Office of Health, Safety and Security
Office of Enforcement and Oversight

Independent Oversight Review of the Implementation Verification Review Processes at the Savannah River Site Environmental Management Nuclear Facilities

September 2011

Office of Safety and Emergency Management Evaluations
Office of Health, Safety and Security
U.S. Department of Energy

Independent Oversight Review of the
Implementation Verification Review Processes at the
Savannah River Site Environmental Management Nuclear Facilities

Table of Contents

Independent Oversight Review of the
Implementation Verification Review Processes at the
Savannah River Site Environmental Management Nuclear Facilities

Acronyms

CRAD	Criteria, Review and Approach Document
CSTF	Concentration, Storage and Transfer Facilities
DOE	Department of Energy
DOE-SR	DOE Savannah River Operations Office
DSA	Documented Safety Analysis
DWPF	Defense Waste Processing Facility
EM	Office of Environmental Management
FR	Facility Representative
HSS	Office of Health, Safety and Security
IVR	Implementation Verification Review
LDD	Linking Document Database
N&CSE	Nuclear & Criticality Safety Engineering
NNS	Nuclear Safety Specialist
NMED	Nuclear Material Engineering Division
OLO	DOE-SR Office of Laboratory Oversight
OFI	Opportunity for Improvement
SAC	Specific Administrative Control
SBIP	Safety Basis Implementation Plan
SRNL	Savannah River National Laboratory
SRNS	Savannah River Nuclear Solutions, LLC
SRR	Savannah River Remediation, LLC
SRS	Savannah River Site
SSO	Safety System Oversight
TSR	Technical Safety Requirement
WDED	Waste Disposition Engineering Division

Independent Oversight Review of the
Implementation Verification Review Processes at the
Savannah River Site Environmental Management Nuclear Facilities

1.0 PURPOSE

The Office of Enforcement and Oversight (Independent Oversight) within the Office of Health, Safety and Security (HSS), conducted an independent review of the Implementation Verification Review (IVR) Processes at Savannah River Site Environmental Management Nuclear Facilities. The overall objective of the Independent Oversight IVR review process includes verification that contractors and site offices have developed and implemented appropriate methods for performing IVRs (including direction for scheduling and conducting IVR activities) and measurement of the adequacy and consistency of those IVR processes.

The independent review was conducted at the Savannah River Site during the periods of June 27-July 1, 2011 and July 11-15, 2011, by Independent Oversight in coordination with the U.S. Department of Energy (DOE), Savannah River Operations Office (DOE-SR), Office of Safety and Quality Assurance, Technical Support Division.

2.0 BACKGROUND

10 CFR 830.201, *Performance of Work*, requires that the operating contractors of these facilities "…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 the hazard controls, using approved instructions or procedures, conducting tests and inspections of items and processes, and implementing independent assessments to measure the adequacy of work performance.

In February 2008, the Defense Nuclear Facility 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 there was no explicit requirement to validate safety basis controls, so the Department committed to develop guidance on the validation of safety controls and to add that guidance to the Department's directives.

A DOE working group developed a "best practices guide" for the independent validation of safety basis controls. This guide, together with expectations for its implementation, was provided to National Nuclear Safety Administration and EM sites by joint memorandum from the Assistant Deputy Administrator for Nuclear Safety and Operations and the Deputy Assistant Secretary of Safety Management, respectively, in March 2009. The memorandum directed the sites to compare their current processes to the practices in the guide and to adjust site processes; if appropriate (this memorandum was not formally transmitted with DOE-SR expectations to SRNS or SRR). The memorandum indicated that after a (trial) period of six months, a path forward would be determined and requested feedback on the best practices from the sites. In November 2010, the guidance for performing IVRs was incorporated into DOE G 423.1-1A, *Implementation Guide for Use in Developing Technical Safety Requirements*, Appendix D, *Performance*

of Implementation Verification Reviews (IVRs) of Safety Basis Controls.

The Department of Energy (DOE) Office of Environmental Management (EM) provides direction and oversight of the design and operation of its nuclear facilities at the SRS through DOE-SR. DOE-SR oversees the operation of twelve nuclear facilities conducting environmental management activities at SRS and the Savannah River National Laboratory (SRNL). Each of these nuclear facilities has been categorized as Hazard Category 2 pursuant to DOE STD 1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23*, *Nuclear Safety Analysis Reports*. Within DOE-SR, three line management organizations exercise responsibility for these nuclear facilities and activities. The Waste Disposition Engineering Division (WDED), within the Waste Disposition Project Directorate, is responsible for oversight of the contractor that manages and operates the Concentration, Storage, and Transfer Facilities (CSTF); Defense Waste Processing Facility (DWPF); Saltstone, and Solid Waste Management Facility (SWMF). The Office of Laboratory Oversight (OLO) exercises line management responsibility for the SRNL, and the Nuclear Material Engineering Division (NMED), within the Nuclear Material Stabilization Project Directorate, is responsible for oversight of the remaining Hazard Category 2 nuclear facilities, including H-Canyon, F-Canyon, HB-Line, L Area, and K Area.

Under a DOE management and operation (M&O) contract, Savannah River Nuclear Solutions, LLC (SRNS) operates ten of the Hazard Category 2 nuclear facilities; including HB-Line, H Canyon, L Area, K Area, SWMF, and SRNL. Savannah River Remediation, LLC (SRR), a company formed by URS, Bechtel, CH2M HILL, and B&W TSG, manages and operates the liquid waste programs and facilities; including CSTF, DWPF, and the Saltstone facilities.

3.0 SCOPE

Independent Oversight reviewed DOE-SR processes for oversight of the implementation of safety basis hazard controls established by SRNS and SRR and the establishment and execution of IVR processes by the two operating contractors. The review assessed the extent to which Objectives 1 and 2, and to a lesser extent Objectives 3 and 6, of the HSS Criteria, Review and Approach Document (CRAD), HSS CRAD 45-39, *Implementation Verification of Safety Basis Controls*, were met. A limited set of criteria are addressed in Objectives 3 and 6 as the result of opportunities that were present during the period of on-site review. The scope of the assessment included review of documents that establish both the site office and operating contactor IVR processes, examination of documentation of completed IVR activities, observation of performance of IVR activities by contractor and site office personnel, and independent verification (by sampling) of the implementation of some safety basis controls.

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.

Savannah River Nuclear Solutions, LLC and Savannah River Remediation, LLC

Independent Oversight reviewed the procedures and processes established by SRNS and SRR to implement and maintain the safety basis hazard controls at their facilities. The review was conducted to determine if contractor processes and/or procedures include an IVR or similar process for the implementation of new or revised safety basis documents. The review also assessed these processes and procedures to determine if they contained 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. At the site level, both SRNS and SRR have established appropriate processes to confirm that safety basis hazard controls are in place following approval of new or revised safety basis documents. Manual 11Q, *Facility Safety Document Manual*, governs the preparation and implementation of safety basis documents for both SRNS and SRR. Procedure 1.01, *Generation, Revision, Review, and Approval of Safety Basis Documents*, establishes a 90 day time limit to implement approved documented safety analyses and technical safety requirements and identifies the potential need for an implementation plan to adequately define the scope and schedule of implementation activities. Procedure 1.11, *Safety Basis Requirements Implementation*, which applies to Hazard Category 1, 2, & 3 facilities, contains instructions for implementing new or revised safety basis controls. This procedure assigns overall responsibility for implementation; including implementing safety basis requirements, approving safety basis implementation plans (SBIPs), assigning a responsible manager, and consulting with responsible managers prior to declaring readiness to the facility manager. The process addresses a spectrum of implementation activities; including steps to: identify, prepare, review, approve, and schedule implementing documents (listed in the linking document database (LDD)) and modifications; evaluate and document surveillance requirement implementation; evaluate training needs and conduct training, and validate completion of activities. The procedure provides a summary discussion for each of the major process steps and includes attachments that discuss plan topics and implementation considerations. In addition, Appendix D to the 11Q Manual provides some examples of implementation plans.

Procedure 1.06 of the 11Q Manual, *Linking Documents*, provides additional instructions that relate to the implementation verification process. It defines the site's requirements to control development, review, approval, revision and maintenance of linking documents, which list safety basis requirements and identify the documents that implement those requirements. This procedure also applies to the Hazard Category 2, and 3 facilities operated by both SRNS and SRR. Facility engineering is responsible for implementation of the linking document through a coordinator and the Safety Basis Regulatory Authority is assigned to assist facility engineering in identifying requirements and implementing documents. The procedure provides instructions for identification of requirements, administration, configuration control, and administrative databases, which can be either paper or electronic. An attachment lists the minimum required set of information in the linking document, which is updated as part of the safety basis implementation process.

At the facility level, SRNS has an optional, recommended procedure, A-305, *Development and Implementation of Safety Basis Requirements*, to govern the new or revised safety basis implementation at some, but not all of its facilities. This procedure applies to H-Area Material Disposition and F-Area Deactivation and interviewees indicated that the procedure is also used by K Area personnel. As in the site procedure, facility management is responsible for implementing the procedure with support from facility engineering, operations, support groups and an independent reviewer. The implementation process invokes the development of an SBIP by the Safety Basis Team Leader and addresses both implementation and independent reviews. The composition of the review team is required to be wide enough to cover facility departments and additional supporting departments. Based on review of the changes, related database records, and proposed implementing documents, the review team confirms that the implementation approach is appropriate and changes will be adequately implemented in the field. In addition, the Area Project Chief Engineer may identify an independent reviewer (as required) to verify "adequate implementation of all safety basis document requirements in the implementing documents." Final implementation after approval of the changes is completed by team leader verification that the implementing procedures, documents, and databases are changed and approved and the SBIP is complete. The chief engineer may also direct a "delta change" review by the independent reviewer to verify that final changes made to the draft safety basis documents have been incorporated.

Within SRNS, the Nuclear and Criticality Safety Engineering (N&CSE) group conducts independent assessments of safety basis control implementation as part of its oversight of facility operations in this functional area. For example, the N&CSE calendar year 2011 management assessment plan and schedule includes a sampling (one to two) of specific administrative control (SAC) implementation at each facility using EM assessment criteria (including maintenance and periodic verification). N&CSE also conducts Technical Safety Requirement (TSR) implementation assessments (1/year/facility) that include reviewing the linking document and surveillance records and databases and observing the conduct of surveillances. Each SRNS facility is scheduled for this assessment in the current calendar year.

SRR has also developed processes and procedures for establishing controls based on new and revised safety basis documents. SRR Manual S4, Procedure ENG.02, *Safety Basis Document and Implementation Process*, establishes a process for implementation of new and revised safety basis documents. The procedure assigns responsibilities and provides instructions for developing an implementation checklist. The checklist identifies all the implementing documents impacted by the new or revised safety basis documents and requires the signature of a responsible person to confirm that appropriate changes have been made to these documents. A signature is also required to confirm completion of required training.

SRR procedures also require maintenance of a computerized linking document data base (LDD) to provide a cross reference between design information in safety basis documents and implementing documents that are based on this information. SRR uses the LDD as a tool for development of implementation checklists to facilitate identification and revision of implementing documents. Requirements for maintaining the LDD are included in Manual S4, ADM.42, *Linking Document Data Base*.

In addition to the verification processes discussed above, both SRNS and SRR have procedures or processes in place that result in periodic verification that safety basis controls remain in place, though neither contractor has a specific program in place to track the complete verification of controls over a three to five year period. DOE O 226.1B requires that contractors establish contractor assurance systems to ensure work is performed safely, risks are identified and managed, and systems of control are effective. The site implements these requirements in part through the 12Q Manual, *Assessments Manual*, Procedure SA-1, *Management Assessment*, and Procedure PA-2, *Functional Area Program Performance Analysis*. The Assessments Manual broadly addresses the requirements for verification of safety basis controls through functional area assessments. Also, the linking document procedure in the Safety Basis Manual requires that the linking documents and underlying implementing documents be reviewed annually to assure continuing compliance; a sampling review is acceptable.

In addition to the site procedures, SRR also implements, Manual 1B, Procedure 4.23, *Corrective Action Program,* and Manual S13, Company Level Administrative Procedure 5.2, *Development of the SRR Integrated Assessment Plan*. SRR has applied its contractor assurance system to ensure proper implementation of safety basis documents by requiring triennial reviews of safety basis implementation, annual reviews of linking documents, and annual reviews of TSR SAC effectiveness. During interviews, SRR personnel stated that no independent verification of safety basis controls is conducted at the SRR facilities, although annual assessments of the implementation of SACs and LDDs are conducted. The assessment of SACs is included in the annual assessment schedule to meet the requirement in DOE-STD-1186, *Specific Administrative Controls*, to periodically re-verify these controls. The review of the LDD is scheduled as required by the 11Q Manual.

The 12Q Manual also includes a section with detailed procedures for the planning and conduct of readiness reviews, including both readiness assessments and operational readiness reviews (ORRs). The procedures incorporate the revisions to DOE O 425.1D and apply to both SRNS and SRR. The two

readiness assessment procedures include instructions for determining the level of the readiness assessment, preparing a plan of action, and conducting the assessment. One of the items in the plan of action is a description of the history of IVRs or other reviews. The lines of inquiry are prepared using the guidance in ORR-2, *Operational Readiness Review Planning*, including general guidance for developing lines of inquiry for the core requirements such as safety basis control implementation. In preparing for an operational readiness review, a management self-assessment is also required. The guidelines for achieving and documenting readiness discussed in the procedure include completion of a SBIP and ensuring that the safety documentation, including any changes, are fully implemented prior to beginning the readiness review. ORR-4, *Conduct of the Operational Readiness Review*, contains detailed instructions for completing the contractor ORR, which is based on a sample derived from the lines of inquiry developed per ORR-2.

DOE Savannah River Operations Office

Independent Oversight reviewed processes established by DOE-SR to determine whether these processes adequately assess the contractor's implementation of new and revised safety basis documents and provide sufficient information to confirm the efficacy of contractor processes for the implementation of safety basis requirements.

DOE-SR has established a formal process for reviewing the implementation of hazard controls identified in safety basis documents. Savannah River Implementing Procedure 400, Chapter (SRIP) 421.1, *Nuclear Safety Oversight*, establishes an implementation verification review (IVR) process to determine whether the controls in implementing documents, such as technical safety requirements (TSRs) and facility procedures, are adequate to ensure that nuclear facilities remain within their documented safety and hazard analyses. This procedure, revised in March 2009 to address the IVR, assigns responsibility for the verification process to the line division directors and provides adequate instructions for planning, conducting, and documenting independent reviews of the implementation of new and revised safety basis documents. The described IVR includes the contractor line management assessment, the contractor independent assessment, and the DOE-SR IVR. By procedure, line division directors determine the need, extent, and timing of IVRs based on the quality and results of the contractor IVR and the nature and extent of changes. An assigned team leader prepares and executes the review plan with approval of the division director. The procedure states that a graded approach should be used in applying the process and provides additional guidance for executing the IVR in an attachment. DOE-SR has also developed a criteria, review and approach document (CRAD) to govern the performance of the IVRs required by SRIP 421.1. If followed, the verification process would result in adequate DOE-SR oversight of changes in hazard controls associated with safety basis documentation revisions. Nevertheless, the IVR process does not include a requirement for periodic re-verification of safety basis controls and does not establish timeliness criteria for performing DOE reviews. Managers expressed the intention to perform these reviews, but none had been scheduled or planned at the time of the Independent Oversight review. Also, OLO does not have a Line Division Director, so it is not clear who performs the "Line Division Director" assigned responsibilities in the Nuclear Safety Oversight procedure. **(OFI-1)**

A DOE working group developed a "best practices guide" for the independent validation of safety basis controls. This guide, together with expectations for its implementation, was provided to National Nuclear Security Administration and EM sites by joint memorandum from the Assistant Deputy Administrator for Nuclear Safety and Operations and the Deputy Assistant Secretary of Safety Management, respectively, in March 2009. The memorandum directed the sites to compare their current processes to the practices in the guide and to adjust site processes; if appropriate (this memorandum was not formally transmitted with DOE-SR expectations to SRNS or SRR). The memorandum indicated that after a (trial) period of six months a path forward would be determined and requested feedback on the best practices from the sites. In November 2010, the guidance for performing IVRs was incorporated into DOE G 423.1-1A,

Implementation Guide for Use in Developing Technical Safety Requirements, Appendix D, *Performance of Implementation Verification Reviews (IVRs) of Safety Basis Controls*. **(OFI-1)**

SRIP 425.1, *Nuclear Facility Startup Approval Process*, establishes the DOE-SR process for managing facility startups and restarts. Primary responsibility for oversight and execution of the readiness review process is assigned to the cognizant assistant manager. The procedure governs oversight of the contractor's startup program and implementation of independent readiness reviews by DOE when appropriate. The procedure has not been updated since 2005, although SRIP 200, Chapter 251.4, *DOE-SR Directives Program*, requires review and revision of procedures every two years, and does not include the changes in the process in revision D to DOE Order 425.1, which was issued in April 2010. Although, SRIP 425.1 indicates that the contractor will perform a readiness self-assessment in preparation for an operational readiness review or readiness assessment (for a non-routine startup), it does not specifically address the IVR process. **(OFI-2)**

Safety system oversight of contractor system engineers is accomplished in accordance with SRIP 400, Chapter 421.2, *DOE-SR Safety System Oversight.* This procedure, with an effective date of July 24, 2009, has exceeded its two year review/revision requirement in accordance with DOE SRIP 200, Chapter 251.4, does not reference DOE G 423.1-1A, and does not include an expectation for safety system oversight engineers to perform IVR activities. **(OFI-2)**

Facility Representatives (FRs) perform their duties in accordance with SRIP 400, Chapter 430.1, *Facility Representative Program*. This procedure, dated October 24, 2008, has exceeded its required two year review/revision requirement in accordance with SRIP 200, Chapter 251.4, and does not reference or incorporate changes to the DOE Facility Representative (FR) Program from the last two revisions of DOE-STD-1063-(2008 or 2011), *Facility Representative Program.* The procedure also does not reference DOE G 423.1-1A or establish an expectation for facility representatives to participate in IVR activities. Based on interviews of five FRs and the owner of the FR Program procedure (Primary Division Office), FR participation varies across the site. FRs in Waste Disposition Project Directorate and Nuclear Material Stabilization Project Directorate reported they seldom participate or document participation in IVR activities until the changes trigger a readiness assessment or operational readiness review. In contrast, FRs in OLO are involved and document their participation in all IVR activities at SRNL. **(OFI-2)**

WDED has established supplemental guidance for performing implementation reviews in an internal procedure titled *Safety Process Review Guide for DOE Waste Disposition Project (WDP) Engineering Division (ED)*. NMED, and OLO have not established lower level procedures to govern the IVR process, but both WDED and NMED use spreadsheets to track the performance of IVRs for safety basis changes; including, for example, whether a DOE IVR was required or performed and the associated Savannah River Integrated Management Total Accountability System (SIMTAS) number. The divisional processes are mostly effective in tracking the performance of DOE IVRs, but in several instances the status of the DOE IVR was not available in the NMED tracking spreadsheet, IVR activities by the FRs were not recorded, and the division director's review and approval of the IVR assessment was not evident. **(OFI-1)**

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

Independent Oversight reviewed the contractor and site office IVR methods to determine whether the methods adequately address the implementation of safety basis hazard controls. The review also examined whether 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. By policy, DOE-SR does not

include conditions of approval in the safety evaluation report or approval letter for the safety basis, so no specific implementation activities are required.

Savannah River Nuclear Solutions, LLC

The SRNS verification methods are mostly adequate in confirming the implementation of hazard controls. Several SRNS SBIPs were reviewed and found to provide sufficient detail to identify the facility's implementation activities; including affected controls, implementing procedures, surveillance tests, and training. Generally, the SBIPs summarize all the activities required for implementation including planning actions, preparation of document revisions, startup reviews and implementing actions, and post-implementation follow-up actions. As required by procedure, the SBIPs receive an appropriate degree of management review and approval prior to implementation. Activities are assigned to responsible individuals who signify completion by signing the SBIP. Upon completion of all activities, the SBIPs typically include an individual's verification, as well as management review, that the checklist is complete. It was noted that the SRNS SBIPs vary somewhat in content, since the company does not have an established standard or expectation for the plan and its contents and the areas/facilities have adopted slightly different forms for the SBIP.

In addition to completing the SBIP, SRNS has verified safety basis changes through implementation of its startup readiness reviews, which include both line management preparatory reviews and independent verification. For example, the initiation of new activities at H-Canyon and implementation of a significant revision to the documented safety analysis (DSA) and technical safety requirements (TSRs) in 2010 included a facility self-assessment, management self-assessment and readiness assessment. Similarly, new activities for transuranic waste remediation in F-Canyon were evaluated in a readiness assessment that included review of safety basis implementation. Independent Oversight also observed performance of a readiness assessment at the L Area in preparation for shipments from L Area to H-Canyon (see discussion in Objective 3). In each case, the readiness assessment plans include lines of inquiry in the safety basis functional area (based on a sample) that provide an independent verification of implementation of the safety basis at the facility. The review criteria and approaches, which are based on a site manual that contains performance objectives and criteria, were found to be appropriately tailored to the hazard controls being verified and sufficient for the scope of the reviews**.**

SRNS personnel from N&CSE have conducted nearly all the scheduled annual independent verification reviews. The documentation of the reviews includes details of the planned review activities and the results of the review. The reports provide evidence of thoroughness in their performance; in each review the assessors identified issues or opportunities for improvement in safety basis control implementation and LDDs. Additionally, readiness reviews are well documented using the functional area criteria and lines of inquiry and the documented results indicate that assessors are appropriately thorough and questioning in their approach. It was noted, however, that contrary to the practice used in most of its nuclear facilities, SRNS did not complete one N&CSE implementation assessment at SRNL. This assessment was scheduled for the period September 27, 2010 thru October 28, 2010, but was not accomplished (for an unknown reason) and was not rescheduled in 2011. As a result, no independent N&CSE assessment or readiness review was conducted at SRNL to verify effective implementation of the "flashing spray" controls following completion of the internal management assessment and SBIP process. SRNL is in the process of developing a DSA/TSR Upgrade to be submitted to DOE in September 2011. N&CSE is actively performing an independent review of the DSA/TSR documents and the independent TSR implementation assessment will be scheduled in the 2012 N&CSE Master Assessment Program Schedule, following DOE document approval and facility implementation. **(OFI-3)**

Savannah River Remediation, LLC

SRR performs line management self-assessments to assess execution of safety basis control implementation. Annual line management self-assessments are scheduled and performed to assess the accuracy of the LDD and to assess the adequacy of SACs. SRR has also scheduled triennial reviews of safety basis implementation. Although a triennial review is scheduled for 2011, at the time of this assessment there was no record that a review had been performed since 2005. **(OFI-4)**

The SRR management assessment processes discussed above are for self-assessments by line and functional area managers and are not independent in that they are typically performed by individuals and organizations that have responsibility for the activities that they are assessing. Contrary to the discussion in Section 2.0 above, SRR does not perform independent assessments of the implementation of all safety basis hazard controls on a periodic basis. Additionally, DOE G 423.1-1A, Appendix D, *Performance of IVRs of Safety Basis Controls*, states ". The purpose of an IVR is to independently confirm the proper implementation of new or revised Safety Basis controls. Independence of the review adds an additional layer of defense in depth and is a common practice standard in the commercial nuclear power industry." **(OFI-5)**

DOE Savannah River Operations Office

DOE-SR has developed appropriate methods for independently verifying the implementation of new and revised design basis documents. These methods are well defined in SRIP 400, Chapter 421.1, and in the DOE-SR CRAD for verifying implementation reviews of design basis documents. Defined methods include review of SBIPs to determine whether the contractor's implementation plan contains sufficient detail to ensure effective implementation of safety basis document changes and whether implementation has been verified by the contractors. Implementation methods also include review of procedures and other documents (such as TSRs, DSAs and fire hazard analyses) against an LDD to determine whether design basis information has been incorporated appropriately, verification of the accuracy of data in the LDD associated with the design being reviewed, and review of records to determine if individuals responsible for executing controls associated with reviewed designs are properly trained and qualified.

Examination of implementation review reports completed by WDED and NMED over the 18 month period ending June 30, 2011, indicated that most of the above methods have been appropriately applied. With few exceptions, reports provide evidence that safety basis implementation reports were reviewed, incorporation of safety basis information into procedures and other documents was assessed, issues and questions were communicated to the contractors and resolved, and the accuracy of LDDs was verified. The information contained in each of the reports was adequate to support the stated conclusions.

In addition to the implementation reviews discussed above, NMED was actively involved in oversight of the implementation of Revision 0 to the H-Canyon DSA and TSR. For this implementation, the contractor conducted a series of line management self-assessments and a readiness assessment. DOE-SR actively shadowed these assessments; providing feedback to the contractor with a number of identified weaknesses and opportunities for improvement.

The OLO provides day-to-day oversight of the SRNL, a facility with a single DSA and TSR, with one Facility Engineer for safety system oversight and three relatively senior Facility Representatives. There is no Line Division Director in OLO, as defined by SRIP 421.1. As a smaller organization, the FRs actively participate with the facility engineer in the IVR process, and each of the OLO personnel routinely contribute to and sign the IVR reports, which have been completed and documented for each recent DSA/TSR change. This is a positive attribute of the OLO IVR process, as it ensures early FR understanding and knowledge of the technical bases that support safety control changes in the facility.

(PA-1)

OLO personnel have completed two IVRs using the IVR guidance in SRIP 421.1, Rev. 5, which was approved on 3/26/09. Both reviews utilized a tailored approach based on the scope of the DSA changes, which resolved positive unreviewed safety questions. In the first case, no TSR changes were required. In the second case, which concerned the potential for flashing spray releases, the safety significant evaluation guidelines for co-located workers were challenged; resulting in the development of two new TSR controls, revision of twenty-four (24) procedures, completion of several training activities, and changes to twenty-six (26) other documents. The following observations were made during the review of the OLO IVR reports:

- In each report, the documentation associated with evaluating criterion SB-3 may not be sufficient to form an adequate basis for the conclusion that initial conditions and assumptions were identified and adequately carried forward in the DSA and implemented via adequate TSR control. In the first case, the response (a simple declarative statement) does not contain the detail needed to ensure the adequate implementation of controls. In the second case, the two new TSR controls are identified but there is little analysis provided concerning the adequacy of the controls. Additionally, there is no discussion or analysis of the adequacy of changes in surveillance requirements. **(OFI-6)**
- In the second review, OLO personnel reviewed thirteen of the twenty-four procedures affected by the changes, of which over half (7) had identified deficiencies. In at least two cases, the identified deficiencies would have rendered the procedure unusable as written and would not have resulted in a satisfactory completion of the calibration or functional check. Five deficiencies were identified with the Linking Document and the deficiencies were informally communicated to the cognizant engineer. A note in the IVR report indicates that "All of the procedure-related comments were transmitted to the contractor for evaluation."The FR advised he had sent them informally. There is no indication that either DOE-SR or SRNS re-reviewed the remaining procedures or other affected documents identified in the SRNS SBIP to determine the extent of the identified deficiencies or root cause for the condition. **(OFI-6)**

Although the oversight of the contractors' safety basis implementation processes is adequate overall, several opportunities for improving the implementation of the IVR procedure were identified during the review.

- Most of the reports contained no information about the review of the training and qualification of individuals responsible for executing new or revised controls, such as discussion of the adequacy of the training methodology selected and employed or evaluation of the adequacy of the training that was provided. Only one IVR included the results of a training or qualification review and two others indicated that such a review was not needed. **(OFI-1)**
- In a number of instances (for example, discrepancies in the LDD identified during an IVR at SRNL), issues identified by reviewers were corrected through informal communications with responsible contractor personnel. Although this practice is efficient and effective for minor discrepancies, this process is not appropriate for the number and type of discrepancies identified during the review of the procedure at SRNL. In this case, handling the discrepancies without formal communication in accordance with the performance assurance manual circumvents the contractor's causal analysis, extent of condition determination, development and approval of corrective actions, and tracking to closure. **(OFI-7)**
- IVR implementation has not always been timely in areas where requirements are not clearly stated in the program description. The procedure (SRIP 421.1) does not contain timeliness criteria for performing implementation reviews. On October 1, 2010, the WDED Line Division Director established an expectation for WDED Facility Engineers to perform DOE IVRs within 60 days of the

DOE approval of the DSA and/or TSR change, and it was reported that this expectation was communicated at a subsequent Nuclear Safety Council meeting. This expectation has not been consistently met. For example, the WDED FY2010 and 2011 Safety Basis Change Implementation Summary, dated 7/13/2011 shows that for the changes that were approved after October 1, 2010, 7 of 14 SRS IVR reports exceeded the 60 day expectation. **(OFI-1)**

- The division directors did not always make the decision on whether or not to perform an IVR and did not typically approve IVR plans and reports as required. In addition, in several instances the justification for not performing an IVR was not recorded in SIMTAS, as required. DOE-SR facility engineers said that they made this decision based on the safety significance of the safety basis change. **(OFI-1)**

Objective 3: Contractor IVRs or similar reviews and site office oversight activities are sufficient to verify that safety basis hazard controls have been effectively incorporated into implementing administrative and operating procedures and work control documents.

Note: The original scope of this review was to fully address Objectives 1 and 2. Some, but not all criteria were addressed in Objectives 3 and 6 as a result of opportunities that were present during the period of on-site review, while pursuing the original objectives.

During the review, Independent Oversight was able to verify that safety basis controls have been effectively implemented for a small sample of hazard controls at the site. Independent Oversight observed the performance of a readiness assessment at the L Area Complex and reviewed a sample of changes made to safety basis controls at several SRR facilities.

Savannah River Nuclear Solutions, LLC

Independent Oversight observed the performance of a level 3 readiness assessment conducted to support safety basis changes required for Phase II transfers of spent nuclear fuel from L Area to H-Canyon, installation of a new overhead transfer bay crane, and authorization of use of a new research reactor cask. Readiness assessment activities were guided by a combined safety basis implementation and readiness plan and conducted by an independent team using criteria, objectives, and lines of inquiry from the site's performance objectives manual. The readiness assessment included document reviews, interviews, and observation of activities; in particular, movement of empty casks using the new crane and revised procedures.

The safety basis functional area reviewer evaluated each of the changes in the TSR revision and the flowdown of requirements into the implementing documents. Interviews of the crane system engineer and the facility engineering manager conducted during the readiness assessment were thorough. Overall, the review was systematic and questioning and identified several items requiring follow-up. These included complete incorporation of critical lift protocols in the 70-ton cask movement procedures, a weakness in the process to verify that fuel shipments meet the safety basis assumption, and a change to the definition of operability for the area radiation monitors in the TSR Bases that may not have been incorporated in operating procedures. The review also identified some minor discrepancies in the L Area LDD.

During the readiness assessment, Independent Oversight also verified that some TSR requirements are appropriately implemented. The TSR requirements related to surveillance testing of the area radiation monitors were reviewed. The area radiation monitor testing and maintenance procedure is linked appropriately to the surveillance requirement through the LDD and adequately implements both the semi-annual and annual testing required by the TSR. A hazard analysis assumption from the DSA, which restricts the use of a portion of a storage row, was also reviewed and found to be linked to an

implementing procedure, but the procedure does not identify the relation of the control to the safety basis and the assumption is not protected (included) in the TSRs. Finally, Independent Oversight found that design features identified in the DSA and TSRs are to be maintained through the structural integrity program. The LDD cites the structural integrity program document as the implementing document but does not cite the specific information sheets or ticklers that are used to identify and track the required periodic inspections and tests.

Savannah River Remediation, LLC

The effectiveness of the SRR safety basis implementation process was reviewed for an annual update to the Tank Farm DSA and for a justification for continued operation for actions in response to a potential inadequacy in the safety analysis for DWPF antifoam flammability. The Independent Oversight team reviewed completed checklists and discussed the steps taken to complete them with SRR managers and engineers in order to assess the rigor of the implementation reviews. The reviews were thorough and the checklists were properly completed. The LDDs were used to identify impacted procedures and were updated to reflect the procedure changes. A sample of procedures listed on implementation checklists was reviewed and appropriate changes were confirmed to have been made. The training manager signed the implementation checklist certifying the completion of training for appropriate operations, engineering and Facility Operations Safety Committee personnel.

To further assess the Tank Farm safety basis implementation, Independent Oversight reviewed the implementation of a sample of eight key assumptions from the CSTF DSA that were not associated with the above changes. All eight were properly addressed in implementing documents.

The effectiveness of line management self-assessments of SACs was also reviewed. Independent Oversight reviewed reports for 2009 and 2010 annual assessments and discussed the assessments with SRR management. The management self-assessments were performed by senior managers (that is, the facility manager and facility engineering manager) based upon presentations on each SAC by design authority engineers. Numerous opportunities for improvement were identified. Most opportunities identified the need for clarifications or the need for additional review to determine if the SACs should be revised. The assessments were comprehensive, enabled managers and engineers to gain a common understanding of the basis and need for each SAC, and identified a number of potential improvements to the SACs. Corrective actions were assigned and tracked for the 2009 assessment; however, due to an oversight, corrective actions were not formally assigned or tracked for the 2010 assessment until recently.

Independent Oversight also reviewed 2009 and 2010 annual self-assessments of the LDD. The scope of each assessment was appropriate, the information included in the reports was sufficient to support the conclusions, and findings and opportunities for improvement were documented and tracked. As previously discussed, triennial management self-assessments of safety basis implementation have been scheduled but have not been performed since 2005.

Objective 6: Contractor IVR or similar processes and site office oversight activities are sufficient to verify that the training and qualification program ensures personnel working at the facility are adequately prepared to implement and maintain the safety basis hazard controls.

Note: The original scope of this review was to fully address Objectives 1 and 2. Some, but not all criteria were addressed in Objectives 3 and 6 as a result of opportunities that were present during the period of on-site review, while pursuing the original objectives.

Independent Oversight reviewed the implementation of training and qualification programs for a sample

of DOE-SR personnel with responsibilities for oversight of the implementation of safety basis controls, but was not able to review the contractor training and qualification programs due to time and resource constraints.

DOE Savannah River Operations Office

Facility engineers at DOE-SR are generally qualified to the Nuclear Safety Specialist (NSS) functional area qualification standard and participate in the DOE-SR technical qualification program. It is also common for the facility engineers to be qualified to the Safety System Oversight (SSO) functional area qualification standard. In a sample of five facility engineers, all but one of the engineers were found to be currently qualified to the NSS and SSO functional area qualification standards. One facility engineer was qualified as SSO, but could not demonstrate qualification to NSS.

All seven FR training records reviewed indicated they are currently qualified to the FR functional area qualification standard. During FR interviews, FRs who attended the last FR quarterly meeting reported being briefed on the IVR process that had recently been added to SRIP 400, Chapter 421.1, *Nuclear Safety Oversight Procedure.* FRs also indicated that the FR Council was being re-established such that FRs own and run the council, as opposed to managers doing so. A new charter is being developed and officials are being selected. Two items to be addressed in the near term are revision of the FR Program Procedure and addressing/correcting issues identified in the last FR Program Assessment (but not entered into SIMTAS and not otherwise corrected); including developing and implementing an FR Continuing Training process.

Both facility engineers and FRs reported that information on changes to DSA and TSR controls was usually communicated to DOE-SR personnel by bulletins or required reading promulgated by a Lotus Notes application. FRs also reported that they had attended contractor training sessions on DSA and TSR control changes, and a few stated they had documented the quality of observed contractor training. Available on-site time did not allow verification that appropriate Federal personnel had been adequately trained on specific control changes.

5.0 CONCLUSION

Both SRNS and SRR have established a set of relatively mature procedures and processes to implement changes to facility safety basis controls; including development of detailed SBIPs, which the contractor organizations have used in implementing new or revised DSAs and TSRs. The SBIPs provide an adequate framework for planning, executing and documenting the implementation of safety basis changes by line management. The procedures and processes provide an appropriate level of planning and formality in the preparation for and conduct of IVRs and use established lines of inquiry to both guide and document the review. In a number of instances SBIP implementation is followed by line management and/or independent readiness assessments that appropriately address implementation of the controls. Both SRNS and SRR address the ongoing implementation of TSR requirements through their established assessment processes; with SRNS utilizing independent assessments by N&CSE and SRR relying more heavily on line management self-assessments of their programs. Documentation reviewed and observations made during the review demonstrate that IVR processes and continuing assessments closely follow an established set of criteria, include an appropriate level of planning and formality, and adequately document the results of the activities. Assessors critically evaluate the areas within the assessment's scope, and the contractors' assessment programs have identified and initiated improvements in the safety basis control systems. Finally, with the one exception noted below, safety basis hazard controls have been effectively incorporated into implementing administrative and operating procedures and work control documents, and periodic line management assessments have been generally effective.

However, neither contractor has implemented a program that results in a systematic re-verification of all of the safety basis hazard controls over an established period, and SRR does not perform independent assessments of the implementation of all safety basis hazard controls. Although SRNS N&CSE does routinely perform independent reviews of hazard control implementation, they missed one scheduled review at SRNL for documents that were revised to support TSR Revision 9, where an unusually high percentage of deficiencies were identified (by the DOE IVR) in the LDD and in procedures previously revised by the contractor. Additionally, this independent review was not re-scheduled for accomplishment in 2011.

DOE-SR has developed and implemented appropriate methods for independently verifying the implementation of new and revised design basis documents. For the most part, the governing procedure adequately describes expectations for the oversight of the contractor IVR activities. The procedures and processes include an appropriate level of planning and formality for conducting implementation verification reviews (for example, use of a criteria, review and approaches document), and, if properly implemented, would provide sufficient information to confirm the efficacy of the contractors' processes. The line divisions have applied most of these prescribed assessment methods when appropriate. Nonetheless, program implementation has not always been timely in areas where requirements are not clearly stated in the SRIP 421.1A program description, more emphasis could be placed on the review of training and qualification of individuals responsible for execution of new and modified controls, and in at least one case, feedback of issues to the contractor was too informal. In addition, the process could be enhanced to provide greater assurance of implementation by adding a requirement for periodic re-verification reviews.

6.0 OPPORTUNITIES FOR IMPROVEMENT/POSITIVE ATTRIBUTES

This report has identified opportunities for improvement. In accordance with *Office of Independent Oversight Appraisal Process Protocols*, dated July 2009, opportunities for improvement (OFIs) are defined as follows:

> **Opportunities for Improvement:** Opportunities for improvement are suggestions 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. Opportunities for improvement are not mandatory, and they do not require formal resolution by management through the corrective action process.

Specific OFIs identified during the conduct of this review are as follows:

DOE Savannah River Operations Office

OFI-1: Consider the following actions and strengthen the IVR process by:

- Including expectations for contractors to perform a periodic re-verification of safety basis controls; and, an independent assessment element in IVR and IVR-like processes in the *DOE-SR Nuclear Safety Oversight* directive,
- Establish the expectation for the periodic re-verification of a sample of safety basis controls and then schedule these reviews in the OSQA annual performance assurance plan,
- Establishing timeliness criteria for performing DOE reviews in the *DOE-SR Nuclear Safety Oversight* directive,
- Determining who in OLO should accomplish the responsibilities of the Line Division

Director (a position that does not exist at OLO) and including the responsibilities in the DOE-SR Nuclear Safety Oversight Procedure,
- Adding expectations for the content of and the use of Line Division Director IVR tracking spreadsheets in the *DOE-SR Nuclear Safety Oversight* directive
- Briefing Line Division Directors on responsibilities described in DOE-SR Nuclear Safety Oversight; including decisions on whether to perform an IVR, approval of IVR plans and reports, and recording justifications for not performing an IVR in SIMTAS.
- Including review of the training and qualification of personnel on changes to the DSA, TSR, and implementing documents more frequently when conducting an IVR review

OFI-2: Review and revise, if necessary, implementing directives that have exceeded the biennial review requirement and include appropriate IVR expectations and references in the directives.

OFI-6: Examine the rigor and efficacy associated with the conduct of the OLO IVR of revision 9 to the SRNL TSRs (as documented in SIMTAS #2010-003295-SR) and review the need for follow-up actions.

OFI-7: Assess whether additional training and/or guidance on use of informal communication of deficiencies identified during the conduct of IVR reviews is appropriate.

PA-1: A positive attribute of the Office of Laboratory Oversight IVR process is that the Facility Representatives (FRs) are involved in and contribute to each DOE IVR conducted at SRNL. This ensures early FR understanding and knowledge of the technical bases that support safety control changes in the facility.

Savannah River Nuclear Solutions, LLC

OFI-3: Assess the methods for tracking and re-scheduling N&CSE independent implementation reviews to ensure that reviews are accomplished.

Savannah River Remediation, LLC

OFI-4: Evaluate the scheduling and implementation processes to ensure that triennial reviews of safety basis implementation are accomplished.

OFI-5: Evaluate the need to include an element of independent review in contractor IVRs or IVR-like processes in accordance with 10 CFR 830.

7.0 FOLLOW-UP ITEMS

The assessment identified three items or areas for potential follow-up by Independent Oversight. First, the OLO IVR documentation associated with the recent SRNL DSA and TSR revisions (and subsequently into the implementing documents) does not address the evaluation sufficiently to form an adequate basis for the statement that initial conditions and assumptions were identified and were adequately carried forward to ensure appropriate implementation of controls for flashing spray events at SRNL. Similarly, the IVR does not discuss or analyze the adequacy of the implementation of changes in surveillance requirements associated with upgrade of the Building 773-A automatic sprinkler system and the A&M-Area OSUG fire water supply system to safety significant. The IVR also does not document the corrective actions taken to address the issues identified with the implementing procedures during the review. For these reasons, Independent Oversight is considering the performance of a follow-up evaluation of the TSR Revision 9 in the near future.

Second, an interview of a system engineer during the L Area readiness assessment led to a question concerning the functional classification of the crane, which was said to be safety significant for procurement but general service for "operation" (upon completion of the readiness assessment). Follow-up of the discussion revealed that the double contingency analysis identifies the crane as single failure proof and that criticality scenarios include, for example, verification that the crane is within the required periodic inspection interval prior to initiating a fuel cask critical lift. Nevertheless, the DSA and TSR do not identify the crane or its single failure proof characteristics as design features or specify precisely what periodic inspections are required to maintain the single failure proof design. These apparent inconsistencies were not resolved during the Independent Oversight on-site observations. It was noted that DSA Chapter 6.4.4.2 describes the crane as being qualified per NUEG-0554 and those key attributes are required to be protected via the USQ process.

Third, linking document databases cite the structural integrity program document as the implementing document for maintaining the design features credited in the safety analysis. The LDDs generally do not cite the specific information sheets or ticklers that are used to identify and track the required periodic inspections and tests. In addition, in some cases the descriptions of the design features in the TSR do not explicitly address the design features' critical characteristics.

Appendix A
Supplemental Information

Dates of Review

Onsite Review:	June 27- July 1, 2011
Onsite Review:	July 11-15, 2011

Office of Health, Safety and Security Management

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

Quality Review Board

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

Independent Oversight Site Lead for SRS

Phil Aiken

Independent Oversight Reviewers

Phil Aiken - Lead
Aleem Boatright
Al Gibson
David Odland

Appendix B
Documents Reviewed, Interviews, and Evolutions

Documents Reviewed:

- DOE-SR SRIP 425.1, Nuclear Facility Startup Approval Process, Rev. 2, 5/05
- DOE-SR SRM 226.1D, Integrated Performance Assessment Manual, 5/11
- DOE-SR SRIP 421.1, Nuclear Safety Oversight, Rev. 6, 3/11
- DOE-SR SRM 414.1D, Quality Assurance Program Manual, 10/09
- DOE-SR SRIP 450.4, Authorization Agreements, Rev. 1, 11/05
- DOE-SR SRIP 411.1, Lead Responsibility for Safety Oversight and Incident Reporting at the Savannah River Site (SRS), Rev. 0, 10/07
- SIMTAS 2010-002586-SR (I), IVR Assessment for C-Area Annual Update, 4/13/10
- SIMTAS 2010-003335-SR (I), IVR Assessment of HB-Line SAR Rev. 8 & TSR Rev. 22, 6/9/10
- SIMTAS 2010-003521-SR (I), IVR for DSA/TSR L to H 70T Cask, 8/9/10
- SIMTAS 2010-002898-SR (I), IVR for L-Area 2009 Annual Update, 6/29/10
- SIMTAS 2010-004140-SR (I), IVR for Rack JCO, 11/27/10
- SIMTAS 2011-000150-SR (I), IVR Review of H-Canyon 3009 Upgrade Criticality Controls Procedure Implementation – SNF Dissolution and SACs, 10/13/10
- SIMTAS 2010-003125-SR (I), L-Area Rack ESS IVR, 6/29/10
- SIMTAS 2010-004514-SR, Oversight of H-Canyon MSA, FSA, and RA for 3009 DSA and Used Fuel, 8/10
- 11Q, Procedure 1.01, Generation, Revision, Review, and Approval of Safety Basis Documents, Rev. 17, 3/11
- 11Q, Procedure 1.11, Safety Basis Requirements Implementation, Rev. 2/ 12/09
- 11Q, Appendix D (ADM TRIP-1112, Documented Safety Analysis (DSA) and Technical Safety Requirements (TSR) Change Implementation (U), Rev. 3, 6/02, et.al.)
- 11Q, Procedure 1.06, Linking Documents, Rev. 6, 12/09
- 12Q, RA-1, Readiness Assessment (RA) – Level Determination, Rev. 0, 3/11
- 12Q, RA-2, Conduct of the Readiness Assessment (RA), Rev. 0, 3/11
- 12Q, ORR-2, Operational Readiness Review Planning, Rev. 9, 3/11
- 12Q, ORR-3, Management Self-Assessment (MSA), Rev. 9, 3/11
- 12Q, ORR-4, Conduct of the Operational Readiness Review, Rev. 9, 3/11
- 12Q, FEB-1, Facility Evaluation Board, Rev. 10, 1/11
- 1E7, H-Area Material Disposition and F-Area Deactivation Engineering Procedures Manual, A-305, Development and Implementation of Safety Basis Requirements (U), Rev. 6, 4/07
- 1E7, H-Area Material Disposition and F-Area Deactivation Engineering Procedures Manual, A-303, Linking Document Database (U), Rev. 5, 4/07
- SRNS-E8000-2010-00022, SRNS Nuclear & Criticality Safety Engineering (N&CSE) CY 2011 Management Assessment Plan and Schedule, Rev. 2
- Implementation of Hazard Controls in the K Area Complex Final Report, 5/10
- SRNS-E8100-2010-00011, Assessment of Implementation of Hazard Controls in the L Material Storage Complex and C-Reactor Facility, 8/25/10
- Implementation of Hazard Controls in the HB-Line Facility, 10/25/10
- Implementation of Hazard Controls in the H-Canyon, 10/09
- 2010-SA-002070, F-Canyon TRU Drum Remediation Phase II (FAM Assessment), 3/10
- SRNS-N2000-2010-00250, H-Canyon 3009 Documented Safety Analysis (DSA) Implementation/Spent Fuel Dissolving Readiness Assessment Implementation Plan, Rev. 0, 9/15/10
- SIMTAS 2011-000166-SR, Assessment of Select LDD and STD Records for H-Canyon RA, 9/10

- SIMTAS 2011-000137-SR, Oversight of H-Canyon MSA, FSA, and RA for 3009 DSA and Used Nuclear Fuel Operations, 6/10
- SIMTAS 2011-004650-SR, H-Canyon/H-OF, FA-06, Safety Documentation, Contractor RA Oversight, 9/18/10
- SIMTAS 2010-004643, Overview of H-Canyon 3009/Dissolving FSA FA-15 Criticality Safety, 9/10
- U-SBIP-L-00006, SFP Phase II L to H Transfers Safety Basis Implementation/Readiness Plan, L Area Complex, Rev. 1, 6/11
- SOP-DHS-095-L, Fuel Criticality Rules – Surveillance Requirements and Review Data-Disassembly, Rev. 16, 3/11
- N-NCS-L-00018, Nuclear Criticality Safety Evaluation: Double Contingency Analysis for the L Disassembly Basin, Rev. 4, 3/11
- WSRC-TR-2004-00307, 105-L Structural Integrity Program, Rev. 3, 6/11
- SRNS-N2000-2009-00094, HB-Line Implementation Plan for Revision 21 of the HB-Line Technical Safety Requirements (TSR) (Hanford Low Assay Plutonium (LAP) Receipt and Storage) (U), Revision 0, 11/09
- N-SBIP-H-00005, HB-Line Implementation Plan for Revision 22 of the HB-Line Technical Safety Requirements (TSR) (U), Rev. 0, 8/10
- V-SBIP-H-00008, Safety Basis Implementation Plan for H-Canyon Operations TRU Waste Repackaging Phase IIA Stage 1, Rev. 0, 5/9/11
- V-SBIP-H-00009, Change Summary for LDD, IPI, and STD for TRU Waste Repackaging Phase IIA Stage 1, Rev. 0, 5/9/11
- E7 Manual, Procedure 2.04, System Engineering Management Plans, Rev. 1. 10/07
- E7 Manual, Procedure 3.04, SSC Performance Monitoring, Rev. 6, 8/10
- E7 Manual, Procedure 3.48, Structural Integrity Program, Rev. 2, 6/04
- Safety Document Process Guide for DOE Waste Disposition Project (WDP) Engineering Division (ED) Revision 4.
- SRR Manual S4, Procedure ENG.02, *Safety Basis Document and Implementation Process*
- SRR Manual S4, ADM.42, *Linking Document Data Base*
- Manual 12Q, Procedure SA-1, *Management Assessment*
- Manual 12Q, Procedure PA-2, *Functional Area Program Performance Analysis*
- Facility Safety Manual 1B, Procedure 4.23, *Corrective Action Program*
- Facility Safety Manual 12B, Procedure 5.2, *Development of the SRR Integrated Assessment Plan*. SRR
- Central Storage and Transfer Facility Documented Safety Analysis, Chapter 18
- Defense Waste Processing Facility Justification for Continued Operation for Antifoam Flammability PISA Recovery
- 2011 SRR Engineering Self-Assessment Plan
- SRR Manual S13, Procedure 5.2, Company Level Administrative Procedure, *Development of the SRR Integrated Assessment Plan*
- 2009 and 2010 Reports of SRR Line Management Assessments of Specific Administrative Controls
- 2009 and 2010 Reports of SRR Line Management Assessments of the SRR Linking Document Data Base
- Tank Farms Implementation Checklist for TSR Revision 2009-D
- Tank Farms Implementation Checklist for 2011 DSA/TSR Annual Update
- Tank Farms Implementation Checklist for HLW-CRF-10009/TSR Revision 210-C
- Tank Farms Implementation Checklist for HLW-CRF-09010 and HLW-CRF-10006
- DWPD Implementation Checklist for Justification for Continued Operation for Antifoam Flammability PISA Recovery
- DWPF Operations Emergent Training Status Reports
- SRIP 400, Chapter 421.2, *DOE-SR Safety System Oversight*

- SRT-USQ-10-0231, Rev. 0, *Interface Between SRNL DSA and Associated Controls and Transportation Cask OSA Documents (NI-SRNL-10-001/PI-10-007)*
- Authorization Agreement for the SRNL Technical Area, 6/14/10
- WSRC-SA-2, Rev. 10, *SRNL Technical Area Documented Safety Analysis*
- WSRC-TS-97-00014, *SRNL Technical Area, Technical Safety Requirements*
- WSRC-IM-95-0064, *Safety Basis Document Manual*
- WSRC-IM-98-00025, *Linking Document*, Rev. 24 and 25
- Safety Evaluation Report for SRNL Documented Safety Analysis, Rev.10, and Technical Safety Requirements, Rev.10, March 2011
- 2011-000035-SR, *IVR for SRNL DSA changes due to Transportation Cask Positive USQ*
- 2010-003295-SR, *Conduct of Implementation Verification for SRNL DSA/TSR changes for Flashing Spray*
- SRNL-E5300-2010-00018, *SBIP for SRNL TA DSA*, Rev. 9
- SRNL-E5300-2010-00009, *SBIP for SRNL TA TSR*, Rev. 9
- 2010-SA-007913, *Management Review for Incorporation of the JCO for Flashing Spray Release*
- SRNL-E5300-2009-00016, *SRNL TA JCO*, Revision 3
- 2010-SA-012876, *Implementation Readiness Review of DSA, Rev. 9 Change for Transportation Cask USQ*
- SRNL-E5300-2010-00021, *SBIP for SRNL TA DSA/TSR Rev. 10*
- SRT-USQ-09-0011, Rev. 1, *Potential for Flashing Spray Release*
- S-CHA-A-00003, Rev. 1, *Hazards Analysis for Flashing Spray Release*
- S-JCO-A-00001, Rev. 3, SRNL TA JCO, *Potential for Flashing Spray Release*
- SIMTAS 2010-003295-SR, *Conduct of Implementation Verification Process for SRNL DSA/TSR Changes for Flashing Spray*
- SIMTAS 2011-000035-SR, *IVR Transportation Cask*

Interviews

- Acting NMED Division Director
- Acting WDED Division Director
- DOE-SR Facility Engineers/Safety System Oversight
- SRR Nuclear Safety Manager
- SRR Facility Engineer
- Nuclear & Criticality Safety Engineering Engineer
- SRNL Facility Engineering Manager
- SRR Deputy Engineering Manager for Waste Solidification
- LDD Coordinators
- H-Area Engineering Manager
- HB-Line Process Engineering Manager
- L Area Readiness Assessment Team Leader
- Facility Representatives (3)
- SRNL Facility Manager
- AMWDP Operations Division Director
- AMNMSP Operations Division Director
- AMWDP Training Liaison
- AMNMSP Training Liaison
- Nuclear Engineers, DOE-SR Office of Safety and Quality Assurance (2)

Observations

- L Area Spent Fuel Project Phase II L to H Transfers Readiness Assessment