

**Independent Oversight Review
of the Hanford Site
CH2M Hill Plateau Remediation Company
Implementation Verification Review Processes**



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**Office of Safety and Emergency Management Evaluations
Office of Enforcement and Oversight
Office of Health, Safety and Security
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Acronyms

CFR	Code of Federal Regulations
CHPRC	CH2M Hill Plateau Remediation Company
CRAD	Criteria, Review and Approach Document
DOE	U.S. Department of Energy
DOE-RL	Richland Operations Office
DSA	Documented Safety Analysis
FY	Fiscal Year
GP	Good Practice
HSS	Office of Health, Safety and Security
IVR	Implementation Verification Review
LOI	Line of Inquiry
OFI	Opportunity for Improvement
RA	Readiness Assessment
SAC	Specific Administrative Control
SBIP	Safety Basis Implementation Plan
SMP	Safety Management Program
TSR	Technical Safety Requirement

Independent Oversight Review of the Hanford Site CH2M Hill Plateau Remediation Company Implementation Verification Review Processes

1.0 PURPOSE

This report documents the independent review of implementation verification review (IVR) processes at the Hanford Site CH2M Hill Plateau Remediation Company that were conducted by the Office of Enforcement and Oversight (Independent Oversight), which is within the U.S. Department of Energy (DOE) Office of Health, Safety and Security (HSS). The onsite review was performed by the HSS Office of Safety and Emergency Management Evaluations from August 13 to 17, 2012, and was carried out within the broader context of an ongoing program of assessments of the execution of IVRs at DOE sites with hazard category 1, 2, and 3 nuclear facilities. The overall purpose of these Independent Oversight reviews is to evaluate the processes and methods used for verifying and re-verifying implementation of new or substantially revised safety basis hazard controls. The objective of this assessment was to evaluate the extent to which the site management and operating contractor, CH2M Hill Plateau Remediation Company (CHPRC), has developed and employed appropriate methods for verifying implementation of safety basis hazard controls. Independent Oversight's assessment of the independent implementation verification processes of the DOE Richland Operations Office (DOE-RL) is documented in a separate report.

2.0 BACKGROUND

Subpart B of Title 10 Code of Federal Regulations (CFR) 830.201, *Performance of Work*, states, "A contractor must perform work in accordance with the safety basis for a hazard category 1, 2, or 3 DOE nuclear facility and, in particular, with the hazard controls that ensure adequate protection of workers, the public, and the environment." In addition, 10 CFR 830, Subpart A, *Quality Assurance Requirements*, establishes requirements for conducting activities that may affect safety at these facilities, including performing work in accordance with hazard controls, using approved instructions or procedures, conducting tests and inspections of items and processes, and independently assessing the adequacy of work performance.

In February 2008, the Defense Nuclear Facilities Safety Board requested that DOE evaluate the need to conduct "independent validations on a recurring basis" to ensure that facility equipment, procedures, and personnel training related to safety basis controls have not degraded over time. In response, the Department conducted an evaluation that led to the conclusion that the existing requirements for implementation of safety controls and DOE policy for oversight of the implementation of nuclear safety requirements were appropriate. The evaluation also concluded that Departmental directives contained no explicit requirement to validate safety basis hazard controls, so the Department committed to develop guidance on the validation of safety controls and to add that guidance to its directives.

A DOE working group developed a "best practices guide" for the independent validation of safety basis controls. In November 2010, the guidance for performing IVRs was incorporated in DOE Guide 423.1-1A, *Implementation Guide for Use in Developing Technical Safety Requirements*, Appendix D, *Performance of Implementation Verification Reviews (IVRs) of Safety Basis Controls*.

3.0 SCOPE

At the Hanford Site, CHPRC provides onsite management and operations to accomplish DOE and Office of Environmental Management strategic and long-term general goals. CHPRC is the prime contractor for the environmental cleanup of the Hanford Site, including remediation of the Central Plateau and groundwater across the 586-square-mile site. The work involves, for example, cleaning up contaminated groundwater plumes, removing highly radioactive “sludge,” from storage basins, and decommissioning and demolishing the Plutonium Finishing Plant. For this review, Independent Oversight assessed the establishment and execution of CHPRC processes and activities for verifying the implementation of changes to safety basis hazard controls. This scope is consistent with completion of Objectives 1 and 2 in the HSS Criteria, Review and Approach Document (CRAD) HSS CRAD 45-39, Rev. 1, *Implementation Verification Review of Safety Basis Hazard Controls: Inspection Criteria, Activities, and Lines of Inquiry*. The objectives were to determine whether:

- Processes have been established that provide assurance that safety basis hazard controls are maintained and hazard control changes are correctly implemented.
- CHPRC and DOE-RL have developed and implemented appropriate methods for performing IVRs or similar reviews.

The assessment was accomplished by reviewing the documentation that establishes and governs the Hanford Site and DOE-RL IVR processes (for example, work instructions, procedures, forms, and checklists) and interviewing key personnel responsible for developing and executing the associated practices.

4.0 RESULTS

Objective 1: Processes have been established that provide assurance that safety basis hazard controls are maintained and hazard control changes are correctly implemented.

Independent Oversight reviewed the procedures and processes that CHPRC has established to implement and maintain the safety basis hazard controls at the Hanford Site. The review was conducted to determine whether these processes and/or procedures include an independent IVR or similar process for examining the implementation of new or revised safety basis documents. The review also assessed the processes and procedures to determine whether they contain an appropriate level of planning and formality for re-verification of safety basis hazard controls and for verification of the implementation of safety basis requirements prior to the startup of new or modified facilities with new or revised safety basis documents.

CHPRC’s safety basis implementation procedure appropriately addresses the planning and conduct of IVRs as part of the safety basis change process, including responsibilities associated with each process step. The procedure includes sections that address IVRs, the safety basis compliance matrix, the safety basis implementation plan (SBIP), and contain detailed steps for the IVR process. For an annual update, the safety basis change process incorporates an approach that tailors the SBIP and IVR to only those changes needing DOE-RL approval. The SBIP (including any DOE-RL conditions of approval) is prepared by the cognizant nuclear safety engineer and executed under the facility manager. The facility manager determines whether the change is major or moderate; such changes require a 100 percent line management assessment of implementation. An IVR is also required for all changes requiring DOE-RL approval.

The CHPRC's safety basis implementation procedure also provides a brief overview of the IVR process, instructions for developing and maintaining a safety basis compliance matrix, steps for preparing and executing the formal SBIP, and detailed instructions for performing an IVR. The SBIP includes the actions to complete the safety basis implementation and a description of the IVR process to be conducted. The IVR process uses three overarching objectives: controls are incorporated in facility documents and work instructions, personnel are knowledgeable, and controls and requirements are ready to be implemented. Notably, the IVR process is also applied when a facility is downgraded to below hazard category 3, in order to ensure that the necessary supporting changes and controls are in place. IVRs are designated as major, moderate, or minor using a set of reasonable definitions. A site form is used for completing minor and moderate IVRs, while a major IVR requires a written plan with an appropriate format and content provided in an appendix. As noted, both major and moderate IVRs require the facility to complete a management assessment of implementation prior to the IVRs. The guidance in the procedure appendix appropriately includes example objectives and criteria and several lines of inquiry (LOIs) and activities, though observation of procedure performance is not specifically addressed. The procedure requires independent reviewers; for example, a member of the quality assurance, nuclear safety, or independent assessment group, for major and moderate level IVRs. Independent reviewers oversee the IVR process and select sample elements to "re-review."

For minor or moderate IVRs, reviewers generate an IVR checklist and document any issues, the facility manager determines those that are pre-implementation and completes the required actions, and IVR reviewers complete the checklist when the condition reports are appropriately addressed. The IVR may be completed by a project designee and reviewed by an independent reviewer, whose degree of independence is specified on the form, or the form may be completed by the independent reviewer. The first section of the IVR form lists the document categories being reviewed (for example; documented safety analysis (DSA), technical safety requirements (TSRs), fire hazards analysis, compliance matrix, and procedures) and the second section addresses the completion of training appropriate to the change.

CHPRC has also developed a transportation safety basis implementation procedure, PRC-PRO-TP-40436. This procedure includes provisions for developing a compliance matrix and performing an IVR for implementation of the safety requirements for a transportation activity. In this case, the compliance matrix and IVR checklist are combined and the IVR is completed by an independent assessor. Independence is appropriately defined in the procedure, and the definition of independence in the checklist corresponds to the definition in the procedure. The procedure provides an adequate set of instructions for completing the documentation but does not specifically address whether the independent reviewer should complete document reviews, conduct interviews or observe work activities. (See Section 6, opportunity for improvement (OFI)-1.)

The safety basis implementation procedure also establishes requirements for periodic re-verification of TSRs and specific administrative control (SAC) implementation. The nuclear safety manager/lead establishes a schedule to complete TSR and SAC re-verification every three years and coordinates with independent organizations to assign assessors and ensure that re-verification is included in the CHPRC integrated evaluation plan. The implementation assessment can be completed as either an independent assessment or a management assessment, as appropriate. The assessments are to use LOIs obtained from the IVR checklist and the TSR LOIs in HNF-22632, *Process Description for Safety Management Program Implementation Verification*, and identified issues are documented in condition reports. Assessment reports are completed as required by the governing assessment procedure. (See Section 6, good practice (GP)-1)

HNF-22632 provides CHPRC with a process for ongoing verification of the implementation of safety management programs (SMPs), following initial verification through the IVR or readiness review process. The process description identifies each implementing document for the key attributes identified

in the standard (site) SMP description document. The process is implemented through the assessment and issues management programs and establishes a collective approach to assessing the common attributes of the SMPs specified in the individual facility TSRs. An attachment contains general LOIs and criteria based on the generic program requirements, which may need some modification to address specific facility requirements. Functional areas include, for example, fire protection, radiation protection, quality assurance, work control, nuclear safety, criticality safety and emergency preparedness. Each functional area is to be verified on a triennial basis. The nuclear safety functional area includes LOIs and criteria to verify that facility assessments of TSR implementation are being completed per PRC-PRO-NS-8317, a TSR compliance matrix is established, and TSR controls are properly implemented in field work. The SMP assessment can be also expanded to include SAC implementation in accordance with the DOE standard.

CHPRC has a startup readiness procedure and an accompanying guide that provide excellent overall guidance for establishing and demonstrating readiness. The startup readiness procedure incorporates the requirements of DOE Order 425.1D and includes process instructions for a number of readiness review areas; including, the level of review, preparation process, planning requirements and guidance, depth and breadth of reviews, approval requirements, basis requirements for conducting reviews, response to findings, and documentation. The procedure addresses operational readiness reviews and three levels of readiness assessment (RA) depending on the approval authority. It also provides appropriately for developing a plan of action and in some cases an activity readiness plan. The instructions for the plan of action and readiness reviews allow for graded activities and appropriate levels of documentation based on the assessed level of the readiness review. The most formal reviews involve the use of criteria review and approaches. The startup readiness guide references the use of independent reviews in determining the scope of the operational readiness review plan of action, although it does not mention IVRs specifically.

The *CHPRC Assessment Program Plan* describes the company's oversight and assessment model and provides a suite of tools to support the continued verification of safety basis hazard control implementation. These include: independent assessments, management assessments, surveillances (independent assessment targeted to a work activity), work site assessments, the management observation program, worker assessments, and program assessments (for example, for SMPs). The program includes an adequate level of planning using the integrated evaluation plan. The subordinate implementing procedures provide instructions for an appropriate level of planning and formality for the assessment activity and a sufficient level of documentation.

Objective 2: The contractor and site office have developed and implemented appropriate methods for performing IVRs or similar reviews.

Independent Oversight reviewed CHPRC IVR methods to determine whether they adequately address the implementation of safety basis hazard controls. The review also examined whether the review criteria and approaches are appropriately tailored to the hazard controls being verified and sufficient for the scope of the review, and whether the review activities are sufficiently well documented (per procedures) to support the conclusions of the review. Review activities included reading the completed management assessment reports and IVR checklists, conducting meetings and interviews with responsible personnel at several facilities (including, for example, the Plutonium Finishing Plant, Waste Encapsulation Storage Facility, and 105-KW Basin), and performing tabletop walkthroughs of selected IVR records.

The safety basis changes included in the Independent Oversight review were appropriately classified as moderate or minor in scope in accordance with the CHPRC procedure. Facility personnel had prepared and executed implementation plans using the company-wide procedure and, in some cases, a local facility procedure. The implementation plans and management assessments (performed by the facility to confirm readiness for implementation prior to the IVR) were sufficiently detailed, typically using the IVR

checklist outline to identify all the required document changes and verify that the procedure revisions were ready for issue. Preparation of the implementation plans is supported by compliance matrices that provide a link between the safety basis hazard control and the implementing document. The implementation plans also included training needs analyses that generally identified the need to provide briefings to facility personnel and to revise the safety basis training documentation. The implementation plans appropriately capture implementation requirements related to conditions of approval. The completed implementation plans and management assessments provided the basis for the initial completion of the IVR checklist. For a moderate change, the IVR checklists were then completed by project personnel who were selected for their independence from the implementation; for example, a quality assurance staff member, facility engineering manager and maintenance manager. Review of the completed checklists along with discussions and tabletop reviews of the completed implementation documentation provided evidence that the completed IVRs were thorough and probing.

Although the implementation process is thoroughly executed and documented, a few OFIs were identified. For example, the IVRs often do not include observations of personnel performing the revised implementing procedures, which are not emphasized in the safety basis implementation procedure. Additionally, the training needs analyses do not address whether facility personnel should have training to support implementation of the revised documents. Although a procedure revision requires verification and validation of the procedure, some hazard control changes have been implemented through procedure changes that do not require validation. Finally, although the IVR checklist provides a sound framework for recording completion of IVR activities, the documentation is not always sufficient to allow an independent technical reviewer who was not involved in the review to understand how the verification was performed. (See Section 6, OFI-2, OFI-3, and OFI-4)

The CHPRC project facilities have conducted re-verification of hazard controls as required by the safety basis implementation procedure. Facilities in the Waste and Fuels Management Project typically conduct a triennial assessment of the implementation of all TSR controls. At the Plutonium Finishing Plant, re-verification is accomplished over the three year period by reviewing selected requirements each quarter; using a scheduling matrix that is well maintained by facility personnel. At the 100K facilities, annual assessments of TSR controls have been performed; however, a recent management assessment conducted by the Nuclear Operations Support and Compliance Group identified that not all the TSRs are being reviewed as required by the procedure. Re-verification of TSR control implementation by the facilities is typically documented in a work site assessment report. A sample of completed reports, which are recorded on an assessment report form, was found to be generally thorough and well written. The “description of assessment” section provides an adequate description of the assessment activities and the discussion in the “results” section adequately supports the conclusions.

CHPRC recently conducted an RA to support knockout material processing at the 105KW Basin. Changes to the facility safety basis hazard controls to support the new processing effort were implemented using a SBIP and facility IVR, which were followed by an independent management assessment conducted by the Nuclear Operations Support and Compliance Group. The management assessment thoroughly documented the assessment plan, methodology and results. Each IVR element in the checklist was evaluated and discussed to support the conclusion that the facility was prepared to support the change to the safety basis. The results of the IVR were incorporated into the implementation plan for the RA, which credited the IVR in establishing the scope of the review, and included an appropriate set of CRADs and LOIs. The RA report contained a complete description of the RA activities and conclusions, including verification that the IVR was completed. Overall, the report supported the conclusion that readiness was demonstrated. Although the preparation for the new operations and the RA included demonstration of the implementing procedures, the reports did not indicate that the implementation of the new SAC was observed. A subsequent management assessment identified that the

safety basis compliance matrix did not include all the procedures necessary to implement the SAC, even though the procedures are in place. (See Section 6, OFI-2)

In addition to the assessments conducted by the facilities, the Nuclear Operations Support and Compliance Group conducts scheduled management assessments of the SMP governing TSR implementation. These assessments include both programmatic reviews of the facilities' and independent reviews of TSR implementation to determine the facility program's effectiveness. The assessment reports and interviews demonstrate that the assessments are thorough and critical, identifying both findings and opportunities for improvement. The reports are well written, and the description of the lines of inquiry, assessment methodology, and results is sufficiently detailed to support the assessment conclusions.

A recently chartered Nuclear Safety and Performance Evaluation Board, also provides internal, independent oversight of the facilities. The board has committed to review each of the CHPRC projects by the end of the calendar year and has completed reviews at two projects to date. These team reviews use CRADs with detailed LOIs for each of the assessed functional areas, including nuclear safety. The reports are thorough and briefly describe the overall assessment of each of the functional areas. The discussion for each area addresses in detail the findings and observations made in that area.

5.0 CONCLUSIONS

CHPRC procedures and processes provide a well-structured method for implementing changes to the facility safety basis hazard controls, including conduct of IVRs that are graded to the evaluated significance of the changes. Verification methods adequately address implementation of conditions of approval in the safety evaluation report or safety basis approval letter. The procedure and processes specifically include re-verification of safety basis hazard controls at a defined interval and appropriately involve both the facilities and the central nuclear safety organization; the re-verification process is implemented by the facilities and overseen by the Nuclear Operations Support and Compliance Group. The processes for startup and restart that include new or revised safety basis documents incorporate IVRs into the contractor's readiness activities. Overall, the contractor processes and procedures include an appropriate level of planning and formality in the preparation for and conduct of IVRs and readiness reviews. Independent Oversight review of documentation and discussions with CHPRC personnel revealed that personnel are familiar with the IVR processes and careful in their application. Review criteria and approaches have been appropriately tailored to the hazard controls being verified and are generally sufficient for the scope of the review. Results of IVR activities are mostly well documented and the discussions support the conclusions of the reviewers, although the use of checklists does not always lead to clear documentation.

For the most part, re-verification of hazard controls has been accomplished on a periodic basis through a combination of facility and corporate assessments. Opportunities for improvement exist in expanding the observation of actual procedure performance and evaluation of conduct of training specific to the procedures as part of the IVR process. Overall, the implemented verification methods adequately address the implementation of safety basis hazard controls.

6.0 GOOD PRACTICE AND OPPORTUNITIES FOR IMPROVEMENT

The DOE-RL procedure for oversight of contractors includes three levels of issues. A concern represents a programmatic breakdown or widespread problem and a finding represents a noncompliance with requirements. Observations are considered conditions or practices that do not provide or promote effective protection of health and safety, but are not linked directly to compliance. The RL usage of

observation approximates the Independent Oversight definition of an OFI, which according to Independent Oversight protocols is a “suggestion offered by the Independent Oversight appraisal team that may assist line management in identifying options and potential solutions to various issues identified during the conduct of the appraisal.”

During the review, Independent Oversight identified the following opportunities for improvement and a good practice, as characterized in accordance with the DOE-RL oversight procedures. These potential enhancements are not intended to be prescriptive or mandatory. Rather, they are offered to the site to be reviewed and evaluated by the responsible line management organizations and accepted, rejected, or modified as appropriate, in accordance with site-specific program objectives and priorities.

Good Practice

GP-1: The safety basis implementation procedure establishes requirements for periodic re-verification of TSRs and SAC implementation, which are implemented by the facilities and overseen by the central Nuclear Operations Support and Compliance Group.

Opportunities for Improvement

OFI-1: Consider revising the transportation safety basis implementation procedure to explicitly address the use of document reviews, interviews or work observations as part of the IVR.

OFI-2: Consider revising the safety basis implementation procedure to stress field observation, whenever possible, of the performance of procedures that implement hazard controls as part of the IVR process.

OFI-3: Evaluate the need to adjust the safety basis implementation process to include training on specific procedures (and revisions) that implement hazard controls.

OFI-4: Consider reviewing completed IVR checklists periodically and providing feedback to the reviewers to ensure that the documented activities sufficiently support the IVR conclusions.

7.0 FOLLOW-UP ITEMS

Independent Oversight will follow up on the corrective actions resulting from the assessment of the IVR processes and any actions resulting from this assessment as part of its normal operational awareness activities under the site lead program.

**Appendix A
Supplemental Information**

Dates of Review

Onsite Review: August 13-17, 2012

Office of Health, Safety and Security Management

Glenn S. Podonsky, Chief Health, Safety and Security Officer
William A. Eckroade, Principal Deputy Chief for Mission Support Operations
John S. Boulden III, Director, Office of Enforcement and Oversight
Thomas R. Staker, Deputy Director for Oversight
William E. Miller, Deputy Director, Office of Safety and Emergency Management Evaluations

Quality Review Board

William Eckroade
John Boulden
Steven Simonson
Thomas Staker
William Miller
Michael Kilpatrick
George Armstrong
Robert Nelson

Independent Oversight Site Lead for Hanford Site

Jacob F. Wechselberger

Independent Oversight Reviewers

Jacob F. Wechselberger – Lead
Robert Compton
David Odland

Appendix B

Documents Reviewed, Interviews, and Observations

Documents Reviewed

- A-6004-593, CHPRC Procedure Request (Form), Rev. 3
- A-6004-808, CHPRC Implementation Validation Review (IVR) Checklist, Rev. 1
- A-6004-808, CHPRC Implementation Validation Review (IVR) Checklist for Update of the 105-KW Basin Safety Analysis Report and 105-KW Basin Technical Safety Requirements, 4/12
- CHPRC-01547, Implementation of Safety Basis Changes for the SWOC Master Documented Safety Analysis and Technical Safety Requirements Revision 8 and CHPRC Safety Management Programs Revision 8, 12/11
- CHPRC-1202124, Evaluation of the Waste and Fuels Management Project, 5/12
- D&D-2010-WSA-7523, 100K Annual CVDF TSR Compliance Assessment, 9/11
- D&D-2012-MA-11847, Implementation of 105K West Safety Basis Documents for Knock-out Pot (KOP) Product Material Processing, 4/12
- D&D-2012-RA-11635 IP, Readiness Assessment Implementation Plan for Knock Out Pot Material Processing, 2/12
- D&D-2012-WSA-10910, 105KW TSR Surveillance Compliance, 1/12
- D&D-2012-WSA-11014, TSR Procedure and Administrative Control Compliance at 100K West Basin and CVDF, 12/11
- DD-52755, Readiness Assessment Final Report for Knockout Pot Material Processing, 5/12
- FSP-PFP-5-8, 13.3, Safety Basis Requirements Compliance, Rev. 10, Chg. 3, 5/12
- HNF-22632, Process Description for Safety Management Program Implementation Verification, Rev. 7, 7/11
- Management Observation Report, CSB TSR SAC 5.12 Verifications (OP-24-004S), 8/12
- NS-4-005, Safety Basis Document Implementation Plan for the 105-KW Basis Safety Basis Update to Support KOP/MCO Processing, 4/12
- NS-4-019, Plant Review Committee, Rev. 9, Chg. 2, 3/10
- NS-4-030, Implementation Validation Review Process at 100K, Rev. 1, 6/11
- Nuclear Safety and Performance Evaluation of the Waste & Fuels Management Project, 5/12
- PFP-2011-WSA-9241, Safety Management Program Verification: LOIs 17-11-2 and 17-11-3 for 1st Quarter FY TSR Assessment – LCO 3.2.1, SAC 5.11, SAC 5.12, DF 6.1.1/DF 6.1.2, 11/10
- PFP-2011-WSA-9242, Safety Management Program Verification: LOIs 17-11-2 and 17-11-3 for 2nd Quarter 2011 FY TSR Assessment – AC 5.22, AC 5.23, and DF 6.1, 2 /11
- PFP-2011-WSA-9243, Safety Management Program Verification: LOIs 17-11-2 and 17-11-3 for 3rd Quarter 2011 FY TSR Assessment – AC 5.2, AC 5.3, and AC 5.4, 5/11
- PFP-2011-WSA-9244, Safety Management Program Verification: LOIs 17-11-2 and 17-11-3 for 3rd Quarter 2011 FY TSR Assessment – AC 5.6, SAC 5.7, AC 5.9, and SAC 5.18, 7/11
- PRC-GD-OP-11615, Startup Readiness Guide, Rev. 1, Chg. 2, 1/12
- PRC-MP-QA-40092, CHPRC Assessment Program Plan, Rev. 2, 5/12
- PRC-PRO-9769, Surveillance Process, Rev. 2, Chg. 2, 5/12
- PRC-PRO-EN-20050, Engineering Configuration Management, Rev. 0, Chg. 3, 10/11
- PRC-PRO-EN-440, Engineering Documentation Preparation and Control, Rev. 1, Chg. 1, 6/11
- PRC-PRO-IRM-309, Controlled Software Management, Rev. 2, Chg. 0 6/12
- PRC-PRO-MS-589, CH2M Hill Plateau Remediation Company Procedures, Rev. 1, Chg. 7, 3/12
- PRC-PRO-MS-589, CH2M Hill Plateau Remediation Company Procedures, Rev. 1, Chg. 7, 3/12
- PRC-PRO-NS-700, Safety Basis Development, Rev. 0, Chg. 9, 8/11

- PRC-PRO-NS-8317, Safety Basis Implementation and Maintenance, Rev. 1, Chg. 1, 3/12
- PRC-PRO-OP-055, Startup Readiness, Rev. 2, 1/12
- PRC-PRO-QA-052, Issues Management, Rev. 5, 5/12
- PRC-PRO-QA-246, Management Assessment, Rev. 3, Chg. 1, 8/11
- PRC-PRO-QA-40090, Work Site Assessment, Rev. 2, Chg. 2, 5/12
- PRC-PRO-QA-40091, Integrated Assessment Planning, Rev. 3, 8/11
- PRC-PRO-QA-9662, Independent Assessment Process, Rev. 2, Chg. 2, 5/12
- PRC-PRO-TP-40436, Transportation Safety Basis Implementation, Rev. 0, Chg. 0, 5/12
- PRC-STD-NS-8739, CHPRC Safety Analysis and Risk Assessment Handbook, Rev. 0, Chg. 1, 8/11
- SHS&Q-2011-MA-9655, Management Assessment of the Surveillance and Maintenance Decontamination and Decommissioning Technical Safety Requirements Implementation, 3/11
- SHS&Q-2011-MA-9657, TSR Implementation Assessment of the Waste and Fuels Management Project, 6/11
- SHS&Q-2012-MA-10768, TSR Implementation Management Assessment PFP Project, 3/12
- SHS&Q-2012-MA-10771, 100K Technical Safety Requirements, Safety Program Key Attribute 17-11, 8/12
- SHS&Q-2012-MA-9659, TSR Implementation Assessment of Transportation Safety, 10/11
- Sludge Treatment Project, Knock Out Pot (KOP) Disposition Sub-project, KOP Processing System (KPS) Startup Oversight Report, 6/12
- WFMP-2012-MA-10970, ISA DSA Implementation, 11/11
- WFMP-2012-MA-11774, WESF DSA Annual Update Implementation, 3/12
- WFMP-2012-MA-11775, CSB FSAR Annual Update Implementation, 4/12
- WFMP-2012-WSA-11023, Triennial Assessment of TSR Implementation – CP S&M Facilities, 1/12
- WFMP-NS-11-MA-005, CSB FSAR Annual Update Implementation, 12/10
- WFMP-NS-11-WSA-9419, 2010 Technical Safety Requirement Implementation Self-Assessment, 12/10

Interviews

- Nuclear Operations Support & Compliance, Lead, Safety Analysis
- Nuclear Operations Support & Compliance, Lead,
- Nuclear Operations Support & Compliance, Lead, Waste Encapsulation Storage Facility
- Nuclear Operations Support & Compliance, Lead, Waste Facilities Management Project
- Nuclear Operations Support & Compliance, 100K (2)
- Facility Manager, Plutonium Finishing Plant
- Safety Basis and Technical Support, Plutonium Finishing Plant
- Systems Engineer, Plutonium Finishing Plant
- Engineering Manager, Plutonium Finishing Plant
- CHPRC Engineering, System Engineering Program Lead
- Engineering Manager, Waste Encapsulation Storage Facility
- Facility Manager, Waste Encapsulation Storage Facility
- Engineering Manager, 100K
- Maintenance and Work Control Manager, 100K
- Engineer, 100K
- Engineering Manager, Solid Waste Operations
- Nuclear Safety and Performance Evaluation Board Director
- Nuclear Safety and Performance Evaluation Board Member

Observations

- Tabletop Review of IVR Documentation