

Implementing Changes to an Approved and In-Use Documented Safety Analysis

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

FLUOR[®]
P.O. Box 1000
Richland, Washington

**Approved for Public Release;
Further Dissemination Unlimited**

Implementing Changes to an Approved and In-Use Documented Safety Analysis

J. P. King
Fluor Hanford, Inc.

Date Published
April 2008

To Be Presented at
Energy Facility Contractors Operating Group

EFCOG 2008 Safety Analysis Workshop
Richland, WA

May 6 - 8, 2008

Published in
Safety Analysis Working Group


Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

FLUOR[®]
P.O. Box 1000
Richland, Washington

Copyright License

By acceptance of this article, the publisher and/or recipient acknowledges the U.S. Government's right to retain a nonexclusive, royalty-free license in and to any copyright covering this paper.


Release Approval

04/09/2008
Date

**Approved for Public Release;
Further Dissemination Unlimited**

LEGAL DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use 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 any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

This document is available to the U.S. Department of Energy and its contractors, in paper from the Office of Scientific and Technical Information (OSTI). It is available for sale to the public from the National Technical Information Service (NTIS).

This report has been reproduced from the best available copy.
Available in paper copy.

Implementing Changes to an In-Use Documented Safety Analysis

Jeffry P (Jeff) King

**Fluor Hanford Nuclear and Criticality Safety
Plutonium Finishing Plant**

MSIN T5-54

P. O. Box 1000, Richland WA, 99352 Phone (509) 373-5194 / FAX (509) 373-2752

Jeffry P Jeff King@rl.gov

Abstract

The Plutonium Finishing Plant (PFP) has refined a process to ensure a comprehensive and complete DSA/TSR change implementation. Successful Nuclear Facility Safety Basis implementation is essential to avoid creating a Potential Inadequacy in Safety Analysis (PISA) situation, or implementing a facility into a non-compliance that can result in a TSR violation. Once past initial implementation, additional changes to Documented Safety Analysis (DSA) and Technical Safety Requirements (TSRs) are often needed due to needed requirement clarifications, operating experience indicating that Conditions/Required Actions/Surveillance Requirements could be improved, changes in facility conditions, or changes in facility mission etc. An effective change implementation process is essential to ensuring compliance with 10 CFR 830.202(a), "The contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility must establish and maintain the safety basis for the facility."

Effectively Implementing Change

The PFP has developed a checklist driven process that is used to implement DSA/TSR change. The process ensures that a complete package documenting readiness to implement is brought to the Plant Review Committee for concurrence with readiness to implement actions before the changes are implemented in the field.

Background

In 1994, the PFP was the first nuclear facility on the Hanford site to implement a DOE-Order 5480.22 compliant TSR document. A detailed readiness assessment-like process was used to transition the facility from the pre-1994 Operational Safety Requirements and into the 5480.22 compliant TSRs. The transition document provided a comprehensive and valuable "snapshot in time" demonstrating implementation of and compliance with the new TSRs. However, the process for maintaining TSR compliance documentation and implementation of future Safety Basis change was not well defined. From 1994 to 2004, three major PFP Final Safety Analysis Report revisions and thirty-five TSR revisions were implemented using a process that was generally documented on a single page checklist completed by a single person. This unrefined Safety Basis change process resulted in numerous oversight and self identified Findings related

to requirement changes not being incorporated, or being inadequately/improperly incorporated, into field-level compliance procedures. The unrefined process ultimately resulted in at least one TSR violation.

Implementation Process Improvement

In response to the recognized change implementation shortcomings, Fluor Hanford established the Implementation Validation Review (IVR) process and issued a site wide procedure titled "Safety Basis Implementation and Maintenance." The primary objectives of the IVR process are to:

- Verify that the DSA/TSR controls and requirements are incorporated into facility documents and work instructions;
- Verify that facility personnel are knowledgeable of DSA/TSR controls and requirements; and
- Verify that DSA/TSR controls will be adequately implemented.

Essential elements of the Safety Basis Implementation and Maintenance include implementation plans, IVR checklists, and compliance matrices.

Implementation Plans and IVR Checklists

The safety basis implementation plan provides a process to ensure the plant hardware, management systems, and personnel are ready to implement the requirements of the safety basis. It also includes the means to validate the implementation of the safety basis change prior to its implementation/transition date. The plan helps to ensure the appropriate safety basis supporting documents have been reviewed against the safety basis and all required changes to these documents have been completed and are ready to issue. The IVR checklist provides for documentation of the reviews that were performed to determine readiness to implement the safety basis.

Compliance Matrices

The safety basis compliance matrix tracks commitments from the facility DSA/TSR and the DOE-issued Safety Evaluation Report to their implementing procedures and processes. The compliance matrix serves as a convenient document during facility performance assessment activities and performance of unreviewed safety question determinations.

The compliance matrix or matrices may be maintained as spread sheets, databases, or word processor tables. All of these formats are workable. To be of real value, the compliance matrix or matrices must be sufficiently detailed and maintained up-to-date. The compliance matrix is the starting point in identifying documents affected by safety basis changes. The compliance matrix oftentimes becomes the only comprehensive record of disposition of Safety Evaluation Report Conditions of Approval (COA's) and/or technical direction.

PFPP's Integrated Safety Basis Change Implementation Plan/IVR Checklist Process

PFPP has chosen to integrate the safety basis change implementation plan, and the IVR checklist into a single safety basis change process and document that satisfies the requirements of the site Safety Basis Implementation and Maintenance procedure.

Essential Elements to Successful Change Implementation

Approximately three years of refining the safety basis change implementation process has resulted in identification of a number of elements that are essential to successful change implementation. These elements are:

- Application of graded approach to the complexity of the implementation plan.

Fluor's Safety Basis Implementation and Maintenance procedure defines three levels of safety basis change.

- **Major Changes.** Multiple changes, physical alterations of credited components, changes in methods used to demonstrate operability of TSR controls. Major changes could potentially affect the ability to comply with the safety basis or involve the implementation of a new safety basis.

A major change would typically involve a management readiness assessment like review. The scope and contents of an implementation plan/IVR for a major change is reviewed and approved by the Plant Review Committee.

- **Moderate Changes.** One or more complex changes or numerous changes to credited controls or control parameters involving safety class or safety significant items or TSR operating limits or administrative controls.

A moderate change typically requires at least two individuals, one of which should be from an independent oversight organization (e.g., Quality Assurance). The scope and contents of an implementation plan/IVR for a moderate change are also reviewed and approved by the Plant Review Committee.

- **Minor Changes.** One or more simple changes to a credited control or control parameter involving safety class or safety significant items or TSR operating limits or administrative controls. This also includes the deletion of credited controls (e.g., as a result of deactivation or decommissioning activities).

A minor change implementation is typically limited to review by two individuals assigned by the project. The scope and contents of an implementation plan/IVR for a minor change is approved by the facility Operations Director or delegate.

➤ Management ownership of the implementation process.

The facility manager is responsible for maintaining the safety basis. The facility manager or delegate:

- Concurs with the assigned change level (i.e., Major, Moderate, Minor).
- Concurs with the scope of and level of detail in the implementation plan/IVR. This concurrence is delegated for minor changes.
- Assigns the individuals responsible for completing the implementation plan/IVR.
- Assigns work priorities to organizations that have actions to complete within the implementation plan.

➤ Early planning of scope/detail based on safety basis change level assignment.

Allow sufficient time to complete implementation actions. Completion of some actions, such as training or equipment modifications, may take longer than originally anticipated due to availability of personnel (shift work, vacations, etc.).

- For major changes, implementation plan development should start concurrently with facility approval of the safety basis and no later than upon submittal of the change package to DOE for approval.
- For moderate changes, implementation plan development should start no later than resolution of any DOE review comments and drafting of the Safety Evaluation Report.
- For minor changes, implementation plan development typically starts upon receipt from DOE of the change approving SER.

Reviews, Document Changes, and Other Actions to Include in the Implementation Plan

PFP's implementation plan process has identified numerous categories of reviews, document changes, and other actions such as training and work planning that must be considered. These include:

- Active Justifications for Continued Operation and open Unreviewed Safety Question Determinations, Unreviewed Safety Question process categorical exclusions (CX's).
- Criticality Safety and Fire Hazard Analyses documents.
- Safety Basis compliance matrix or matrices.
- Operational aids such as status boards, shift orders, other operator aids, recovery plans.
- Engineering documents such as drawings, system description documents, operating specification documents, safety equipment list.
- Work planning items such as job hazard analyses, work packages with affected documents within or that involve affected equipment.

- Emergency preparedness documents such as the emergency preparedness hazards assessment, building emergency plans, and other emergency response procedures.
- Administrative and technical procedures.
- Training to the safety basis change(s). This category includes a training needs analysis to determine the scope/delivery of the training and the required audience, development of the training package, delivery and documentation of the training, and evaluation of any affected existing training packages (e.g., operator or engineer training/qualification/certification modules) that require modification.
- Consulting with involved management and organizational groups to identify any “gaps” in the implementation plan, such as additional documents that might not have been identified for change.
- Post implementation punch lists and action tracking system entries for items that will not be completed before declaration of readiness for change implementation .
- Log book entries to notify responsible personnel when the implementation process is entered, and then again when implementation readiness is declared and implementation effective date.
- Assembling an “evidence book” of completed actions. This book is actually a three ring binder containing copies of all completed documented changes, implementation plan review comments, e-mails to others documenting requests to complete actions, replies documenting completed actions, log book entries, completed training actions, etc.
- Obtaining concurrence from the Plant Review Committee on readiness to implement.
- Coordinating roll-out of the revised safety basis and affected documents. Some tasks may need to include a “time out” or be deferred while obsolete procedures are removed from the field or work package and replaced with ones updated to reflect the revised safety basis.
- Verification that, after readiness declaration, all affected document changes are issued in a timely manner.

Disposition of a Completed Implementation Plan

The completed implementation plan is issued as a controlled engineering document for records retention purposes. Record copies of the documents that were changed as part of implementation are retained as required by the site records management system. However, the populated “evidence book” and a hard copy of the completed implementation plan are retained in plant for easy future reference. These retained copies are especially useful when a safety basis change such as a Justification for Continued Operation must be closed out or “unimplemented”.

Benefits from Using the Refined Safety Basis Change Implementation Process

As a direct result of using the refined safety basis change implementation plan/IVR process, the PFP has:

1. Reduced the number of oversight findings of documents not being current with the approved safety basis.
2. Reduced the number of work packages and work procedures rendered unworkable due to safety basis changes not being incorporated into them.

3. Improved safety basis change training delivery process. Target audiences requiring training are identified through an analysis of training needs that are specific to change packages.
4. Improved the accuracy of continuing training packages by ensuring that they are reviewed and revised to reflect safety basis changes.
5. Reduced the potential for safety basis change induced PISA's and TSR violations.