

# Best Practices #114

**Best Practice Title:** Best Practices in Support of Implementing the revised DOE USQ Guide, DOE G 424.1-1B

**Facility:** EFCOG SAWG USQ Subgroup

**Point of Contact:** Mark Mitchell, EFCOG SAWG USQ Subgroup Chair, (925) 422-8600, [mitchell36@llnl.gov](mailto:mitchell36@llnl.gov)

**Brief Description of Best Practice:** Best practices were developed to support implementation of the revised DOE Unreviewed Safety Question (USQ) Guide, DOE G 424.1-1B.

**Why the best practice was used:** There are significant changes in the PISA process as described in DOE G 424.1-1B, as well as nuances that need to be considered when revising local USQ procedures in relation to DOE G 424.1-1B.

**What are the benefits of the best practice:** The USQ Subgroup believes that the proposed recommendations will help streamline the process of revising USQ procedures in relation to DOE G 424.1-1B.

**What problems/issues were associated with the best practice:** DOE G 424.1-1B includes changes in practices that some contractors may not be aware of. This best practice highlights all changes for consideration.

**How the success of the Best Practice was measured:** This best practice paper has helped minimize difficulties encountered when revising local USQ procedures in relation to DOE G 424.1-1B.

**Description of process experience using the Best Practice:** See attached presentations. The first presentation is a high level summary of changes, as discussed by the USQ panel at the EFCOG SAWG Safety Basis Workshop. The second presentation is a detailed track change analysis of the revisions in DOE G 424.1-1B.



LAWRENCE  
LIVERMORE  
NATIONAL  
LABORATORY

# Best Practices in Support of Implementing the revised DOE USQ Guide, DOE G 424.1-1B

M. A. Mitchell

October 18, 2011

EFCOG SAWG Safety Basis Workshop  
Albuquerque, NM, United States  
October 24, 2011 through October 27, 2011

## **Disclaimer**

---

This document was prepared as an account of work sponsored by an agency of the United States government. Neither the United States government nor Lawrence Livermore National Security, LLC, nor any of their employees makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States government or Lawrence Livermore National Security, LLC. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States government or Lawrence Livermore National Security, LLC, and shall not be used for advertising or product endorsement purposes.

---

## Best Practices in Support of Implementing the revised DOE USQ Guide, DOE G 424.1-1B

---

**Facility:** EFCOG SAWG USQ Subgroup

**Best Practice Title:** *Best Practices in Support of Implementing the revised DOE USQ Guide, DOE G 424.1-1B*

**Point of Contact:** Mark Mitchell, EFCOG SAWG USQ Subgroup Chair, (925) 422-8600, [mitchell36@llnl.gov](mailto:mitchell36@llnl.gov)

**Brief Description of Best Practice:** Best practices were developed to support implementation of the revised DOE Unreviewed Safety Question (USQ) Guide, DOE G 424.1-1B.

**Why the best practice was used:** There are significant changes in the PISA process as described in DOE G 424.1-1B, as well as nuances that need to be considered when revising local USQ procedures in relation to DOE G 424.1-1B.

**What are the benefits of the best practice:** The USQ Subgroup believes that the proposed recommendations will help streamline the process of revising USQ procedures in relation to DOE G 424.1-1B.

**What problems/issues were associated with the best practice:** DOE G 424.1-1B includes changes in practices that some contractors may not be aware of. This best practice highlights all changes for consideration.

**How the success of the Best Practice was measured:** This best practice paper has helped minimize difficulties encountered when revising local USQ procedures in relation to DOE G 424.1-1B.

**Description of process experience using the Best Practice:** See attached presentations. The first presentation is a high level summary of changes, as discussed by the USQ panel at the EFCOG SAWG Safety Basis Workshop. The second presentation is a detailed track change analysis of the revisions in DOE G 424.1-1B.

**Status of Implementation  
of the DOE USQ Guide (DOE G 424.1-1B)  
USQ Panel Discussion  
October 2011**



**Mark Mitchell  
EFCOG USQ Subgroup Chair**

Lawrence Livermore National Laboratory, P. O. Box 808, Livermore, CA 94551  
This work performed under the auspices of the U.S. Department of Energy by  
Lawrence Livermore National Security, LLC under Contract DE-AC52-07NA27344  
[Lawrence Livermore National Laboratory](http://www.llnl.gov)

# Outline

## ➤ Summary

- Background/summary of revision of DOE USQ Guide
- Summary of RevCom comments
- Summary – Discussion
- What's changed in DOE G 424.1–1B: Before and After Comparison (-1A to -1B)
- Questions for Panel Discussion – Status of implementation at different sites and DOE organizations
  - Successes and challenges
- Lessons Learned – Entry into PISA Process (and thus ESS) should not be judged as inappropriate contractor performance
- DOE National Training Center USQ Training
  - Rapid Development Team rebaselined training to DOE G 424.1-1B
  - Convened a new committee, the Nuclear Safety Steering Committees
- Future opportunities for policy improvement



# Background/Summary of Revision

- Revision addressed concerns/confusion with application of Justifications for Continued Operation (JCO)
  - DNFSB and GAO concerns
  - Lifetime and consistency of JCOs
- Clarified guidance on use of Evaluation of Safety of the Situation (ESS)
  - Panel discussion point – *challenges/successes, has this helped?*
- Consolidated JCO and ESS guidance into a single appendix that addresses the PISA process
  - Improved consistency
  - Panel discussion point – *challenges/successes, has this helped?*
- Added flow chart for the PISA process
  - Panel discussion point – *challenges/successes, has this helped?*
- Other panel discussion points
  - Other changes (e.g., non-PISA) – *challenges/successes, has this helped?*
  - Changes in PISA/ESS/JCO text – *challenges/successes, has this helped?*



# Summary – Discussion

- Concept of ESS derives from a key step in USQ process for addressing a PISA in 10 CFR 830.203(g)
  - Variations arose regarding when and how to apply ESS
  - Previously, little specific guidance on expectations for ESS
- Terminology contributed to confusion on this topic
- Consequently, implementation varied from site to site, facility to facility, and sometimes within same facility over time
- DOE G 424.1-1B should help improve consistency and address concerns that were raised by DNFSB and GAO
  - Panel discussion point – *Status of implementation in USQ procedures*
  - Panel discussion point – *Challenges/successes, has this helped?*





# What's changed in DOE G 424.1-1B: Before and After Comparison (-1A to -1B)

- Consolidates PISA text into a single, unified section
  - Consolidated in new Attachment, Attachment C
  - Text remains in the body (Section 2.4) of DOE G 424.1-1B as well
  - Moved and revised text in Attachment B
    - Moves Attachment B.2 text to C.2, B.3 text to C.4
    - Revises Attachment B.14.3 text and moves to C.6
- Adds new guidance:
  - Flow diagram for PISA process
  - Recommends initial confirmatory process as part of USQ procedures
  - Timeliness of an ESS
  - DOE Approval of ESS (positive USQD)
  - ESS Purpose and Content
  - Expectations for a JCO
- Subtle revisions on other topics (more than just PISA topics were changed)
  - Main body - subtle revisions
    - Sections 2.3, 2.4, 3.1, 3.2, 3.3, 3.4
  - Attachment B
    - Attachment B.2, B.3, B.14.3, B.14.6, B.14.7, B.15 (former numbering)
  - Other misc. editorial changes



# Summary of RevCom Comments

- Recommended changes to USQ Guide beyond PISA/JCO/ESS process
  - Recommendation for major overhaul
    - *Deferred to later revision of DOE USQ Guide*
  - Correct/clarify some material
    - Discussion of TSRs
    - Maintenance activities excluded from USQ
    - Records management
    - Equipment Important to Safety (EITS)
    - *Deferred to later revision of DOE USQ Guide*
  - Operability Determination
- PISA process — added paragraph describing rationale
- JCO/ESS:
  - Revised flow chart to show ESS/JCO option
  - Minor revision to ESS/JCO recommended content
  - Allowed time for ESS/JCO development after PISA identified



# Lessons Learned – Entry into PISA Process (and thus ESS) should not be judged as inappropriate contractor performance

- DOE-HQ has traditionally highlighted that DOE Site Offices should not provide disincentives for contractors to follow the PISA process
- PISA process is simply a defined mechanism for dispositioning issues that require DOE involvement
- Entry into the process should not be construed as a judgment of inappropriate contractor performance
- It is failure to properly utilize the process that may reflect on performance
- Remember, “P in PISA”
  - Potential inadequacy
- Awareness
  - Contractor and DOE Contract officials may not be aware of this when writing a Contract’s Performance Based Incentives (PBIs)



# DOE National Training Center USQ Training

- DOE National Training Center USQ Course rebaselined to reflect DOE G 424.1-1B
  - Teach DOE policy to DOE audience; not opinion
  - Course
    - Understand broad DOE policy and more focused details in implementation at local site
    - Increased audience participation
    - Assist sites in revising local USQ procedures to implement DOE G 424.1-1B
    - Course development and review was supported by EFCOG, DOE Program Offices, and CTAs
    - Course delivery
      - Held a pilot and first class
      - Next class scheduled in December 2011, at Savannah River
      - Four classes for CY2012 starting February 2012
  - Initiated Rapid Development Team concept, now the DOE NTC blueprint for all future course development



# DOE National Training Center USQ Training

- Convened a new committee, the Nuclear Safety Steering Committees, representing HSS, HS-30, HS-31, HS-64, CDNS, CNS, Office of Science, and Nuclear Energy.
  - Reviewed training material with respect to official policy from policy and program perspective.
  - Supported discussions of issues where differences existed with regard to implementation and training of the DOE USQ Guide.
  - The “parking lot” slides were elevated to the committee.
  - This discussion facilitated resolution of some historically difficult-to-resolve issues.
  - Resolution included in DOE NTC training and will also be included in future documents, e.g., NNSA Technical Bulletins.
  - Issues included:
    - Margin of safety
    - EITS
    - Screening
    - Processing of ESS: Option of ESS combined with JCO
    - Operability Determination
    - *Take the training to learn more!*



# Future opportunities for policy improvement

- Address comments in appropriate location
- Potential revisions of policy documents – panel discussion
  - 10 CFR 830
  - DOE-STD-3009
  - DOE DSA Guide
  - DOE-STD-3007
  - HSS Operational Experience Report
  - NNSA Technical Bulletins
  - Other?



# Status of Implementation of the DOE USQ Guide (DOE G 424.1-1B) October 2011



**Mark Mitchell**  
**EFCOG USQ Subgroup Chair**

Lawrence Livermore National Laboratory, P. O. Box 808, Livermore, CA 94551  
This work performed under the auspices of the U.S. Department of Energy by  
Lawrence Livermore National Security, LLC under Contract DE-AC52-07NA27344  
[Lawrence Livermore National Laboratory](#)

# Outline

## ➤ Summary

- Background/summary of revision of DOE USQ Guide
- Summary of RevCom comments
- Summary – Discussion
- What's changed in DOE G 424.1–1B: Before and After Comparison (-1A to -1B)
- Questions for Panel Discussion – Status of implementation at different sites and DOE organizations
  - Successes and challenges
- Lessons Learned – Entry into PISA Process (and thus ESS) should not be judged as inappropriate contractor performance
- DOE National Training Center USQ Training
  - Rapid Development Team rebaselined training to DOE G 424.1-1B
  - Convened a new committee, the Nuclear Safety Steering Committees
- Future opportunities for policy improvement





# Background/Summary of Revision

- Revision addressed concerns/confusion with application of Justifications for Continued Operation (JCO)
  - DNFSB and GAO concerns
  - Lifetime and consistency of JCOs
- Clarified guidance on use of Evaluation of Safety of the Situation (ESS)
  - Panel discussion point – *challenges/successes, has this helped?*
- Consolidated JCO and ESS guidance into a single appendix that addresses the PISA process
  - Improved consistency
  - Panel discussion point – *challenges/successes, has this helped?*
- Added flow chart for the PISA process
  - Panel discussion point – *challenges/successes, has this helped?*
- Other panel discussion points
  - Other changes (e.g., non-PISA) – *challenges/successes, has this helped?*
  - Changes in PISA/ESS/JCO text – *challenges/successes, has this helped?*



# Summary – Discussion

- Concept of ESS derives from a key step in USQ process for addressing a PISA in 10 CFR 830.203(g)
  - Variations arose regarding when and how to apply ESS
  - Previously, little specific guidance on expectations for ESS
- Terminology contributed to confusion on this topic
- Consequently, implementation varied from site to site, facility to facility, and sometimes within same facility over time
- DOE G 424.1-1B should help improve consistency and address concerns that were raised by DNFSB and GAO
  - Panel discussion point – *Status of implementation in USQ procedures*
  - Panel discussion point – *Challenges/successes, has this helped?*



# What's changed in DOE G 424.1-1B: Before and After Comparison (-1A to -1B)

- Consolidates PISA text into a single, unified section
  - Consolidated in new Attachment, Attachment C
  - Text remains in the body (Section 2.4) of DOE G 424.1-1B as well
  - Moved and revised text in Attachment B
    - Moves Attachment B.2 text to C.2, B.3 text to C.4
    - Revises Attachment B.14.3 text and moves to C.6
- Adds new guidance:
  - Flow diagram for PISA process
  - Recommends initial confirmatory process as part of USQ procedures
  - Timeliness of an ESS
  - DOE Approval of ESS (positive USQD)
  - ESS Purpose and Content
  - Expectations for a JCO
- Subtle revisions on other topics (more than just PISA topics were changed)
  - Main body - subtle revisions
    - Sections 2.3, 2.4, 3.1, 3.2, 3.3, 3.4
  - Attachment B
    - Attachment B.2, B.3, B.14.3, B.14.6, B.14.7, B.15 (former numbering)
  - Other misc. editorial changes



# Summary of RevCom Comments

- Recommended changes to USQ Guide beyond PISA/JCO/ESS process
  - Recommendation for major overhaul
    - *Deferred to later revision of DOE USQ Guide*
  - Correct/clarify some material
    - Discussion of TSRs
    - Maintenance activities excluded from USQ
    - Records management
    - Equipment Important to Safety (EITS)
    - *Deferred to later revision of DOE USQ Guide*
  - Operability Determination
- PISA process — added paragraph describing rationale
- JCO/ESS:
  - Revised flow chart to show ESS/JCO option
  - Minor revision to ESS/JCO recommended content
  - Allowed time for ESS/JCO development after PISA identified



# Section 2.3 Tests or Experiments Not Described...

## ➤ 2.3 Tests or Experiments Not Described in Existing **DSAs** Documented Safety Analyses

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



## Section 2.4

- Major rewrite, too extensive to quote here
  - Consolidation of PISA text into unified section (Attachment C) with some remaining text in Section 2.4
    - Remaining text was modified to delete a considerable amount of old text, added new text, and add a link to Attachment C
      - “Attachment C provides additional guidance on processing a Potential Inadequacy of the Safety Analysis (PISA) including guidance on the timing of processing multiple PISAs found during audits, and the development of Evaluations of the Safety of the Situation and Justifications for Continued Operation.”
  - Also note the following subtle revision about New Information
    - “The USQ process does not apply to DSA upgrades in response 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~~ may not be ~~in-error~~ bounding or may be otherwise inadequate.”



# Section 3.1 and 3.2

## ➤ Section 3.1 Integrated Unreviewed Safety Question Process

- *Intent of this change is to drive up-front communication between operations and safety communities*
- “Facility procedures should provide that facility line management ~~take approval~~ approves action on the USQ documents.”

## ➤ Section 3.2 Screening

- Expanded discussion of interim state hazards subject to the USQ process via an added footnote
  - “Even for these activities, intermediate configurations which may occur during the activity must be considered separately under the USQ process. For example, erection of scaffolding in the vicinity of seismically qualified SSCs to complete these activities should be subject to the USQ process.”



# Section 3.3 Unreviewed Safety Question Determinations

## ➤ Subtle revisions to clarify text

- Removed text in DOE USQ Guide to better align with DSA development
  - “For the purposes of this Guide, equipment important to safety should be understood to include any equipment whose function can affect safety either directly or indirectly. This includes safety class and safety significant SSCs, including support systems to these systems that are necessary for the safety function, ~~which should have the same classification,~~ and other systems that perform an important defense-in-depth safety function, equipment relied on for safe shutdown, and, in some cases, process equipment.”
- Other discussion of EITS remained unchanged
  - RevCom comments on inconsistency of EITS discussion deferred to a future revision
- Clarified difference between entry into PISA process and whether the PISA was indeed an USQ (Inadequate Safety Analysis)
  - “In the case of a potentially inadequate safety analysis, the fact that there is reason to believe a safety analysis may be inadequate ~~makes it a USQ and~~ invokes paragraph 10 CFR 830.203(g), including performance of a formal USQD ~~for confirmation.~~ When a potentially inadequate safety analysis finding arises from an as-found condition, the seven questions can be used in a backward-looking manner as if the current configuration were a proposed modification. If the USQD is found to be negative, the contractor could have approved the discrepant condition without DOE involvement. This would resolve the discrepancy and provide justification for the current configuration.”





## Section 3.4 Documentation and Retention

- Subtle revisions to clarify text
  - “As a minimum, the facility documentation should be maintained consistent with DOE Records Schedules.”



# Attachment B.2, B.3, B.14.3 (former numbering)

- Consolidated PISA text into Attachment C



# Attachment B.14.6 (former numbering)

## ➤ B.12.5 Major Modifications

- Linked to DOE-STD-1189

- “The possibility exists that a major modification to a facility could be broken down into a series of changes that, individually, would not be considered major. Avoidance of a USQ issue by breaking a modification down into many “minor modifications” could be considered an intentional failure to implement 10 CFR 830 requirements in good faith.

- ~~— The question of when a proposed change to a facility is a major modification (requiring a preliminary documented safety analysis) versus a change that can be considered under the USQ requirements and a safety analysis approval has been intentionally left to local (DOE and contractor) determination. An important consideration involved is the importance of imposition of the nuclear safety design requirements of DOE O 420.1B (or successor document), and demonstration of how they will be met. However, also note that~~ 10 CFR 830.3 defines a major modification as one that “substantially changes the existing safety basis for the facility.” This includes the content of the safety basis, not just consideration of bounding accidents. Guidance on when a proposed change to a facility is a major modification (requiring a preliminary documented safety analysis) versus a change provided in DOE Standard 1189, *Integrating Safety into the Design Process.*”



# Attachment B.14.7 (former numbering)

## ➤ B.12.6 Transportation Activities under 10 CFR 830.203 USQ Requirements

- Removed text in DOE USQ Guide to provide more consistency with 10CFR830
  - “Transportation activities are regulated under 10 CFR 830, except for those activities regulated by the Department of Transportation. ~~The requirements related to a DSA can be satisfied using the appropriate “safe harbors” described in Appendix A of the rule, including Transportation Safety Documents (TSDs under the Transportation Orders 460.1 or 461.1) or DOE-STD-3009, if desired. However, The TSR and USQ requirements also must be satisfied. This Guide provides general guidance for the USQ process. That~~This guidance can be applied directly to transportation activities.”



# Attachment B.15 (former numbering)

## ➤ B.13 Operability Determinations

- Added text to clarify
  - *Panel discussion item: Implications of these changes need to be discussed, what are they, what will this do in implementation?*
- New text reads as follows:
  - “A safe condition may include continued facility operation if, although a degraded or nonconforming SSC is not be-fully qualified, the impact on safe facility operations is judged to be acceptable, possibly aided by operational restrictions. and the TSRs are still being met in terms of required operable equipment for the given MODE of operations and associated ACTIONS.”
  - “If a SSC identified in a TSR is determined to be inoperable, then in accordance with the facility TSR, the action statement(s) in the TSR must be implemented. The TSR action statement may direct the facility operator to go to a MODE in which the piece of equipment is not required or the facility operator may choose to take this action even though the TSRs do not explicitly direct it.”
- [continued]



# Attachment B.15 (continued)

- Added text to clarify
  - Panel discussion item: Implications of these changes need to be discussed, what are they, what will this do in implementation?
- New text reads as follows:
  - “There may be situations where an SSC has been degraded such that there is a loss of quality or functional capability or a nonconforming condition may exist with the SSC or its documentation but the SSC has not been determined to be inoperable. These situations may constitute a PISA. When a degraded or nonconforming SSC is identified as a PISA, the contractor must first “take action, as appropriate, to place or maintain the facility in a safe condition” (10 CFR 830.203(g) (1)). A safe condition may include continued facility operation if, although a degraded or nonconforming SSC is not fully qualified, the impact on safe facility operations is judged to be acceptable, possibly aided by operational restrictions and the TSRs are still being met in terms of required operable equipment for the given MODE of operations.”
  - ...“An operability determination is a forward-looking evaluation by the operating contractor of whether there is a reasonable expectation that continued operation of the facility is safe even when a degraded or nonconforming condition (~~PISA~~) and ~~USQ~~ exists.”



# Attachment C.2 – Processing Information to Determine Whether a PISA Exists

## ➤ Investigate

- Not all conditions may be accurate or applicable
- “It is appropriate to allow a short period of time (hours or days but not weeks) to investigate the conditions to confirm that a safety analysis is potentially inadequate before declaring a PISA.”
- “The main consideration is that the analysis does not match the current physical configuration, or the analysis is inappropriate or contains errors.”
- “If immediately clear that a PISA exists, then the PISA should be declared immediately.”
  - Confusing text of concern was deleted during RevCom

## ➤ New Information (NI) Process

- “DOE Sites should consider including this initial confirmatory process as part of their USQ procedures.”
  - Successes/challenges?



# Attachment C.3 – Placing or Maintaining the Facility in a Safe Condition

## ➤ What is safe?

- “The determination of what constitutes a safe condition is the responsibility of the contractor.”
- “The contractor should take conservative action to impose operational restrictions to ensure the facility is safe.”
- Operational restrictions may include
  - Restrictions on work activities for the affected part of the facility,
  - Imposition of additional controls (e.g., fire watches if the adequacy of a fire protection control is in question), or
  - Placing the facility into a different TSR mode
- “In addition, per 10 CFR 830, Subpart B, Appendix A, Section G(3), the contractor must evaluate the operability of impacted safety systems and components and enter any applicable TSR actions statements.”

## ➤ Rationale for determination that facility is in safe condition

- Should be documented
  - Good practice (not required)
- Should not involve an extensive/detailed analysis as the ESS will occur at a later stage of processing the PISA, e.g., after the USQD





# Attachment C.4 – Expediently Notifying DOE When Information is Discovered

- ORPS may be used
  - Essentially the old text moved to new location with the following additions
- “The DOE Facility Representative and/or other DOE management responsible for the facility should be notified immediately.”
  - Good practice
- DOE notification should clearly identify any operation restrictions that were invoked to ensure the facility is in a safe condition
  - No DOE approval of the operational restrictions is needed
  - DOE should review them and can direct other restrictions be implemented if needed.



# Attachment C.5 – Performing a USQD and Notifying DOE of the Results

- Similar to old text (e.g., Section 2.4)
- USQD “should be performed in a short period of time (hours or days, not weeks) following confirmation of the PISA.”
- Positive USQD
  - DOE M 231.1-2 requires condition be categorized and reported as Significance Category 2 under ORPS Group 3 B (1)
  - Contractor must notify DOE of whether the USQD positive or negative
  - **Examples of notification methods may include:**
    - Updating ORPS report, or
    - Submitting separate letter to DOE
- **As part of performing USQD, new information may arise that results in contractor identifying additional operational restriction that should be imposed and modifying its operability determination**
  - **No DOE approval of any new operational restrictions is needed**
  - **DOE should review them and can direct other restrictions be implemented if needed**



# Attachment C.6.1 – ESS Timing

## ➤ Timeliness of an ESS

- Function of whether USQD positive or negative
  - ESS associated with positive USQDs should be developed within a short period of time following completion of USQD (as soon as practicable and not more than a month)
  - No specific time limit for submittal of ESS
    - Positive USQD if facility is placed in a TSR safe MODE
    - Negative USQD PISA because condition of facility is such that DOE approval would not have been needed (per USQ requirements) if facility intentionally put in condition.
  - However, in accordance with 10 CFR 830.203(g), ESS must be performed prior to lifting any operational restrictions
  - “Further, it is a good practice to address the cause of the PISA (e.g., correct discrepant conditions and/or update safety basis) and return the facility to normal operations (e.g., lift operational restrictions) as soon as practicable.”



# Attachment C.6.1 – 4 Actions Required by 10 CFR 830.203(g)

- “10 CFR 830.203(g) lists 4 actions that contractors must perform when a PISA is discovered.”
  - “Although nothing in 10 CFR 830.203(g) requires these actions be performed in order, it is logical and recommended that they performed in this manner.”



# Attachment C.6.1 – ESS, DOE Review and Approval

- ESS should be reviewed by DOE to determine whether facility (with any remaining operational restrictions in place) is in a safe condition
- Negative USQD
  - No DOE approval needed
- Positive USQD
  - DOE should formally approve ESS's for PISAs that result in a positive USQD
  - DOE review of the ESS should focus on
    - Adequacy of the contractor's analysis of the impact of the PISA on the safety of the facility and
    - Capability of the operational restrictions/controls to mitigate the hazards and to compensate for any potential decreases in the facility safety caused by the PISA
  - Approval authority for DOE should be at the same level as the Safety Basis Approval Authority level for the facility.



# Attachment C.6.1 – ESS and *Positive* USQD Path Forward

- If operations continue for extended period of time (i.e., greater than a month) under restricted conditions of other than a TSR safe MODE, then
  - Contractor should evaluate whether further (more detailed) analysis may be appropriate to justify that continuance
    - May take the form of Justification for Continued Operation
    - Alternatively, update ESS to include more detailed analysis utilizing outline described in Section C.6.2 taking into consideration JCO content described in Section C.7 and to submit updated ESS to DOE
- Contractor should incorporate changes to resolve the USQ into next annual DSA/TSR update
  - As needed
  - If not submitted earlier, or as may be specified in JCO



# Attachment C.6.2 – ESS and *Positive* USQD Path Forward

## ➤ Negative USQD

- ESS should document assessment of safety of the situation
- ESS provides evidence that immediate controls placed on the facility or activity to ensure a safe condition are not required and can be removed

## ➤ Positive USQD

- ESS documents assessment of safety of the situation
- ESS provides the basis for how actions taken (including implementation of operational restrictions), and/or planned actions, ensure safety
- If DSA modification is made as part of resolution of PISA or JCO, then in accordance with 10 CFR 830.207, need Safety Evaluation Report (SER)
- If not done earlier, then any needed changes to safety basis should be made at next annual update

➤ Note: Although in Attachment C.6.2, “assessment” replaced “qualitative assessment” for both negative and positive USQD cases, “qualitative assessment” preserved in C.7.



# Attachment C.6.2 – ESS Format and Content

## ➤ Recommended format and content for an ESS:

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





# Attachment C.6.2 – Additional ESS Content for *Positive* USQD

## ➤ Additional appropriate content:

- Current operational status of the facility
- Clear identification of all operational restrictions needed to maintain the facility in safe condition
- Analysis that addresses safety impact of PISA with operational restrictions removed (or with operational restrictions in place if their removal is not proposed)
- Path forward for restoring facility into compliance with DSA (e.g., by revising DSA or by correcting discrepant condition)
- Summary of recommendations and conclusions
- Analysis
  - Should be bounding
  - Level of detail sufficient to provide confidence that facility maintained in safe condition

## ➤ Challenges/successes?

- Level of detail?



# Attachment C.7 – JCO

- Similar to old text
  - “also appropriate to update the ESS in lieu of developing a JCO”
- If PISA arises from situation where analytical errors in the DSA are identified or analysis is otherwise inappropriate, proposed DSA change should be prepared and submitted to DOE
  - New text for JCOs depending on PISA situation
    - Concept of “timely manner (e.g., within a month)”
      - If DSA change cannot be submitted in timely manner (e.g., within a month) and a strong programmatic need exists to continue operations
      - JCO that defines specific operational restrictions or other compensatory measures that will be maintained should be submitted to DOE for approval
- A PISA could also arise from a discrepant as-found condition (e.g., installed equipment not meeting design specifications)
  - Facility should be restored to meet design conditions
    - However, there may arise situations where it may not be possible to align facility configuration with analysis in a timely manner (e.g., a month) and there may be a need to continue operations
    - JCO that defines specific operational restrictions or other compensatory measures that will be maintained should be submitted to DOE for approval.



# Attachment C.7 – JCO and Hazard Controls

- JCO should analyze hazards and **identify** controls
  - Appropriate for hazards associated with PISA and length of time conditions which resulted in PISA expected to exist
  - “This analysis should be consistent with the approach in 10 CFR 830 Subpart B, Appendix A, for developing a documented safety analysis.
  - Given that a JCO is intended to address emergent conditions in a timely manner; the associated analysis and controls/compensatory measures can be more simplified and conservative/bounding than in a final DSA.
  - By taking a more bounding approach, control effectiveness can be assured even though the analysis may not be as complete as would be in a final DSA.”
- Examples?
- Challenges/successes?



# Attachment C.7 – JCO and the Safety Basis

- When DOE approves a JCO, JCO and **any DOE imposed conditions of approval** become temporary additions to safety basis that would permit operations to continue under specified conditions, including a defined termination point
  - DOE review of JCO should follow similar approach to approval review of DSA.
  - “should be documented in a SER (e.g. using a graded approach consistent with DOE-STD-1104 (Review and Approval of Nuclear Facility Safety Basis and Safety Design Basis Documents)).
  - The approval authority for the DOE should be at the same level as the Safety Basis Approval Authority level for the facility.”
- Examples?
- Challenges/successes?



## Attachment C.7 – JCO and the Safety Basis (cont'd)

- “A JCO is expected to define an appropriate set of temporary hazard controls (that is, compensatory measures) to be in effect during the life of the JCO.
  - In some cases, these hazard controls might involve temporary changes to the facility TSRs.
  - If the JCO results in additional or modified controls, a review of the planned changes should be done prior to implementation to ensure the changes properly address the JCO.
  - A JCO cannot change a TSR in the non-conservative direction but may alter it into a more conservative direction.
  - Additional analysis could be performed later, in order to justify the relaxation of any identified controls.”
- Examples?
- Challenges/successes?



## Attachment C.7 – JCO and the Safety Basis (cont'd)

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



## Attachment C.7 – JCO and the Safety Basis (cont'd)

- Similar to old text, slight revisions (key revisions highlighted below)
  - “A JCO is not an appropriate means to request a change of the safety basis for a planned operation, a new experiment, a major modification, or new construction.
    - In these cases, a request for a change to the facility safety basis should be prepared by the contractor and submitted to DOE for approval.
    - Because the JCO is established in response to an unexpected condition, event, or new information, it is inappropriate to use it in planning new activities.
    - A JCO should not be used in place of an exemption to 10 CFR 830 requirements.
  - The JCO should be maintained as provided for in 10 CFR 830.202(c) for safety basis maintenance until the conditions that resulted in the PISA have been corrected and the JCO has been terminated.”
- Challenges/successes?



# Attachment C.7 – JCO Format and Content

## ➤ Recommended format and content

- Title
- Executive Summary
  - Optional, depending on length of document
- Purpose of the Document (JCO)
  - “For example, to provide the rationale for the safety of operations while the PISA exists.
  - May also include brief discussion on how JCO was developed in accordance with site processes for meeting 10 CFR 830 safety basis requirements.”
- Discussion of Background
  - What condition(s) led to need for JCO
  - Note: could cite ESS which transmits JCO, or precedes it, as this material is in ESS
  - Include discussion on PISA, facility status, and steps taken (including any operational restrictions put in place) to ensure facility in safe condition
  - Discuss results of USQD

## ➤ Challenges/successes?

---





# Attachment C.7 – JCO Format and Content (cont'd)

- “Description of what operations are authorized to occur during the time the PISA exists (given the compensatory measures are in place) along with rationale for why the operations need to continue.
- Compensatory Measures (Risk-reduction activities being applied immediately).
  - Provide a detailed discussion of any established controls or existing or planned compensatory measures. Include a discussion of how the measures will be implemented.
- Safety Assessment. Briefly discuss the results of the USQ determination and the impact on mitigated consequence and event frequency with any compensatory measures in place, and whether these risk factors are time dependent.
  - This may be a qualitative assessment of the relative risk of operating the facility with the PISA and any compensatory measures in place as compared to operating the facility as analyzed in the DSA.”

➤ Challenges/successes?



# Attachment C.7 – JCO Format and Content (cont'd)

- “Planned Corrective Actions (Actions that will be developed as the permanent solution).
  - Include a discussion of actions to take place to resolve the PISA and to ensure that the facility can be safety operated in accordance with the approved safety basis.
  - The JCO should include a summary of recommendations and conclusions, including the specific proposed path or action to terminate the JCO (e.g., DSA change, restoring the facility configuration to the analysis).
- Termination of JCO (Those events/date that will define termination of JCO).
  - Discuss the expected date or events (e.g., correction of deficiency) at which time the JCO will be terminated and the actions/approvals that will be necessary to terminate the JCO.”

➤ Challenges/successes?



# Attachment C.8 – Multiple PISAs and Design Basis Reconstitution

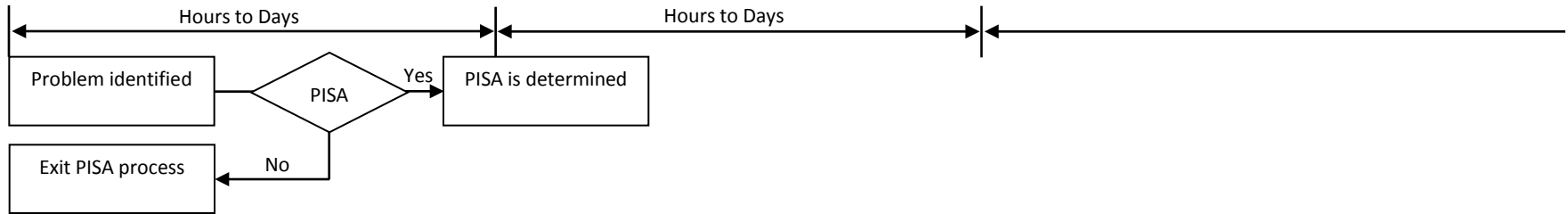
- Similar to old text
- Deleted redundant text that is also contained in Section 2 (“USQ process not applicable when new requirements are being implemented...”)



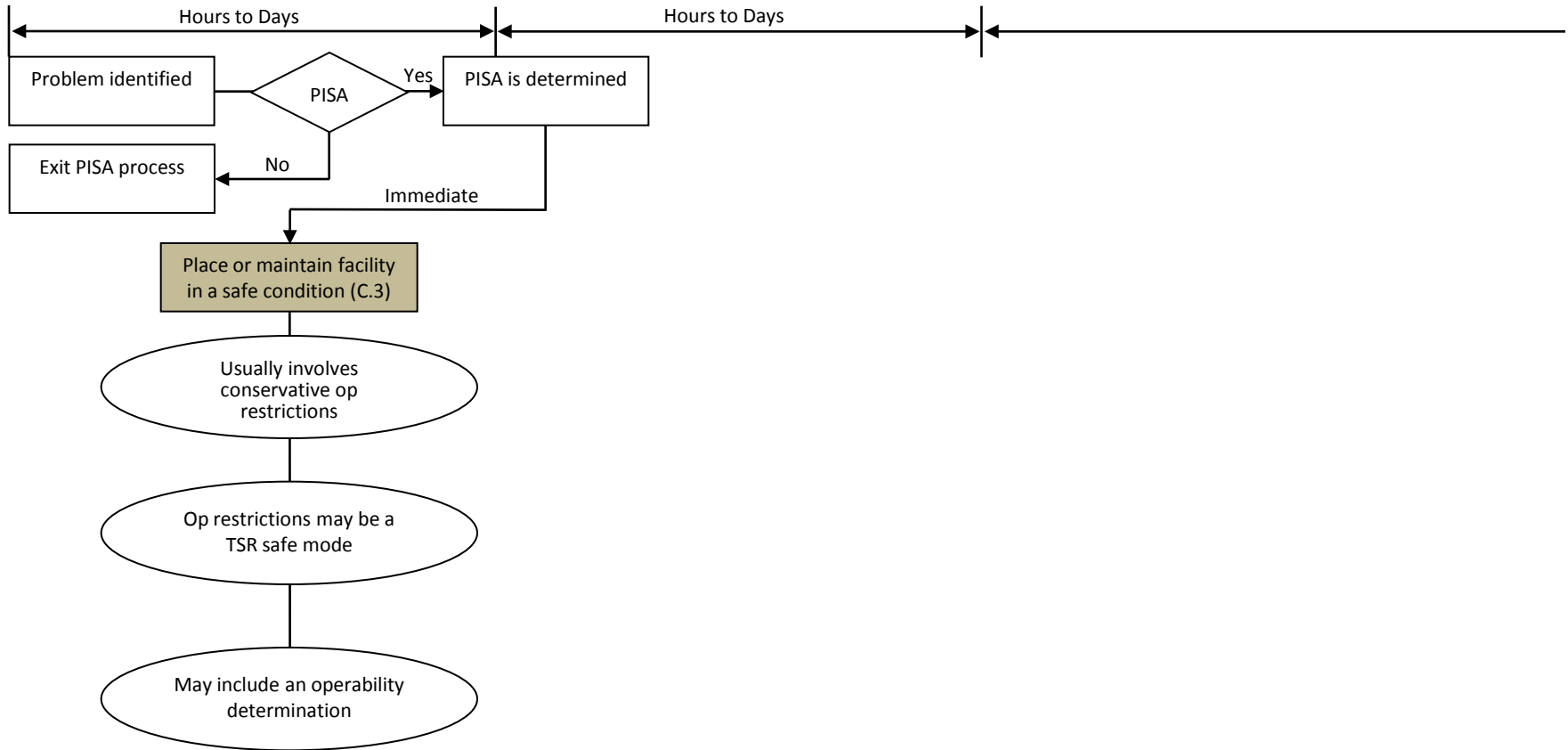
# Attachment C, Figure 1: Timeline and Process for PISAs - When a PISA Exists



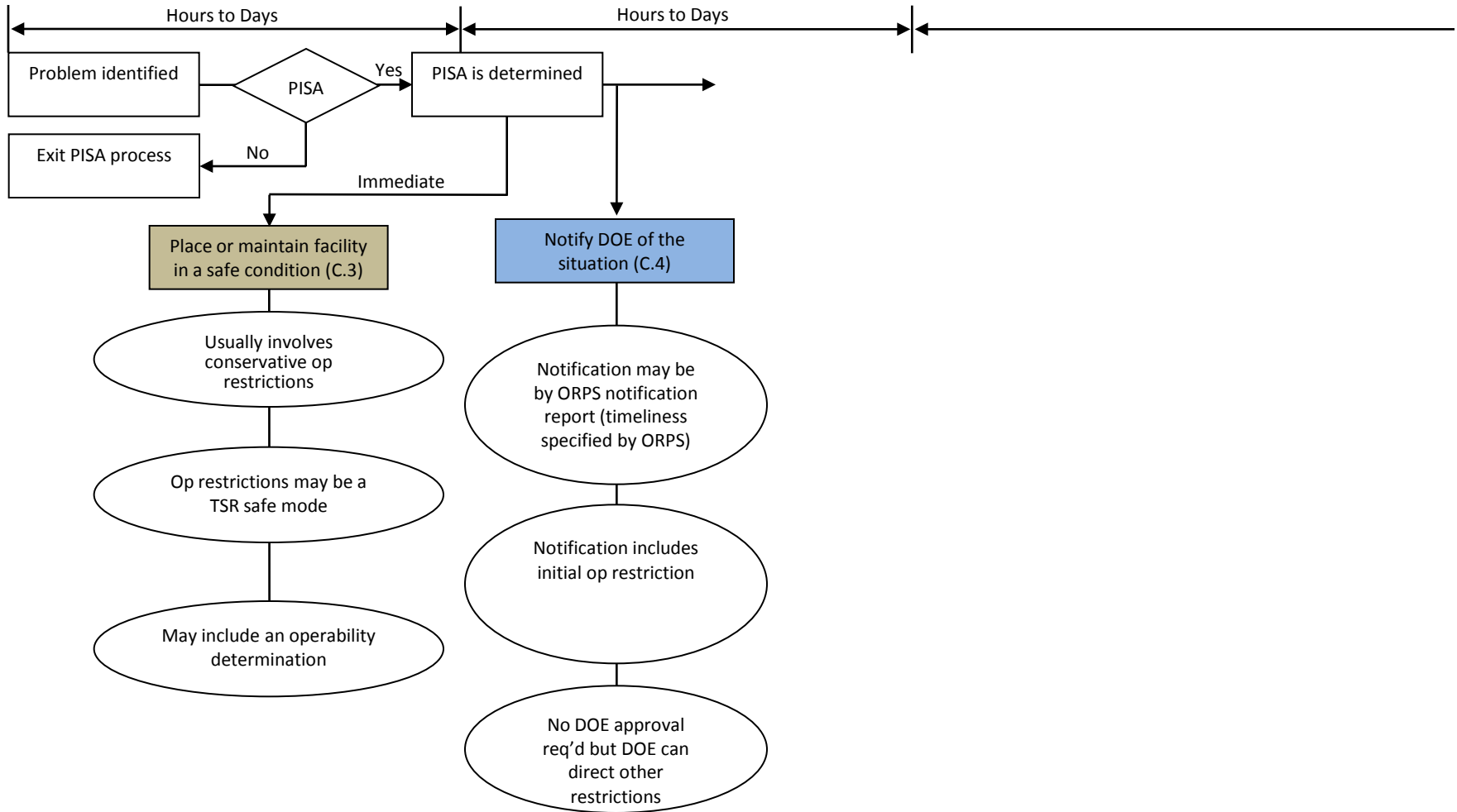
# Attachment C, Figure 1 (cont'd) - When a PISA Exists



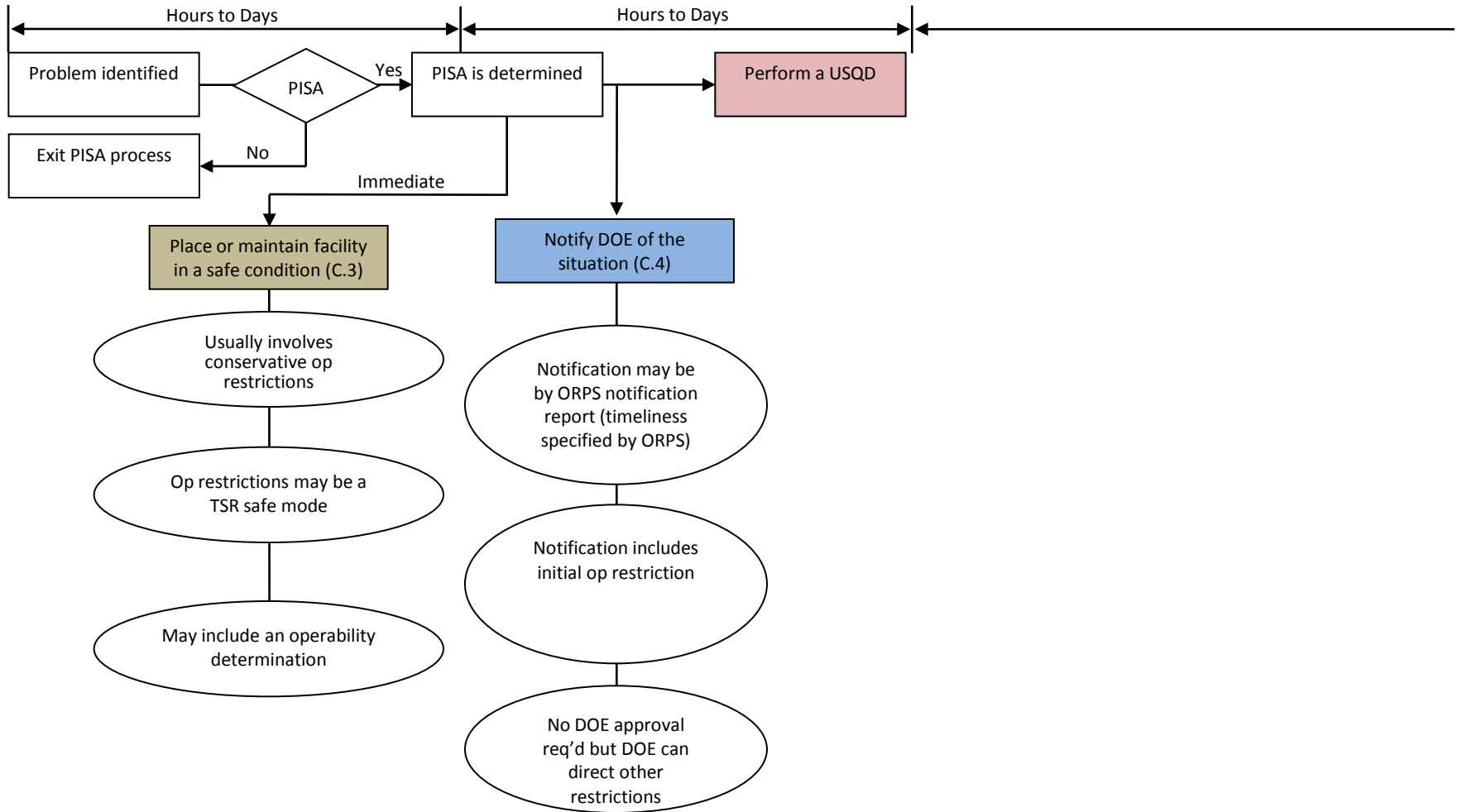
# Attachment C, Figure 1 (cont'd) - First Step of the PISA Process



# Attachment C, Figure 1 (cont'd) - Second Step of the PISA Process

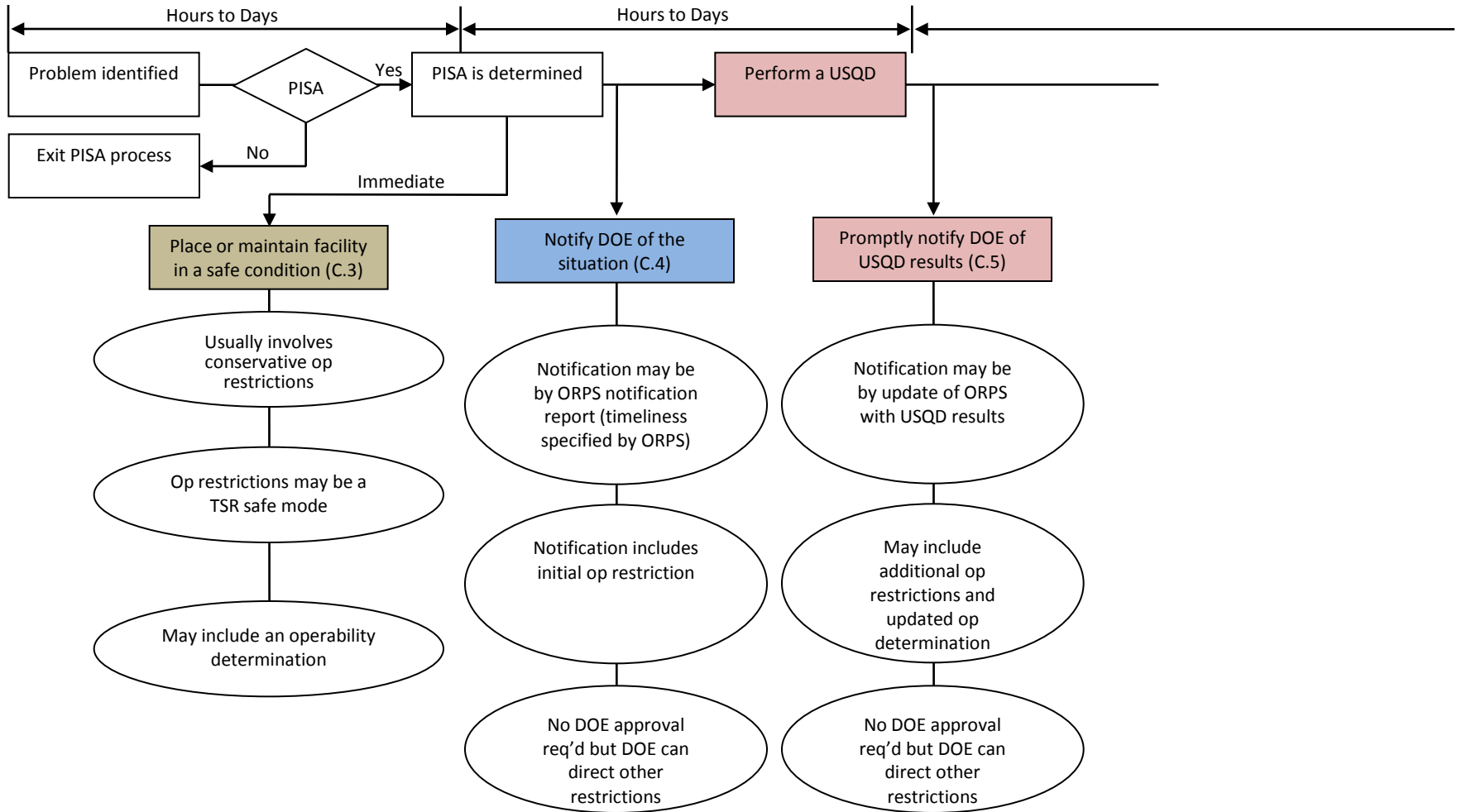


# Attachment C, Figure 1 (cont'd) - Third Step of the PISA Process

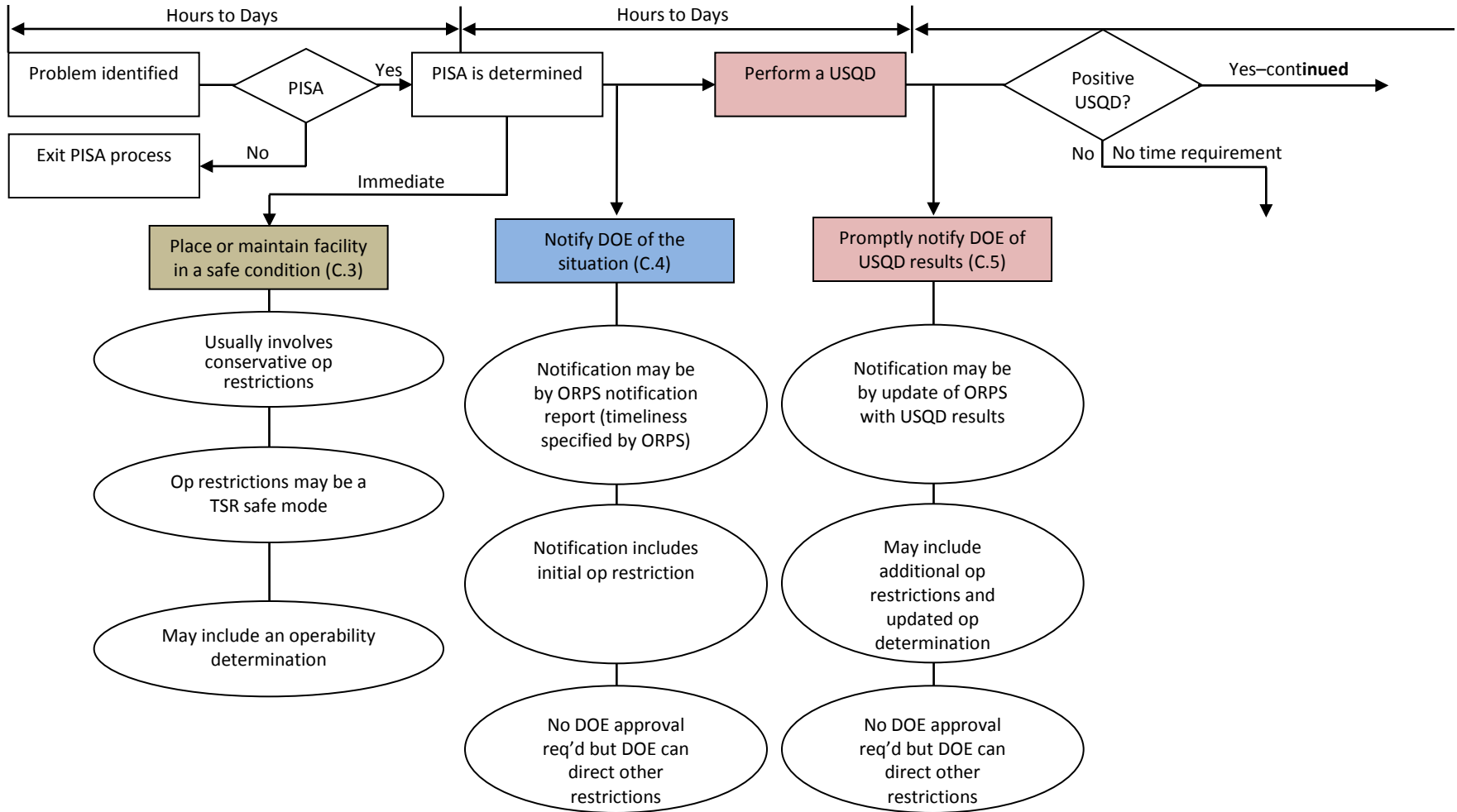




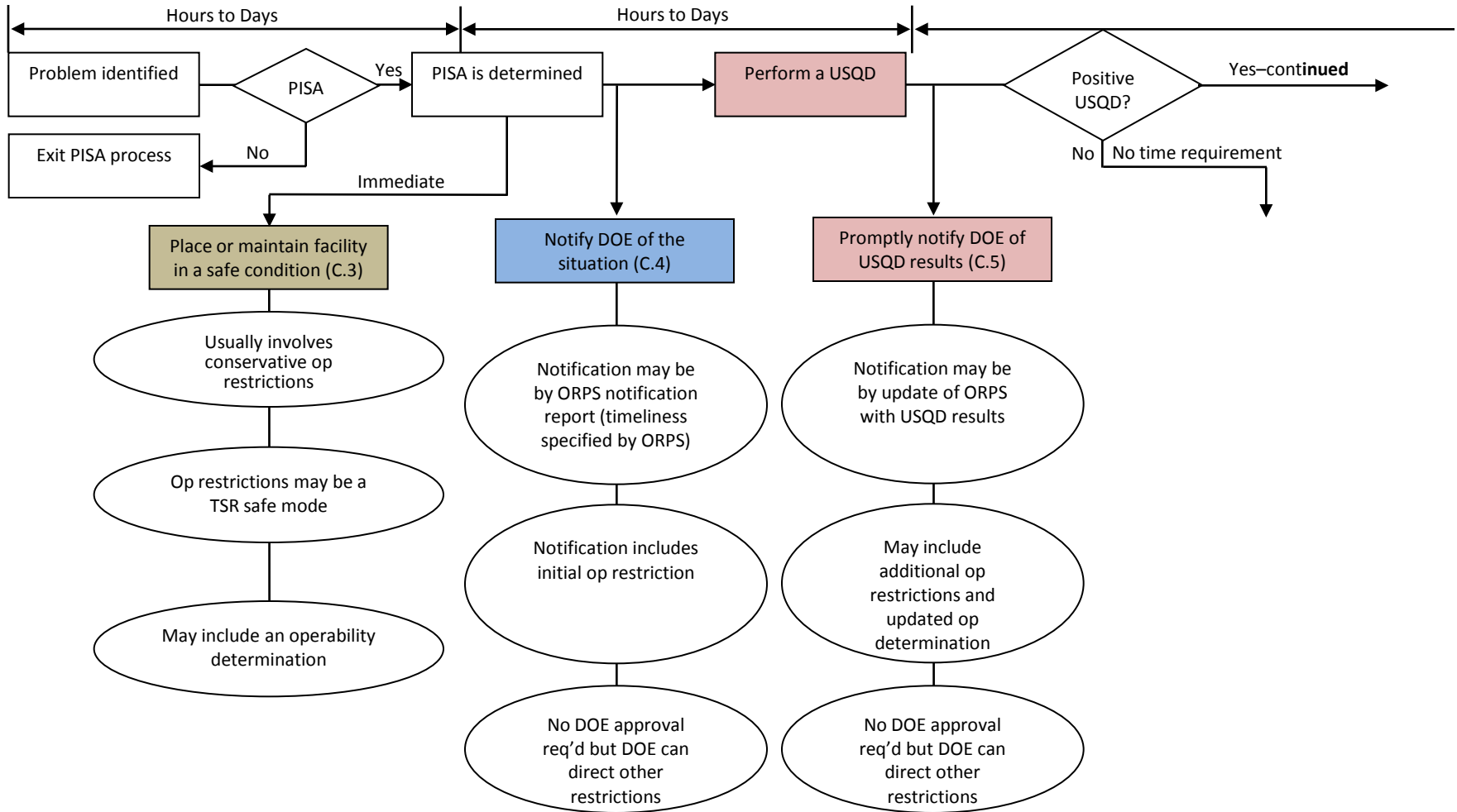
# Attachment C, Figure 1 (cont'd) - Third Step of the PISA Process



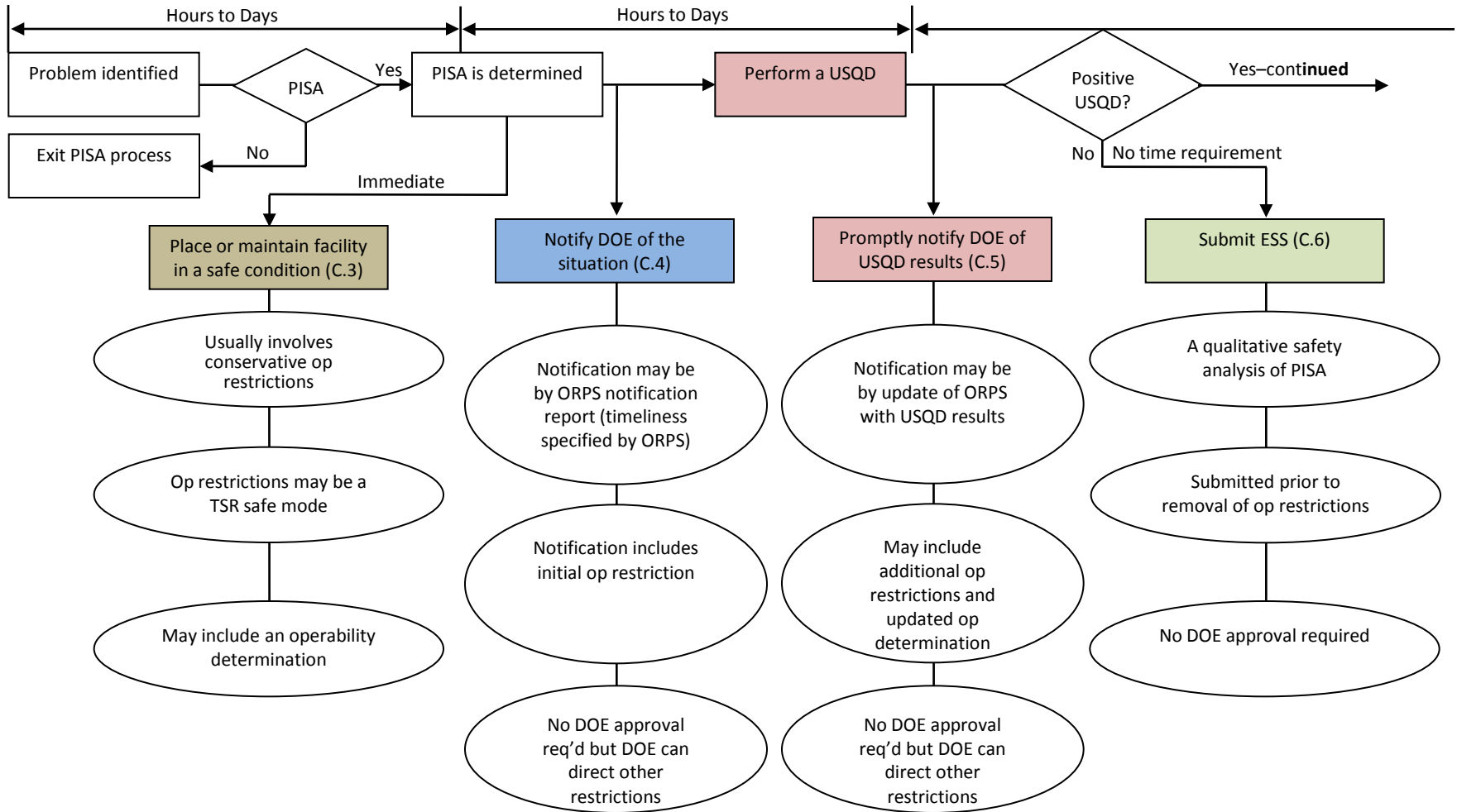
# Attachment C, Figure 1 (cont'd) - Processing an ESS



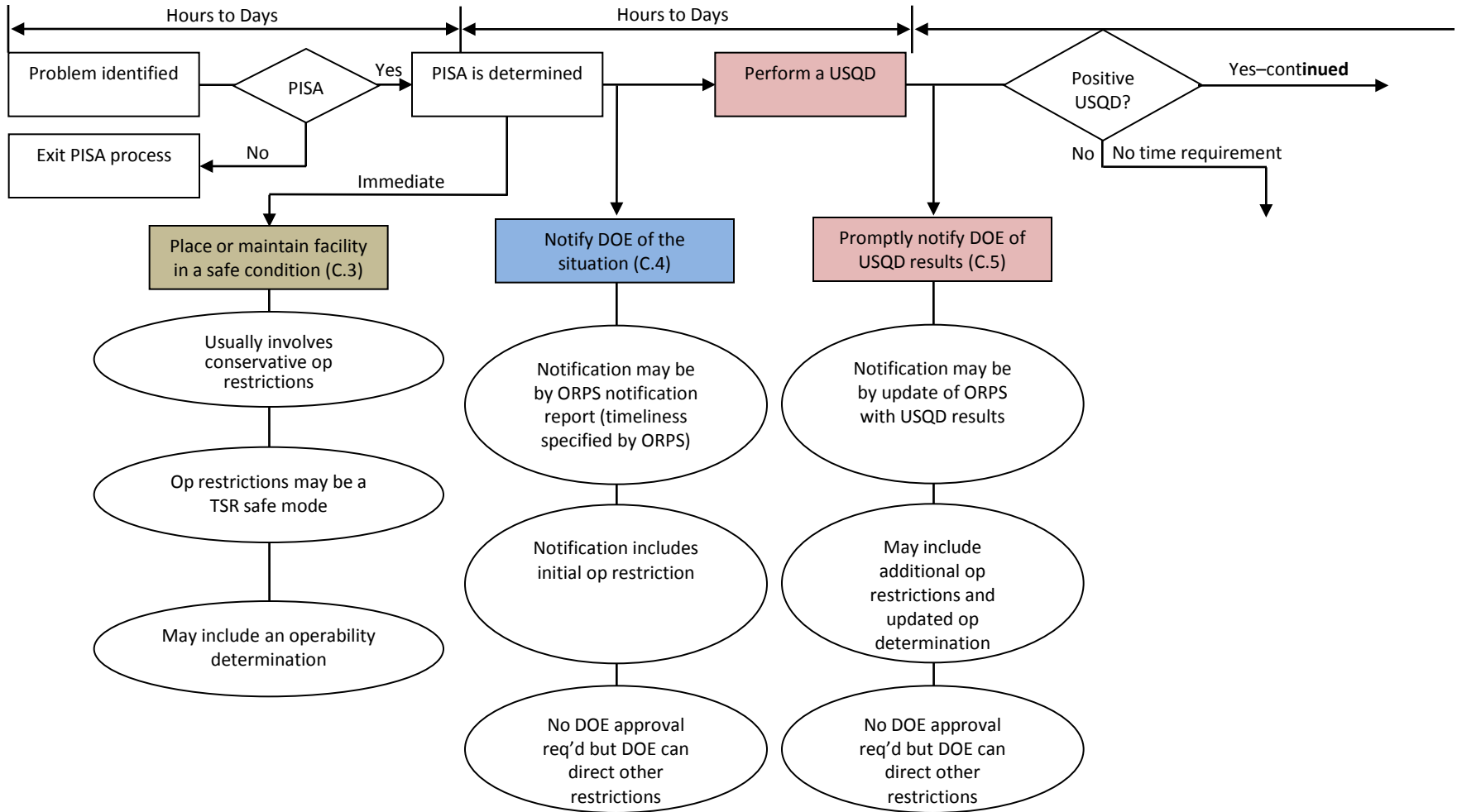
# Attachment C, Figure 1 (cont'd) - Processing an ESS



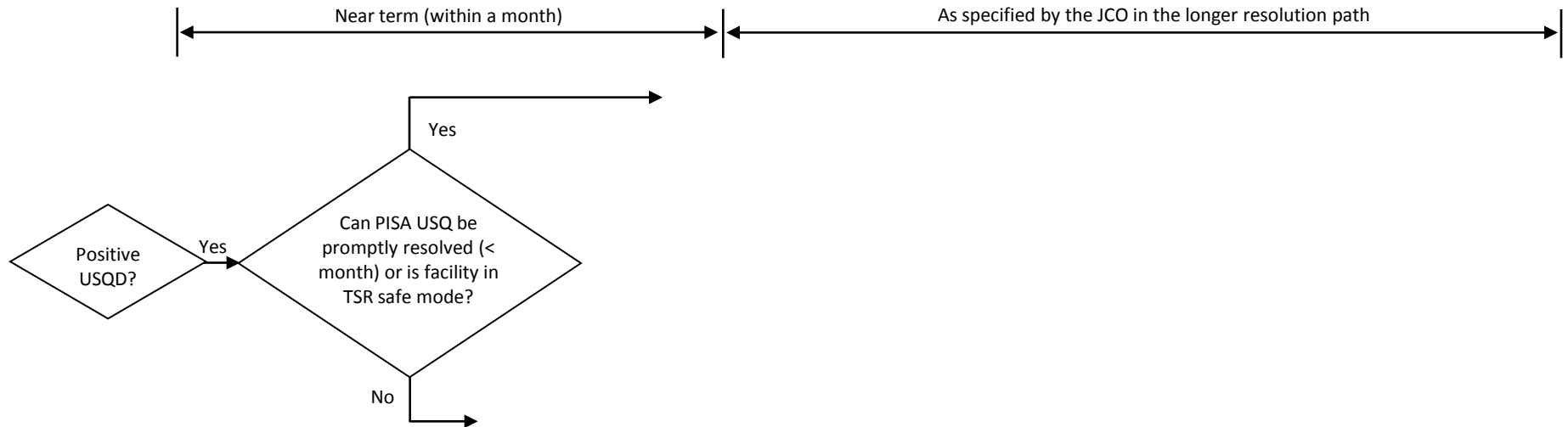
# Attachment C, Figure 1 (cont'd) - Processing an ESS



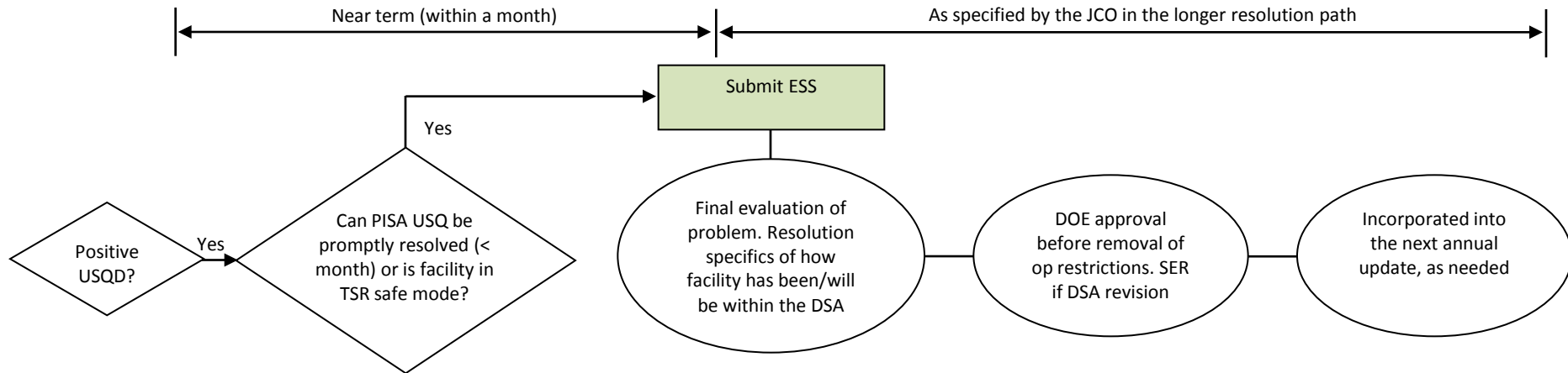
# Attachment C, Figure 1 (cont'd) - Processing an ESS



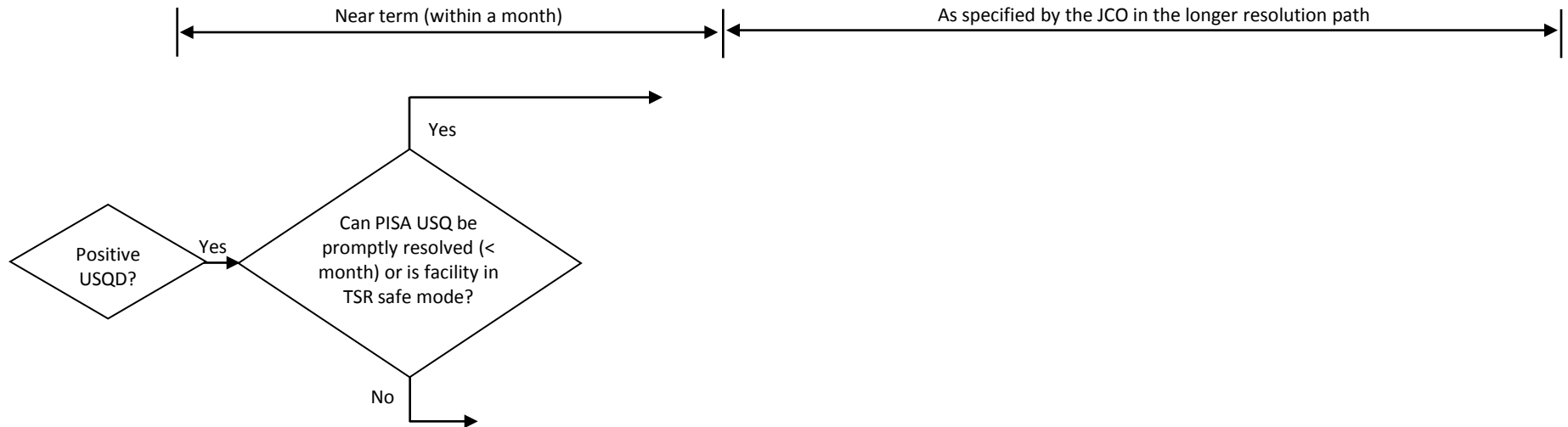
# Attachment C, Figure 1 (cont'd) - Processing an ESS



# Attachment C, Figure 1 (cont'd) - Processing an ESS

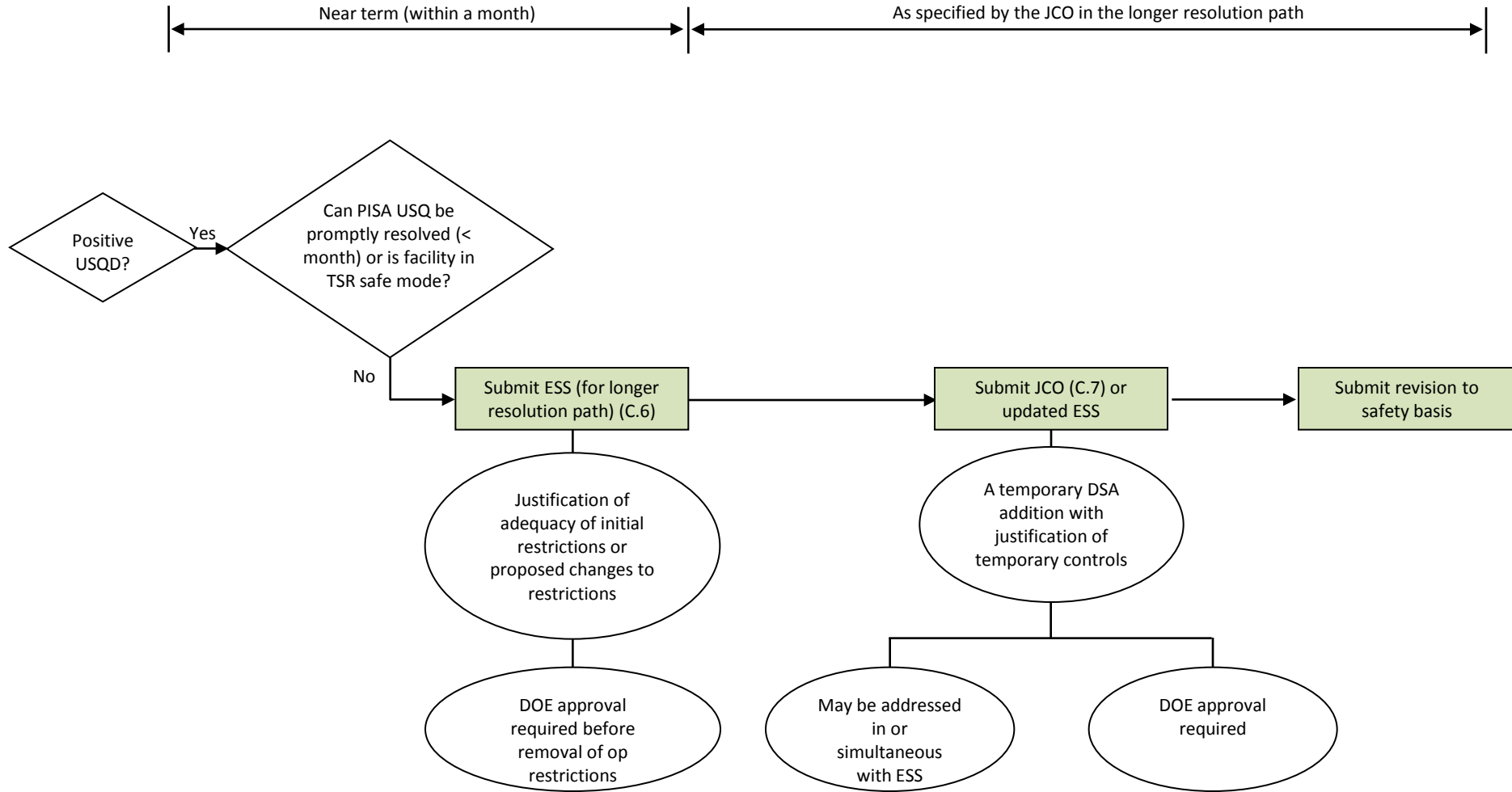


# Attachment C, Figure 1 (cont'd) - Processing an ESS





# Attachment C, Figure 1 (cont'd) - Processing an ESS



# Lessons Learned – Entry into PISA Process (and thus ESS) should not be judged as inappropriate contractor performance

- DOE-HQ has traditionally highlighted that DOE Site Offices should not provide disincentives for contractors to follow the PISA process
- PISA process is simply a defined mechanism for dispositioning issues that require DOE involvement
- Entry into the process should not be construed as a judgment of inappropriate contractor performance
- It is failure to properly utilize the process that may reflect on performance
- Remember, “P in PISA”
  - Potential inadequacy
- Awareness
  - Contractor and DOE Contract officials may not be aware of this when writing a Contract’s Performance Based Incentives (PBIs)



# DOE National Training Center USQ Training

- DOE National Training Center USQ Course rebaselined to reflect DOE G 424.1-1B
  - Teach DOE policy to DOE audience; not opinion
  - Course
    - Understand broad DOE policy and more focused details in implementation at local site
    - Increased audience participation
    - Assist sites in revising local USQ procedures to implement DOE G 424.1-1B
    - Course development and review was supported by EFCOG, DOE Program Offices, and CTAs
    - Course delivery
      - Held a pilot and first class
      - Next class scheduled in December 2011, at Savannah River
      - Four classes for CY2012 starting February 2012
  - Initiated Rapid Development Team concept, now the DOE NTC blueprint for all future course development



# DOE National Training Center USQ Training

- Convened a new committee, the Nuclear Safety Steering Committees, representing HSS, HS-30, HS-31, HS-64, CDNS, CNS, Office of Science, and Nuclear Energy.
  - Reviewed training material with respect to official policy from policy and program perspective.
  - Supported discussions of issues where differences existed with regard to implementation and training of the DOE USQ Guide.
  - The “parking lot” slides were elevated to the committee.
  - This discussion facilitated resolution of some historically difficult-to-resolve issues.
  - Resolution included in DOE NTC training and will also be included in future documents, e.g., NNSA Technical Bulletins.
  - Issues included:
    - Margin of safety
    - EITS
    - Screening
    - Processing of ESS: Option of ESS combined with JCO
    - Operability Determination
    - *Take the training to learn more!*



# Future opportunities for policy improvement

- Address comments in appropriate location
- Potential revisions of policy documents – panel discussion
  - 10 CFR 830
  - DOE-STD-3009
  - DOE DSA Guide
  - DOE-STD-3007
  - HSS Operational Experience Report
  - NNSA Technical Bulletins
  - Other?

