. In this regard, the focus should be on clearly discernable increases in probability or consequences, at least on a qualitative basis. It is considered inappropriate to set a numerical margin for increases in the probability or consequences within which a positive USQD would not be triggered. Such margins lend themselves to excessive efforts in calculations when accident parameters are highly uncertain, and the possibility that the results might be a function of the calculation methods used, rather than actual changes in safety. However, if the change in probability or consequence is so small or the uncertainties in determining whether a change has occurred are such that it cannot be reasonably concluded that the probability or consequence has actually changed, a negative response to these USQD questions is appropriate. Some examples are:

- A bounding accident is originally postulated to result in 1.0E-06 rem to the maximally exposed off-site individual (MOI). A proposed change increases the calculated MOI consequence to 1.0E-05 rem. Even though this involved an order of magnitude increase, a sub-millirem dose increase is usually not considered significant, and would not be considered a discernable increase in consequence.

Appendix G – Instructions for USQ Determinations

- A bounding accident is originally postulated to result in 10 rem to the co-located worker. A proposed change increases the co-located consequence to 14 rem. Although this change results in less than an order of magnitude increase in consequences, rem-level increases are usually discernable.
- A bounding accident is originally postulated to occur in the Unlikely probability range, with no numeric probability value given. A proposed change is qualitatively judged to possibly result in a slightly higher probability of the accident occurring, but it is still postulated to remain in the Unlikely probability range. Such an increase is usually not considered discernable or significant.
- A bounding accident is originally postulated to occur low in the Unlikely probability range, with no numeric probability value given. A proposed change is qualitatively judged to possibly result in a higher probability of the accident occurring, possibly in the upper end of the Unlikely probability range. Such an increase is usually considered qualitatively discernable, and significant.
- A proposed change is qualitatively judged to possibly result in a slightly higher probability of an accident occurring but the probability remains below 1E-6. Such an increase is usually not considered discernable or significant.

The discussions given following the evaluation questions are provided to help the reviewer identify potential USQs. They are not meant to be examples of USQs. The USQD requires consideration of the safety basis for the nuclear facility or other DOE-approved documentation that provides the safety basis for operations or other activities and the specific details of the activity.

1. **Does the proposed activity or PISA increase the probability of occurrence of an accident previously evaluated in the existing safety basis?**

To understand how the probability of occurrence of an accident 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 accidents considered in the DSA.

In answering this question, the first step is to identify any accidents which may be affected by the proposed activity, and which have been evaluated in the previously approved safety basis. By focusing on the initiators and preventive and mitigative measures of the previously evaluated accidents, an evaluation is made as to whether there is an increased likelihood of any of these accidents. Also, when considering a new scenario within a family of accidents, it is important to assess whether the criterion of discernibly increasing the probability of an accident type may be triggered. The following questions may provide a useful approach in making this evaluation.

- Will the proposed activity meet the design, material, and construction standards applicable to the SSC being modified? If the answer is "yes," this aspect of the proposed activity is judged not to increase the likelihood

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of the occurrence of an accident. If the answer is "no" to any of the items, either a justification for saying there is not 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.

- Does the proposed activity affect overall SSC performance in a manner that could increase the probability of a previously analyzed accident? Possible questions to ask are:
- Does the proposed activity use instrumentation with accuracies or response characteristics that are different from those of existing instrumentation such that an accident is more likely to occur?
- Does the proposed activity cause SSCs to be operated outside their design or testing limits: Examples include the following: overloading electrical systems, over pressurizing a piping system, and operating a motor outside its rated voltage and amperage.
- Does the proposed activity cause system vibration, water hammer, fatigue, corrosion, thermal cycling, or degradation of the environment for SSCs that would exceed the design limits?
- Does the proposed activity cause a change to any SSC interface in a way that could increase the likelihood of accident?

2. Does the proposed activity or PISA increase the consequences of an accident previously evaluated in the existing safety basis?

When evaluating for "increase in consequences" of an accident, if the previously bounding case for that family of accidents remains the bounding case, generally there is no increase in the consequences within the USQ process. In this regard, it is important the family of accidents be related, in addition to being of the same type (e.g., fires), but also use the same set of preventative and mitigative measures

In answering this question, the first step is to determine which accidents evaluated in the safety analyses may have their consequences altered as a direct result of the activity. The next step is to determine whether the activity does, in fact, increase the consequences of any of the accidents evaluated in the existing safety analyses. It is important to note that consequences to workers (in-facility and outside, or collocated), as well as to the public and the environment, are considered. Examples of questions that assist in this evaluation are:

- Does the proposed activity degrade or prevent safety functions described or assumed in the existing safety analyses?

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- Does the proposed activity alter any assumptions previously made in evaluating the radiological and hazardous material consequences in the existing safety analyses?
- Does the propose activity play a direct role in mitigating the radiological or hazardous material consequences assumed in the existing safety analyses?
- Does the proposed activity affect the integrity or function of any radioactive material barrier or hazardous material barriers?

3. Does the propose activity or PISA increase the probability of occurrence of a malfunction of equipment ITS previously evaluated in the existing safety basis?

The safety analyses for the facility assume the proper functioning of equipment ITS in demonstrating the adequacy of design. The proper functioning of other systems, including support systems, is generally assumed. The scope of the USQD should include these other systems. For example, an activity that does either of the following is an activity that increases the probability of occurrence of a malfunction of equipment ITS:

- Degrades the performance of a equipment ITS, assumed to function in the accident analysis, to below the performance level assumed in the existing safety analyses.
- Increases the challenge to equipment ITS assumed to function in the accident analysis (e.g., more rapid pressure rise) such that equipment ITS performance is degraded below that assumed in the existing safety analyses.

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

Will the proposed activity meet the original design specifications for materials and construction practices when the following questions are considered?

- Are the seismic specifications met (e.g., use of proper supports, proper lugging at terminals, and isolation of lifted leads)?

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- Are separation criteria met (e.g., minimum distance between circuits in separate divisions, channels in the same division, and jumpers run in conduit)?
- Are the environmental criteria met (e.g., use of materials suitable for the radiation or thermal environment in which they will be used)?

Will the proposed activity degrade equipment ITS reliability by:

- Imposing additional loads not analyzed in the design?
- Deleting or reducing system/equipment protection features?
- Downgrading the support system performance necessary for reliable operation of the safety equipment?
- Reducing safety system/equipment redundancy or independence?
- Increasing the frequency of operation of safety systems/equipment?
- Imposing increase or more severe testing requirements on safety systems/equipment?

If the activity adversely impacts the safety equipment, the likelihood of equipment malfunction may be increased. A "no" answer to any question in (a) above or a "yes" answer to any question in (b) above may not mean that there is a negative impact on safety. It would, however, indicate the existence of a USQ and the need for further analyses.

4. Does the proposed activity or PISA increase the consequence of a malfunction of equipment ITS previously evaluated in the existing safety basis?

Again, remember that this question only applies to malfunctions of equipment ITS that were previously evaluated. For those not evaluated, we have another question!

This question asks whether, assuming a malfunction of safety equipment, the activity would result in increased hazardous material or radiological consequences. For example, consider a change such that a valve in a safety system fails in the closed position where it was previously 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.

5. Does the proposed activity or PISA create the possibility of an accident of a different type than any previously evaluated in the existing safety basis?

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

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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 that are analyzed.

The possible malfunctions or accidents of a different type are limited to those considered to be as likely to happen as those considered in the existing safety analyses. For example, a seismic induced failure of a component designed to appropriate seismic criteria will not cause a malfunction of a different type. However, an activity that increases the probability of an accident previously thought to be beyond extremely unlikely, so that it is as likely as the accidents considered in the existing safety analyses, 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 activity 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. Does the proposed activity or PISA create the possibility of a malfunction of equipment ITS of a different type than any previously evaluated in the existing safety basis?

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

7. Does the proposed activity or PISA reduce a margin of safety?

To determine and document the correct answer to this question, the margin of safety has to be identified.

The margin of safety is defined and preserved by:

- The TSRs and their Bases.

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- The function, availability, and operability of Safety Class and Safety Significant features, and
- Those functions of defense-in-depth (DID) features that have been identified as ITS.

Functional requirements for Safety Class and Safety Significant features are established in the DSA and protected by TSRs, typically with LCO statements and associated surveillance requirements. The addition of new features to provide the same function through a different means as a function that is identified as ITS should be studied carefully. The change may cause a change in the margin of safety, since the change in method may alter the reliability of the function or introduce new failure mechanisms not previously considered or accepted by the DOE.

The ITS features are identified in the DOE approved facility or project DSA or the associated SER. It does not consist of all equipment listed or discussed in the DSA, rather it applies to those items specifically identified as providing an ITS function. The level of detail provided to describe the performance expectations for these components and functions are typically somewhat less specific than those provided for Safety Class or Safety Significant features. Consistent with this, the functional performance and reliability of equipment ITS are what establishes the margin of safety associated with their functions. To this end, it may be permissible to alter the details of ITS features without prior DOE approval provided the reliability and functional performance of the existing features can be met or exceeded. The addition of new features to provide the same function through a different means may be a change in the margin of safety since the change in method may alter the reliability of the function or reduce the difference between the performance level considered or accepted by the DOE and the level necessary to maintain safe operation.

DID features not designated as ITS are not considered in determining the affects of a proposed activity or PISA on any margin of safety.

The margin of safety is defined as the difference between the DOE accepted limit on methodology, reliability and functionality, as compared to the expected performance, from an engineering perspective, of the affected features.

In some cases the DOE accepted limit on reliability or function is explicitly defined, while in the majority of cases it is implicitly defined.

If the DOE indicates that a feature is acceptable because it limits the negative affects to below some quantity, that quantity establishes the highest acceptable level to preserve the margin of safety.

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If the DOE has not explicitly described an acceptable limit, but has accepted performance of the feature as described, the performance level described in the DSA establishes the lowest level acceptable.

An exception to this is if a recognized industry or DOE standard has been presented in the DSA as a basis for the acceptability of a feature and the DOE has not modified that basis in the SER. When a standard defines a level of acceptable performance, changes in the level of performance of a feature within the bounds of that standard do not result in a change in the effectiveness of the feature. Therefore a change to the feature that maintains compliance with the limits of the standard do not result in the reduction of a margin of safety.

For example, if a vessel that is identified as ITS has a design pressure of 125 psi in accordance with the ASME B&PV Code with no TSR limit imposed, and the feature of concern is the internal pressure, a change in an analysis result that indicates the peak accident pressure increased from 50 to 100 psi does not represent a reduction in the margin of safety. The code established the limit of 125 psi and any operation below that limit will not affect the reliability of the component to perform its design function. This conclusion is based on engineering judgment that compliance with the standard provides an equivalent level of function across the full range of the limits of concern. However, if the safety basis relied on the margin between the calculated peak accident pressure and the vessel design pressure to provide response time, recovery actions, allow for uncertainties, etc., this margin provides a margin of safety, and the analysis change would represent a reduction in the margin of safety.

To summarize, when assessing the affects of a proposed activity or PISA on the margin of safety:

- Consider the TSRs and its Bases.
- Consider Safety Class and Safety Significant feature performance as described in the DSA,
- Consider ITS feature performance as described in the DSA or associated SER, and
- Assess the affect of the proposed activity on the level of performance explicitly or implicitly specified by the DOE. Include consideration of identified standards when determining the boundaries of the margins of safety.

Safety Basis Configuration Control

After the information cut-off date for a safety basis submission and until this new safety basis is implemented, application of the USQ process must also consider the safety

Appendix G – Instructions for USQ Determinations

basis submittal. This applies to all changes that are submitted to USQs, USQDs, and PISA determinations. The purpose is to ensure configuration management for the future safety basis and to ensure that future PISAs are not created by changes that occur in the interim. This may be accomplished in three ways:

- Consider each change fully against the future safety basis as they occur as part of the USQ, USQD, or PISA determination that evaluates the change or issue against the existing safety basis and document this consideration explicitly (as a minimum, a positive statement in the USQ Safety Basis Reference section should be made that the bases of all USQ answers reflect consideration of the "submitted not approved" or "approved not implemented" DSA documentation unless otherwise noted); or
- In using comprehensive USQDs, consider the entire set of changes that have occurred since the cut-off date for information incorporated into the safety basis submission to the DOE prior to implementation of this new safety basis; or
- Prior to implementation perform an applicability review of all USQs written in this interim time frame and then complete a comprehensive USQ of the changes that are considered to possibly impact the new safety analysis being implemented.

NOTE: Only the currently approved and implemented safety basis can be used to determine whether a USQ or a PISA exists. If the answers were "Yes/Maybe" with respect to a future safety basis, this may signify the need to not proceed forward with the proposed change until such time as a revised safety basis submittal is made to the DOE. Also, even where the USQ process is "negative" with respect to the future safety basis, the "future safety basis changes" that do not require DOE approval should be identified and completed prior to conducting readiness activities.

USQ Determination Revision

Qualified USQ evaluators, if the circumstances that caused the USQ to be performed have changed, a new or a revised USQ may need to be performed. Revision of an existing USQ can be used for changes that do not change (1) the answers to the screen or evaluation questions (such as changing a "Yes" to a "No" or vice versa), or (2) the substantial content of the bases to any USQD question. If any answer would change, or there is a substantial content change of the bases to any USQ question, a new USQ with new USQ tracking number must be initiated. The revised USQ:

- Identifies in the description section of the form that the USQD is a revision to an existing USQD.
- Identifies in the description section of the form the modifications or revisions being made, and their bases (e.g., direction from NRB). The scope statement of the USQD form must identify what each revision of the USQs/USQD includes/adds.

Appendix G – Instructions for USQ Determinations

- Preserves the original scope or intent of the USQD when revisions are made. If it is not possible to preserve the original scope or intent, a new USQ tracking number shall be obtained.
- Must preserve all previous revisions of a USQD revision. Therefore, all documents listed in a USQS/USQD are carried into the next revision.

Signatures (revised USQs carry signatures of the first and second reviewers) on a revised USQD indicate concurrence with all statements carried over from all previous revisions.

NOTE: If the safety basis has in any way changed since the last USQS/USQD revision, all documents identified within the scope of the USQD (i.e., carried from previous revisions) must be reviewed against the current safety basis.

Attachment 1 – Example USQ Screening Form

USQ Number	USQ SCREENING	Page x of x
<p>Title:</p> <p>Scope:</p> <p>Description:</p> <p>Safety Basis Documentation Reviewed:</p> <p>Other References:</p>		
<p>Is the subject of this screening covered by a categorical exclusion?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes</p> <p>If yes, identify categorical exclusion number and title, complete required approvals and exit the USQ process.</p> <p>If no, continue to next initial screening question.</p>		
<p>Does the subject of this screening require a revision to the TSR or represent a DSA change where DOE approval is required (e.g., major modification)?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes</p> <p>If yes, identify the TSR(s) and or DSA change, complete required approvals, and exit USQ process.</p>		
<p>1. Does the proposed activity represent a change to the facility or procedures as described in the safety basis?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes/Maybe</p> <p>Basis:</p>		
<p>2. Does the proposed activity represent conditions (e.g., new or changed hazards) that have not been analyzed in the existing safety basis?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes/Maybe</p> <p>Basis:</p>		
<p>3. Does the proposed activity represent a test or experiment not described in the safety basis?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes/Maybe</p> <p>Basis:</p>		

Attachment 1 – Example USQ Screening Form

USQ Number	USQ SCREENING	Page x of x
<p>Conclusion:</p> <p>[] The proposed activity screens negative and no USQD is required.</p> <p>[] The proposed activity screens positive and a USQ Determination is required.</p>		
USQ Evaluator #1	USQ Evaluator #2 (Independent Reviewer)	
(Print Name)	(Print Name)	
Signature Date	Signature	Date

Attachment 2 – Example USQ Evaluation Form

USQ Number	USQ DETERMINATION	Page x of x
<p>Title:</p> <p>Scope:</p> <p>Description:</p> <p>Safety Basis Documentation Reviewed:</p> <p>Other References:</p>		
<p>1. Does the proposed activity or PISA increase the probability of occurrence of an accident previously evaluated in the existing safety basis?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes/Maybe</p> <p>Basis:</p>		
<p>2. Does the proposed activity or PISA increase the consequences of an accident previously evaluated in the existing safety basis?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes/Maybe</p> <p>Basis:</p>		
<p>3. Does the proposed activity or PISA increase the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the existing safety basis?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes/Maybe</p> <p>Basis:</p>		
<p>4. Does the proposed activity or PISA increase the consequences of a malfunction of equipment important to safety previously evaluated in the existing safety basis?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes/Maybe</p> <p>Basis:</p>		
<p>5. Does the proposed activity or PISA create the possibility of an accident of a different type than any previously evaluated in the existing safety basis?</p> <p><input type="checkbox"/> No <input type="checkbox"/> Yes/Maybe</p> <p>Basis:</p>		

Attachment 2 – Example USQ Evaluation Form

USQ Number	USQ DETERMINATION	Page x of x
6.	Does the proposed activity or PISA create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the existing safety basis? [] No [] Yes/Maybe Basis:	
7.	Does the proposed activity or PISA reduce a margin of safety? [] No [] Yes/Maybe Basis:	
<p>Conclusion:</p> <p>[] All questions above were answered "No"; therefore, no USQ exists.</p> <p>[] One or more of the above questions was answered "Yes"; therefore, DOE approval is required prior to performing the proposed activity.</p> <p>Safety basis change required? [] No [] Yes, change number</p> <p>Summary of change required:</p>		
USQ Evaluator #1		USQ Evaluator #2 (Independent Reviewer)
(Print Name)		(Print Name)
Signature	Date	Signature Date
NRB REVIEW (If Required)		
Meeting No.:	_____	Date: _____
NRB Chairman Concurrence:	_____	Date: _____
	Signature	
OTHER REVIEW (If Required)		
Print and Sign:	_____	Date: _____

Attachment 3 – Example PISA Determination Form

USQ Number	PISA DETERMINATION	Page x of x
<p>Title:</p> <p>Scope:</p> <p>Description:</p> <p>Safety Basis Documentation Reviewed:</p> <p>Other References:</p>		
<p>1. Does the discrepant as-found condition, operational event, or new information indicate that the system, structure, or component may not be fully capable of performing the safety function as described in the safety basis?</p> <p>[] No [] Yes/Maybe</p> <p>Basis:</p>		
<p>2. Does the discrepant as-found condition, operational event, or new information indicate that parameters used or assumed in safety basis calculations or in calculations in supporting documents referenced in the safety basis may not be conservative with respect to consequence or frequency?</p> <p>[] No [] Yes/Maybe</p> <p>Basis:</p>		
<p>3. Does the discrepant as-found condition, operational event, or new information indicate there is a hazardous condition not considered in the safety basis that has the potential for significant impact to workers, the public, or the environment?</p> <p>[] No [] Yes/Maybe</p> <p>Basis:</p>		
<p>4. Does the discrepant as-found condition, operational event, or new information indicate the existing hazard controls may not provide the mitigation or prevention credit assigned to them within the safety basis?</p> <p>[] No [] Yes/Maybe</p> <p>Basis:</p>		

Attachment 3 – Example PISA Determination Form

USQ Number	PISA DETERMINATION	Page x of x
<p>Conclusion:</p> <p>[] This condition does not represent a PISA.</p> <p>[] The condition represents a PISA and appropriate actions should be initiated in accordance with WP 02-AR3001.</p>		
USQ Evaluator #1		USQ Evaluator #2 (Independent Reviewer)
(Print Name)		(Print Name)
Signature	Date	Signature
		Date
NRB REVIEW (If Required)		
Meeting No.: _____ Date: _____		
The NRB concurs that the discrepant as-found condition, operational event, or new information represents a PISA.		
NRB Chairman Concurrence: _____ Date: _____ Signature		