Independent Oversight Review of the Savannah River Site Tritium Facilities Implementation Verification Review Processes

June 2012

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

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Acronyms

CFR	Code of Federal Regulations
CRAD	Criteria, Review and Approach Document
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
FR	Facility Representative
FY	Fiscal Year
HANM	H-Area New Manufacturing
HSS	Office of Health, Safety and Security
IVR	Implementation Verification Review
LCO	Limiting Condition for Operation
LDD	Linking Document Database
NNSA	National Nuclear Security Administration
NP	Noteworthy Practice
OFI	Opportunity for Improvement
SAC	Specific Administrative Control
SRNS	Savannah River Nuclear Solutions, LLC
SRSO	Savannah River Site Office
SSO	Safety System Oversight
TSR	Technical Safety Requirement
VSS	Vital Safety System

Independent Oversight Review of the Savannah River Site Tritium Facilities
Implementation Verification Review Processes

1.0 PURPOSE

This report documents the independent review of implementation verification review (IVR) processes at the Savannah River Site Tritium Facilities conducted by the Office of Enforcement and Oversight (Independent Oversight), which is within the Office of Health, Safety and Security (HSS). The review was performed by the HSS Office of Safety and Emergency Management Evaluations April 16-19, 2012, and was carried out within the broader context of an ongoing program of assessments of the execution of IVRs at U.S. Department of Energy (DOE) sites with hazard category 1, 2, and 3 facilities. The overall purpose of these Independent Oversight reviews is to evaluate the processes and methods used for verifying and re-verifying the implementation of new or substantially revised safety basis hazard controls. The objective of this review was to evaluate the extent to which the site management and operating contractor, Savannah River Nuclear Solutions, LLC (SRNS), and the Savannah River Site Office (SRSO) have developed and employed appropriate implementation verification methods.

2.0 BACKGROUND

Subpart B of 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 Tritium Facilities, SRSO provides onsite management, day-to-day oversight, and surveillance of SRNS, as well as operations and support for accomplishing DOE and National Nuclear Security Administration (NNSA) strategic and long-term general goals. During a previous review, Independent Oversight assessed the IVR processes at SRNS. For the current review, Independent Oversight assessed the establishment and implementation of IVR processes and activities by SRSO and the implementation

of a readiness assessment (similar to an IVR) by SRNS. This scope was 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:

- SRSO has established processes that provide assurance that safety basis hazard controls are maintained and hazard control changes are correctly implemented.
- SRNS and SRSO have developed and implemented appropriate methods for performing IVRs or similar reviews.
- The performance of the contractor readiness assessment and DOE shadow assessment adequately evaluated the implementation of safety basis hazard controls.

The review was accomplished by assessing the documentation that establishes and governs the SRSO IVR processes (for example, work instructions, procedures, forms, and checklists) and interviewing key personnel responsible for developing and executing the associated practices. Independent Oversight also observed the conduct of an SRNS readiness review at the Tritium Facilities, including SRSO oversight of the review.

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 previously reviewed the procedures and processes that SRNS has established to implement and maintain the safety basis hazard controls at the Tritium Facility. The current review was conducted to determine whether DOE/NNSA line oversight processes provide information to confirm the effectiveness of contractor IVR processes.

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Independent Oversight reviewed SRSO processes to determine whether the processes adequately assess the contractor's implementation of new and revised safety basis documents and provide sufficient information to confirm the ongoing effectiveness of contractor processes for the implementation of safety basis requirements.

SV-PRO-030, *SRSO Nuclear Safety Oversight*, addresses the review of safety basis documents, the preparation of safety evaluation reports, the unreviewed safety question process, potential inadequacy of the safety basis, and specifically addresses the IVR process. The procedure establishes roles and responsibilities for determining when to complete an IVR. It describes the approach for performing an IVR for verification of initial control implementation, changes to the safety basis, and periodic re-verification. Based on the scope of the safety basis change, the procedure provides for a graded approach in the scope, conduct, and reporting of the review. The procedure also provides some examples of potential review activities and reference to the CRADs in the DOE guidance for conducting IVRs. The nuclear safety oversight procedure also adequately addresses the re-verification of safety basis hazard controls through the safety system oversight (SSO) and Facility Representative (FR) programs. The SSO program is to review each safety system and specific administrative control (SAC) on a three-year frequency, and the FR program is to include monthly assessments of technical safety requirement (TSR) items.

SV-PRO-016, *Readiness Review Process*, addresses startup notification reports, operational readiness reviews, and readiness assessments. The procedure establishes roles and responsibilities for accomplishing the various readiness review tasks and provides detailed instructions for determining the review type and for planning, conducting, and reporting the review. The procedure allows for a graded approach for readiness assessments, noting that in some situations a DOE readiness assessment may not be required. The readiness review procedure discusses changing the scope of a readiness review based on previous independent assessment, but it does not specifically mention the use of IVRs in preparing (or establishing the scope) for a readiness review.

The SRSO technical assessment program procedure establishes the oversight processes for the site office. It addresses operational awareness activities, assessments of operations and the contractor assurance program, and evaluations of contractor performance. The procedure addresses the development of an annual assessment plan to address required assessments and evaluations of the contractor self-assessment program. It also contains sufficient information to guide the development of assessment plans, including use of lines of inquiry and conduct of the assessment. The procedure also sets the expectations for the content of assessment reports. The instructions for conducting vital safety system (VSS) assessments and for implementing the FR program are addressed in separate procedures.

The VSS assessment procedure addresses safety systems, SACs, and programmatic administrative controls in the TSRs. The procedure includes the goal to assess each safety system on a rotating three-year basis. It also contains a set of typical lines of inquiry that include the adequacy of the TSR operability requirements, objective evidence the system can perform its safety function, and review of the adequacy of recently completed surveillances. These lines of inquiry would be sufficient to verify the continued implementation of the safety basis hazard controls for the system being assessed.

SV-PRO-010, *SRSO Facility Representative Program*, includes an attachment delineating program requirements, which address facility status (TSRs and surveillance requirements), facility tours, and activity observations (including safety-related surveillance requirement activities, review of SACs, and walk down of safety-related systems). FR assessment activities are included in a monthly FR assessment schedule that is developed using the annual assessment plan. The FR assessments are governed by a set of guidelines that are organized around routine activities; for example, observation of facility status, determination of facility conditions, conduct of a safety-system walkdown, or observation of a surveillance test. The assessments, which may include an abbreviated checklist, are documented in the site electronic tracking system.

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

Independent Oversight reviewed the SRNS and SRSO 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.

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Independent Oversight observed the level 3 readiness assessment conducted by SRNS for the startup of the helium-3 separation and bottling process in the Tritium Facilities. The plan of action and implementation plan contained an adequate scope for the review, which included newly installed equipment in H-Area New Manufacturing (HANM) and minor modifications to existing facility equipment. The documented safety analysis (DSA) and TSRs were also revised to reflect the processing

changes and additional controls. The assessment plan included detailed lines of inquiry with specific activities and methods of assessment. Independent Oversight observed that the assessment was conducted in accordance with the assessment plan and that the degree of rigor applied to the assessment was appropriate. Assessment team members demonstrated adequate technical expertise and qualifications and were observed to be thorough, critical, and inquisitive. The readiness assessment plan, as executed, placed sufficient emphasis on observation of work activities. Evolutions included the performance of the procedure for purifying the by-product, completion of the associated data sheet, and completion of the end-of-shift system status data sheet.

SRNS developed a comprehensive training course for the helium-3 purification system that included the system's purpose, major component design, indications, alarms, and TSR controls. Independent Oversight observed interviews of the operators, shift managers, shift operations managers, and senior technical engineer. In general, operating personnel demonstrated a good understanding of the process and controls, although a need to review second-person verification and SACs was identified by the readiness assessment team. During the review, Independent Oversight witnessed that facility operators demonstrated good conduct of operations techniques, including adherence to procedures and three-way communication.

Independent Oversight reviewed the Readiness Assessment Final Report, SRNS-RP-2012-00204. This report identifies eight findings; five pre-start 'A' corrective actions and five post-start 'B' corrective actions that were properly categorized as pre- or post-startup.

Although the facility self-assessment and the SRNS readiness assessment were thorough and independently addressed many of the recent changes to the DSA and TSRs, they did not include all of the changes to the safety basis hazard controls in the annual safety basis document update. In addition, though the Tritium Facilities executed the safety basis implementation process for this revision to the DSA and TSRs, which included an implementation review by quality assurance personnel for several of the changes, the scheduled independent verification by Nuclear and Criticality Safety was not completed. (See Section 6, **OFI-1**.)

Independent Oversight also observed two minor items relating to fire protection. First, the SRNS and SRSO lines of inquiry were limited to evaluating the active fire suppression system. Attention should also have been directed to the passive systems, specifically the fire wall penetrations that were described in the design change package and the associated surveillance that is required on an annual basis. Secondly, the project Fire Hazards Analysis indicated that the added safety significant sprinkler head located in the air hood "would be in the most remote sprinkler area and that existing hydraulic calculations would likely be impacted." The results of the assessment did not reflect that either of these items had been adequately evaluated. (See Section 6, **OFI-2**.)

Independent Oversight reviewed the change process for the safety basis hazard controls that were included in the fiscal year (FY) 2011 annual update but were not in the scope of the readiness assessment. The changes were implemented using the established safety basis change implementation process and included an appropriate safety basis change record. The safety basis change implementation plan was prepared by the lead engineer, approved by the facility manager, and completed in December 2011. As noted above, the plan included quality assurance verification of completion of some of the significant change actions. Although the process is mostly thorough, the Independent Oversight team determined that the safety basis implementation record does not include a check to verify that the revised DSA and TSR match the current version of the fire hazards analysis. This check is a requirement in the fire protection program documents, but not in the safety basis documents. (See Section 6, **OFI-3**.)

Independent Oversight reviewed a sample of safety basis changes that were not included in the scope of

the readiness assessment. These changes involved revisions to clarify the operability requirements for the fire suppression system, fire patrol methods, and minimum staffing.

Revision 19 to the TSRs includes a revision to the fire protection program (5.7.2.3.b) that contains detailed requirements for operability and maintenance reporting for the fire suppression system. These requirements are delineated in a memorandum of understanding between the Tritium Facilities and Site Infrastructure. The linking document database (LDD) lists the memorandum of understanding as a reference rather than an implementing document and does not list any other Site Infrastructure documents as implementing documents. A review of one of the Site Infrastructure procedures for the fire suppression system revealed that some but not all of the steps in the procedure are marked as TSR surveillance requirements, and that steps to return the pump to an operating alignment following the test (though marked as TSR related) do not implement independent verification to ensure the valves are left in the correct positions. For example, step 3.12 addresses the Tritium Facilities operability requirements, but it is not marked as TSR related. Steps 5.4.5 and 5.4.9 are marked as TSR related (the only steps marked), but there is no indication that the positions are independently verified (note that the restoration of the pump to automatic could be used as an independent verification). Finally, there is no indication that the test data will be reviewed against a set of acceptance criteria to determine and report pump operability to the Tritium Facilities. (See Section 6, **OFI-4**.)

Fire patrol requirements were revised in the latest TSR revision. The Limiting Condition for Operation (LCO) actions require the fire patrol to be established immediately for an inoperable fire suppression system. The TSR bases indicate that the monitoring period and frequency of the fire patrol is determined by a specific facility procedure. The LDD lists the fire patrol datasheet (DP-FA-106) as an implementing procedure for the fire suppression system LCO. A recent procedure change to the datasheet removes the hourly requirement from the fire patrol and references ADM-TRIT-1464, *Fire Patrol Program*. This procedure contains recent guidance for adjusting the fire patrol frequency, but it is not listed in the LDD as an implementing document. (See Section 6, **OFI-4**.)

Preparations have been made to adjust the Tritium Facilities minimum shift staffing to allow positions to be shared between the older Tritium Facilities and the Tritium Extraction Facility; however, these changes cannot be implemented until the Tritium Extraction Facility TSRs are revised and implemented through an operating procedure.

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SV-PLN-002, *SRSO Annual Assessment Plan*, contains a triennial schedule that addresses the planned assessments for the current and following two FYs. The assessment plan for this FY includes the IVR scheduled for 2012, as well as the triennial SAC assessment. The plan references the procedures for VSS and FR assessments. FR assessments of safety basis implementation are scheduled monthly. VSS assessments are listed generically on the annual assessment plan under the Nuclear Safety and Process Safety functional area, and the specific quarterly SSO assessments are tracked in an internal database. The SSO internal database includes assessments of structures, systems, and components (including design features), and SACs, and provides a detailed record of completed assessments (including references to the last completed assessments). The database matrix provides a thorough status of the program of assessments affecting safety basis hazard controls. (See Section 6, **NP-1**.)

SRSO conducted an independent IVR for the FY 2010 revisions to the Tritium Facilities safety basis, which included several major control changes. The IVR implemented an approved plan that adequately described the scope of the SRSO activities. The scope included oversight of the SRNS assessment and independent evaluation of several areas, including training, flowdown of requirements to implementing documents, and evaluation of drills for abnormal conditions. Four assessment records are associated with

this review, as well as a final assessment report. The SSO VSS assessment conducted in conjunction with the IVR identified three findings, though none were designated as pre-implementation. The SRSO report discusses the results of the SRNS Nuclear and Criticality Safety Engineering Department IVR and indicates that SRSO concurred with the issues (11 findings and 33 opportunities for improvement or OFIs) and did not identify additional findings.

SRSO did not conduct an independent review of the FY 2011 revisions to the safety basis, but did perform a shadow assessment of the helium-3 separations and bottling process readiness assessment, as discussed further below. The rationale for not performing an independent IVR was that the changes to the safety basis that were not included in the scope of the readiness assessment were minor in nature, but this rationale was not documented as required by SV-PRO-030. (See Section 6, **OFI-5**.)

A review of the SSO assessment schedule and assessments indicated that the structures, systems, and components were being assessed within a three-year window and that design features for safety and SACs were included in these reviews. SSO assessments were conducted using a detailed set of criteria that address safety basis hazard controls, including review of completed surveillance tests and comparison of test acceptance criteria to safety basis functional requirements. The FRs perform daily oversight, including reviewing the status of LCOs; performing walkdowns of safety-related systems, surveillance requirements, and SACs; and participating in the review of safety basis documents, readiness reviews, and IVRs. Independent Oversight reviewed a sample of FR assessments that included an activity observation/surveillance of oxygen monitors functional checks (a TSR surveillance requirement), assessments of the SACs for inventory at the Tritium Extraction Facility and at HANM, surveillance of pressure/deflagration controls, and a surveillance of the fire suppression system. SSO assessments and FR reports provide evidence of critical reviews of the assessed areas and the well-documented write-ups that support the assessment conclusions.

Independent Oversight reviewed the SRSO IVR plan for the Tritium Facilities helium-3 separation and bottling process and observed the site office oversight activities. The SRSO IVR review plan contained an adequate scope for the shadow review and a discussion of the contractor scope and lines of inquiry. The shadow assessment was conducted in accordance with the assessment plan, including independent review of several of the functional areas and lines of inquiry. The degree of rigor applied to the assessment was appropriate; SRSO team members were thorough in their approach and follow-up on potential issues. Team members had adequate technical expertise and qualifications and appropriately referred to subject matter experts on potential findings and level of significance, when necessary. The team placed sufficient emphasis on observation of the assessment activities; SRSO personnel were involved in nearly all of the work activities, interviews, walkdowns, and team meetings. SRSO personnel interacted appropriately with SRNS readiness assessment team members to ensure that potential issues were addressed and resolved. Finally, the SRSO IVR report appropriately documented the team's activities and the evaluation of the SRNS readiness assessment.

5.0 CONCLUSIONS

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Tritium Facilities personnel executed the safety basis implementation process for the most recent revision to the DSA and TSRs but did not perform an independent IVR. The readiness assessment independently addressed most but not all of the changes to the safety basis hazard controls. The readiness assessment plan of action and implementation plan contained an adequate scope for the review and included detailed lines of inquiry with specific activities and methods of assessment. The assessment was conducted in accordance with the assessment plan and included sufficient observation of work activities. The degree of

rigor applied to the assessment was appropriate; team members were observed to be thorough, inquisitive, and critical, and demonstrated adequate technical expertise and qualifications. During the demonstrations, operators demonstrated good conduct of operations techniques, including adherence to procedures and three-way communication. Some opportunities to improve the readiness assessment were observed. For example, the requirement for installation and annual inspections of pipe penetrations in accordance with site procedures was not identified in the assessments. Additionally, Independent Oversight review of the safety basis hazard controls that were not included in the scope of the readiness assessment revealed that the implementation process does not include a review of changes to the DSA and TSR to ensure the Fire Hazards Analysis is updated, if required. A couple of instances were also identified in which the LDD did not include the flowdown of the requirements to all of the specific implementing documents.

Independent Oversight reviewed the SRNS readiness assessment final report (SRNS-RP-2012-00204), which identifies eight findings, five pre-start 'A' corrective actions, and five post-start 'B' corrective actions. These findings and corrective actions were properly categorized as pre- or post-startup.

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SRSO has established and executed an appropriate set of procedures to address independent verification of implementation of safety basis hazard controls. Notably, the process addresses re-verification of facility safety basis controls every three years through the SSO and FR programs. The IVR process is supplemented by a readiness review process that adequately addresses the review process, appropriately allowing for a graded approach for readiness assessments. SRSO conducted and documented an independent IVR for revision 10 of the safety basis documents. Review of the SSO assessment schedule and assessments indicated that the structures, systems, and components were being assessed within a three-year window and that design features for safety and SACs were included in these reviews. SSO assessments have been conducted using a detailed set of criteria that address safety basis hazard controls, including review of completed surveillance tests and comparison of test acceptance criteria to safety basis functional requirements. The FRs perform daily oversight of safety basis hazard control implementation. SSO assessments and FR reports provide evidence of critical reviews of the areas, and the reports support the assessment conclusions. The SSO engineer's method for tracking completion of periodic evaluations provides a positive means of ensuring that the safety basis hazard controls receive a periodic re-verification.

The SRSO IVR review plan contained an adequate scope for the shadow review and a discussion of the contractor scope and lines of inquiry. The shadow assessment was conducted in accordance with the assessment plan and included independent review of several of the functional areas and lines of inquiry. The degree of rigor applied to the assessment was appropriate; SRSO personnel were thorough and followed up suitably on potential issues. Assessment personnel had adequate technical expertise and qualifications and appropriately referred to subject matter experts, when necessary. Importantly, the SRSO readiness assessment team placed sufficient emphasis on observation of the assessment and was involved in nearly all of the work activities, interviews, walkdowns, and team meetings. SRSO personnel interacted appropriately with SRNS readiness assessment team members to ensure that potential issues were addressed and resolved.

Independent Oversight reviewed the final SRSO IVR report (ASRP-SRSOMA-5.7.2012-437546), and the report identified one finding that the room configuration for the Helium-3 Process Air Migration Study was incorrect. SRNS took appropriate action and the Air Migration Study was re-performed. SRSO appropriately requested a corrective action plan for this finding within 30 days in the formal transmittal of the report to SRNS.

6.0 NOTEWORTHY PRACTICE AND OPPORTUNITIES FOR IMPROVEMENT

During the review, Independent Oversight identified one noteworthy practice (NP), which corresponds closely to "proficiency," as defined in the SRSO assessment procedure.

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NP-1: The SSO engineer's method for tracking completion of periodic evaluations provides a positive means of ensuring that the safety basis hazard controls receive a periodic re-verification.

During the review, Independent Oversight identified several OFIs. These issues are characterized in accordance with the SRSO technical assessment process procedure (SV-PRO-011) and are annotated in the report by level and number (for example, **OFI-1**). The SRSO procedure defines three levels of deficiencies. A concern is an "indication of a programmatic breakdown or widespread problem supported by several findings," and requires the submittal of a corrective action plan. A finding is "an individual item that is non-compliant," and an observation is a "variance from the contractor-stated benchmark expectations." Neither a finding nor an observation requires a written response.

According to Independent Oversight protocols, OFIs "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." OFIs are not mandatory and do not require formal resolution by management through the corrective action process.

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SRNS should consider:

OFI-1: Ensuring that an independent review of all significant safety basis hazard control changes is conducted when the safety basis documents are revised.

OFI-2: Ensuring that readiness assessments evaluate the installation and annual inspections of pipe penetrations (in accordance with site procedure 5.10, manual 2Q, and site engineering standard).

OFI-3: Ensuring the safety basis change implementation processes include an expectation to review changes to the DSA and TSR to ensure the Fire Hazards Analysis is updated as needed.

OFI-4: Improving the flowdown process by ensuring that the LDD includes all of the implementing procedures in the appropriate section of the LDD, specifically those TSR-related activities that flow down to and are executed by other SRNS organizations.

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OFI-5: SRSO should consider ensuring that an independent review of all significant safety basis hazard control changes is conducted when the safety basis documents are revised.

7.0 FOLLOW-UP ITEMS

None

Appendix A
Supplemental Information

Dates of Review

Onsite Review: April 16-19, 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
Thomas Staker
William Miller
Michael Kilpatrick
George Armstrong
Robert Nelson

Independent Oversight Site Lead

Phillip Aiken

Independent Oversight Reviewers

Phillip Aiken – Lead
David Odland
Terry Olberding
Jeffrey Robinson

Appendix B
Documents Reviewed, Interviews, and Observations

Documents Reviewed

- ADM-TRIT-1003, Tritium Minimum Staffing, Rev. 20, 12/10, and IPC-1, 12/11
- ADM-TRIT-10051, Limiting Conditions for Operation (LCOs) Tracking Status (U), Rev. 7, 12/10, IPC-3, 12/11
- ADM-TRIT-1112, Documented Safety Analysis (DSA)/Technical Safety Requirements (TSR) Change Implementation, Rev. 6, 6/10
- ADM-TRIT-1464, Fire Patrol Program (U), Rev. 13, 2/12
- ASM-SRSOMA-2.14.2012-418426, SRSO Facility Representative Program Assessment, Rev. 0, 3/15/12
- ASRP-SRSOMA-1.10.2012-410447, Activity Observation/Surveillance, HANH SAC, Inventory Controls, 12/11
- ASRP-SRSOMA-1.13.2011-314990, SRSO FR Assessment Report; TEF Glovebox O2 Functional ASRP-SRSOMA-12.21/2010-309854, Activity Observation/Surveillance of TEF Inventory SAC, 12/10
- ASRP-SRSOMA-4.11.2011-339062, Operational Surveillance Activity H-Area New Manufacturing Facility, 3/11
- ASRP-SRSOMA-7.6.2011-360755, Activity Observation/Surveillance, HANM SAC for Open Glovebox Maintenance Vessel Pressure/Deflagration Controls, 6/11
- ASRP-SRSOMA-9.8.2011-376534, Activity Observation/Surveillance, HANM Fire Suppression System, 8/11
- ASRP-SRSOMA-11.23.2010-302979, Final Report Implementation of Tritium Facilities FY 10 Safety Basis Annual Update, Rev. 0, 12/15/10
- ASRP-SRSOMA-5.7.2012-437546, Final Report, Independent Verification Review of the Tritium Facilities Helium-3 Separation and Bottling Process, Rev.0, 5/7/2012
- COR-SRSOMA-11.15.2010-301068, Letter to Gentile from Dearolph, Subject: Safety System Assessment of Environmental Conditioning Electrical Isolation and the Air Intrusion Valves, 11/19/10
- COR-SRSOMA-2.27.2012-420887, Memo to NNSA-SRSO Facility Representatives from McFall, Subject: Facility Representative Monthly Assessment Plan – March 2012, 2/27/2012 Check January 2011, 1/4/11
- COR-SRSOMA-3.28.2012-428311, Letter to Donati from Dearolph, Subject: Safety System Assessment of Administrative Controls (AC) and Specific Administrative Controls (SAC) for the Tritium Facilities and Tritium Extraction Facility, 4/4/12
- COR-SRSOMA-9.20.2011-379690, Letter to Donati from Dearolph, Subject: Safety System Assessment of the Tritium Extraction Facility (TEF) Uninterruptible Power Supply (UPS) #2 and Selected Design Features from TEF and Tritium Facilities (TF), 9/30/11
- DS-3-BP-0001, Purifying Byproduct from D1 Tank DI-BPA or DI-BPB Data Sheet, Rev 3 Temp IPC-1, 4/2/12
- DS-3-PG-090-R1, HANM Byproduct Purification Process End of Shift System Status, R1, 4/2/12 FA-09 Configuration Management (CR-8) and FA-12 Fire Protection (CR-1,5,8) Sample Plan
- DS-FP-106, Fire Patrol Log (233-H) (U), Rev. 2, 2/11, IPC-5, 3/12
- Implementation Verification Review Plan for the Tritium Facilities Helium-3 Separation and Bottling Process, Rev. 0, 4/16/12

- Implementation Verification Review Plan Tritium Facilities FY 10 Safety Basis Annual Update, Rev. 0, 10/27/10
- Memorandum to Donald Cook from Douglas Dearolph, Subject: Submittal of NNSA SRSO Startup Notification Report (SNR) for the First Quarter Calendar Year 2012 (1QCY2012), 4/11/2012
- OSR-49-073, LCO Tracking Form, 9/10
- PP T-750542, Safety Significant (SS) Air Intrusion Check Valve Change Out (U), Rev. 6, 2/12, IPC-1, 3/12
- SOP -223-70001, Purifying Byproduct from D1 Tank DI-BPA or DI-BPB, Rev 4 Temp IPC-3, 4/2/12
- SOP -70001, Byproduct Transfer and Valve Lineup,
- SP16, H-241-125-001-DFP, Building 241-125H Diesel Fire Pump #1 Annual Flow Test, Rev. 3, 3/12
- SRNS-RP-2012-00064, Helium 3 – Separation and Bottling Process Project S-Y504, Management Control Plan Rev. 0, 3/16/12
- SRNS-RP-2012-00186, NNSA Operations/Programs Helium-3 Separation and Bottling Process Facility Self-Assessment Project Y-504, 4/12
- SRNS-TR-2011-00340, NNSA Operations/Programs Helium-3 Separation and Bottling Process Readiness Assessment Plan of Action/Implementation Plan, Rev. 1, 3/21/12
- Surveillance Test # 2005099, Perform Required Inspection for Building 233-H Gloveboxes per SOP TRIT-5027
- SV-PLN-002, SRSO Annual Assessment Plan, Rev. 9, 12/14/11
- SV-PRO-008, Vital Safety System Assessments, Rev. 5, 2/22/11
- SV-PRO-010, SRSO Facility Representative Program, Rev. 5, 9/15/10
- SV-PRO-011, Technical Assessment Program, Rev. 7, 7/15/11
- SV-PRO-016, Readiness Review Process, Rev. 3, 12/29/10
- SV-PRO-030 SRSO Nuclear Safety Oversight, Rev. 5, 11/30/11
- U-SBIP-H-00007, DSA/TSR Document Change Implementation Record (U), Rev. 0, 12/11
- Vital Safety System Assessment Schedule, 1/27/12
- WSRC-IM-96-142, Tritium Facilities Safety Basis Documents, Rev. 54, 12/11
- Y7.1, 5-11151, Test of CH and CW-Series Check Valve Operating Pressures and Seat Leak Rate, Rev. 2, 1/12

Interviews

- SRNS Lead Design Authority Engineer

Observations

- SRNS RA Team Daily Meetings
- SRSO IVR Team Daily Meetings
- Helium-3 Process Evolution
- Contractor RA Team Interviews of Byproduct Operators (2), Shift Operations Managers (2), Shift Supervisors (2), and Shift Technical Engineer Title
- Facility Annual Review of Monitoring Systems (FARMS) Field Walkdown
- FA-09 and FA-12 Field Walkdown