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2011 Annual Criticality Safety Program Performance Summary

December 2011

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2011 Annual Criticality Safety Program Performance Summary

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Date

Summary

The 2011 review of the INL Criticality Safety Program has determined that the program is robust and effective. The review was prepared for, and fulfills Contract Data Requirements List (CDRL) item H.20, "Annual Criticality Safety Program performance summary that includes the status of assessments, issues, corrective actions, infractions, requirements management, training, and programmatic support." This performance summary addresses the status of these important elements of the INL Criticality Safety Program.

Assessments – Assessments in 2011 were planned and scheduled. The scheduled assessments included a Criticality Safety Program Effectiveness Review, Criticality Control Area Inspections, a Protection of Controlled Unclassified Information Inspection, an Assessment of Criticality Safety SQA, and this management assessment of the Criticality Safety Program. All of the assessments were completed with the exception of the "Effectiveness Review" for SSPSF, which was delayed due to emerging work.

Although minor issues were identified in the assessments, no issues or combination of issues indicated that the INL Criticality Safety Program was ineffective. The identification of issues demonstrates the importance of an assessment program to the overall health and effectiveness of the INL Criticality Safety Program.

Issues and Corrective Actions – There are relatively few criticality safety related issues in the Laboratory ICAMS system. Most were identified by Criticality Safety Program assessments. No issues indicate ineffectiveness in the INL Criticality Safety Program. All of the issues are being worked and there are no imminent criticality concerns.

Infractions - There was one criticality safety related violation in 2011. On January 18, 2011, it was discovered that a fuel plate bundle in the Nuclear Materials Inspection and Storage (NMIS) facility exceeded the fissionable mass limit, resulting in a technical safety requirement (TSR) violation. The TSR limits fuel plate bundles to 1085 grams U-235, which is the maximum loading of an ATR fuel element. The overloaded fuel plate bundle contained 1097 grams U-235 and was assembled under an 1100 gram U-235 limit in 1982. In 2003, the limit was reduced to 1085 grams citing a new criticality safety evaluation for ATR fuel elements. The fuel plate bundle inventories were not checked for compliance prior to implementing the reduced limit. A subsequent review of the NMIS inventory did not identify further violations.

Requirements Management – The INL Criticality Safety program is organized and well documented. The source requirements for the INL Criticality Safety Program are from 10 CFR 830.204, DOE Order 420.1B, Chapter III, "Nuclear Criticality Safety," ANSI/ANS 8-series Industry Standards, and DOE Standards. These source requirements are documented in LRD-18001, "INL Criticality Safety Program Requirements Manual."

The majority of the criticality safety source requirements are contained in DOE Order 420.1B because it invokes all of the ANSI/ANS 8-Series Standards. DOE Order 420.1B also invokes several DOE Standards, including DOE-STD-3007, "Guidelines for Preparing Criticality Safety Evaluations at Department of Energy Non-Reactor Nuclear Facilities."

DOE Order 420.1B contains requirements for DOE "Heads of Field Elements" to approve the criticality safety program and specific elements of the program, namely, the qualification of criticality staff and the method for preparing criticality safety evaluations. This was accomplished by the approval of SAR-400, "INL Standardized Nuclear Safety Basis Manual," Chapter 6, "Prevention of Inadvertent Criticality." Chapter 6 of SAR-400 contains sufficient detail and/or reference to the specific DOE and contractor documents that adequately describe the INL Criticality Safety Program per the elements specified in DOE Order 420.1B. The Safety Evaluation Report for SAR-400 specifically recognizes that the approval of SAR-400 approves the INL Criticality Safety Program.

No new source requirements were released in 2011. A revision to LRD-18001 is planned for 2012 to clarify design requirements for criticality alarms.

Training - Criticality Safety Engineering has developed training and provides training for many employee positions, including *fissionable material handlers*, *facility managers*, *criticality safety officers*, *firefighters*, and *criticality safety engineers*. Criticality safety training at the INL is a program strength. A revision to the training module developed in 2010 to supplement MFC certified fissionable material handlers (operators) training was prepared and presented in August of 2011. This training, "*Applied Science of Criticality Safety,"* builds upon existing training and gives operators a better understanding of how their criticality controls are derived. Improvements to 00INL189, "INL Criticality Safety Principles" are planned for 2012 to strengthen fissionable material handler training. Criticality Safety Engineering assisted the Training Directorate in developing fissionable material handler training at SSPSF. Facility specific training on new and existing criticality controls was provided by Criticality Safety Engineering to operators in classroom settings for FCF, FMF, HFEF, TREAT and ZPPR.

Programmatic Support – The major activity/deliverable of the INL Criticality Safety Engineering Department is performing criticality safety evaluations (CSEs) to support work. CSEs derive administrative and engineered criticality safety controls and limits. The CSEs support changes to Documented Safety Analyses (DSAs) and Criticality Control Lists that provide the specific criticality safety controls for fissionable material activities allowed in a facility. Seventeen CSEs and fifteen revisions to Criticality Control Lists were completed in support of INL activities. In addition to producing these technical reports, all DSA revisions and upgrades were reviewed by criticality safety personnel to ensure that CSEs were used correctly.

The Criticality Safety Engineering Department hired two recent graduates in 2010 and used two subcontractors in early 2011. One of those engineers left the INL in 2011. The current staffing level is projected to be adequate for the projected 2012 work-load.

New Issues Identified in this Management Assessment:

1) Criticality Safety Training (INL1126) for INL Emergency Responders was developed in 2007. An area for improvement was identified to incorporate comments/improvements received on the training and its companion study guide (INL/EXT-07-12535).

2) The existing training plan for Criticality Safety Engineers assumes a certain level of experience and is not adequate for engineers out of college. The qualification needs to be strengthened to help new engineers realize expectations.

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Introduction

The purpose of the Criticality Safety Program is to ensure appropriate actions are taken to prevent and mitigate the consequences of a criticality accident. The requirements of the Criticality Safety Program are documented in Laboratory Requirements Document, LRD-18001, "INL Criticality Safety Program Requirements Manual." LRD-18001 complies with the requirements of 10 CFR 830.204, applicable DOE Orders/Standards, and the ANSI/ANS-8-Series Standards.

A mature and effective criticality safety program requires the involvement of multiple organizations. These organizations include Criticality Safety, Emergency Management, Engineering, Fire Protection, Nuclear Operations, Safety Analysis, Safeguards & Security, and Training. Because of this multi-organizational involvement, the INL Criticality Safety Program relies on, and is part of the Integrated Safety Management System (ISMS). The Laboratory ISMS Program, which includes Criticality Safety, is documented in PDD-1004, "Integrated Safety Management System." The Criticality Safety Program is, in fact, based on the core functions and guiding principles of ISMS.

Management defines the scope of work. The Criticality Safety Engineering Department works with line management to analyze the hazards and develop controls for the prevention and mitigation of a criticality accident. Criticality safety evaluations (CSEs) are performed that identify and document controls. Criticality Safety Engineering assists line management in the implementation of controls and has a program in place to provide feedback and continuous improvement, which includes assessments and lessons learned.

The Criticality Safety Program is built on the first principle of ISMS, "line management is responsible for safety." A strength of the INL Criticality Safety Program is that line management owns, accepts, understands and participates in the criticality safety of their operations and facilities. Criticality Safety Engineering is responsible for developing and documenting the requirements for the INL Criticality Safety Program, but the real owners of the program are facility ("line") management.

The Criticality Safety Program (LRD-18001) clearly defines Laboratory, line management, and criticality safety engineering responsibilities. LRD-18001 also contains the requirements for process evaluation and analysis. CSEs are prepared, reviewed and approved per Laboratory procedures, mainly NS-18201, "Performing and Reviewing Criticality Safety Evaluations." Requirements for fissionable material control and operational procedures are also described in LRD-18001.

The Criticality Safety Program describes the training requirements for fissionable material handlers that meet the requirements of ANSI/ANS-8.20, "Nuclear Criticality Safety Training." The Criticality Safety Program contains specific training and qualification for criticality safety engineers, facility managers, fissionable material handlers, and Criticality Safety Officers (CSOs).

Annual and periodic criticality safety assessments and reviews are performed to ascertain that process conditions have not changed to affect applicable CSEs. The Criticality Safety Program requires these assessments are performed per Laboratory procedures, mainly NS-18202, "Criticality Safety Assessments." These procedures address the response to deficiencies, control violations and infractions.

Implementation of the INL Criticality Safety Program ensures that all operations with the potential for criticality have controls in place to prevent and mitigate the consequence of accidental criticality.

Description

This performance summary addresses the status of the following important elements of the INL Criticality Safety Program and fulfills Contract Data Requirements List (CDRL) requirement H.20, "Annual Criticality Safety Program performance summary that includes the status of assessments, issues, corrective actions, infractions, requirements management, training, and programmatic support." Each area is addressed in the following sections with supporting information included as appropriate.

Assessments - plans, schedules, and results.

Issues and Corrective Actions - significant issues and status.

Infractions - discussion of any criticality safety control or limit violation and status of corrective actions.

Requirements Management - status of contractual requirement implementation.

Training - adequacy of training and qualification.

Programmatic Support – criticality safety evaluations and technical guidance performed in support of INL goals and milestones.

Assessments

CY 2011

Several criticality safety assessments were performed in 2011. Contractor assessments were scheduled in the Laboratory Integrated Assessment Schedule (IAS) database, which is shown in the Appendix. The scheduled assessments included a Criticality Safety Program Effectiveness Review (IAS11711), Criticality Control Area Inspections (IAS11702), a Protection of Controlled Unclassified Information inspection (IAS11714), an Assessment of Criticality Safety SQA (IAS111705), and this management assessment of the Criticality Safety Program (IAS1236).

Quarterly assessments were performed by DOE-ID. The DOE Quarterly assessments use elements from DOE-STD-1158, "Self-Assessment Standard for DOE Contractor Criticality Safety Programs" and other lines of inquiry. These lines of inquiry are mainly programmatic in nature and derived from ANSI/ANS-8.1, "Nuclear Criticality Safety in Operations with Fissionable Material Outside Reactors" and 8.19, "Administrative Practices for Nuclear Criticality Safety". No significant criticality safety issues were identified in the 2011 DOE-ID quarterly assessments.

Criticality Safety Program Effectiveness Review

The "Program Effectiveness" assessment (IAS11711) was planned to use LRD-18001, "INL Criticality Safety Program Requirements Manual," for lines of inquiry. LRD-18001 includes all regulatory requirements from the CFR, DOE Orders/Standards, and ANSI/ANS Standards (see the Requirement Management section). The "Program Effectiveness" assessment (IAS11711) was planned for the Space and Security Power Systems Facility (SSPSF) at MFC. The SSPSF was designated because a new upgraded DSA (SAR-408) was submitted to DOE-ID in September 2009 for review and approval, and was implemented in June of 2011. The purpose of the assessment was to determine the effectiveness of the criticality safety program at the SSPSF. Benefits from the assessment include line management becoming more knowledgeable of the processes that implement the criticality safety program. Another benefit derived from the Program Effectiveness assessment is that it provides an opportunity for Criticality Safety Engineering to improve LRD-18001, i.e., reinforcing requirements and Best Management Practices that may need to be improved. The assessment will identify criticality safety requirements applicable to SSPSF operations and the programs and systems that implement the requirements, ensuring that these programs are not eroded or lost. IAS11711 is scheduled to be complete December 15, 2011, however conflicting priorities have delayed the start of this assessment.

Criticality Control Area Inspections

The purpose of the annual Criticality Control Area (CCA) Inspections (IAS11702) is to ensure that process conditions have not been altered to affect the criticality safety evaluations. These inspections are required by ANSI/ANS 8.1, "Nuclear Criticality Safety in Operations with

Fissionable Material Outside Reactors" and 8.19, "Administrative Practices for Nuclear Criticality Safety." The inspections also include compliance to LWP-18003, "Establishing, Operating and Deleting CCAs" and were performed according to NS-18202, "Criticality Safety Assessments," and LWP-13740, "Performing Inspections and Surveillances," and documented on checklists (Form 431.03). There are currently 26 CCAs and all but NRAD were walked down. No conditions were identified that would invalidate a criticality safety evaluation (see Inspection information in the Appendix). Observations corrected immediately included information updates to the CCA master-list such as updating names of CSOs/alternates and CCA Line Managers. Issues identified were entered into the ICAMS and include:

(1) The inspection at HFEF (CSI11102) determined that a Mass limit CCA located in room 125 within the HFEF Procedure CCA, be eliminated because the majority of the fissionable material has been transferred to another CCA at MFC. Elimination of the CCA required a revision to the HFEF CHCS document, HFEF-OI-1020, which was submitted to HFEF for review, and issued.

(2) Criticality Safety Engineering made a recommendation at CITRC CCAs (CSI11105) that the Laboratory Instruction (LI) for work in this CCA be revised to reflect moderated fissionable equivalent (MFE), which was implemented in several INL facilities in 2010. Homeland Security has a project planned, contingent on funding, to conduct detection of fissionable material (DTRA-LEU) using active-interrogation at the SOX range. The MFE definition will have little effect on the current inventory. Criticality Safety has requested to review and approve the LI.

(3) The inspection of FMF (CSI11117) identified the need to better define/address the "no liquid" moderator control for approved storage in LST-386 and derive the need to control special reflectors.

In addition to the facility inspections, IAS11702 also included a review of all Material Balance Areas to determine whether facilities that contain greater than 15 grams of fissionable material should be designated as CCAs. The MBA information provided a list of fissionable material, custodians, facility, building and location for the following areas: ATR Complex (includes CFA, IF town facilities and CITRC), MFC and PBF. As a result of this review, all MBAs were reviewed. An MBA at CFA-625 containing radioactive sources stored in a cargo container used for research experiments was re-evaluated. The material inventory was previously evaluated in 2008 (JTT-11-08) and was again determined that a CCA is not necessary per LRD-18001 and LWP-18003 requirements. The MBA review determined that there were no areas containing greater than 15 grams of fissionable material that should be designated as CCAs. The results of the CCA inspections are included in the "Assessments" section of the Appendix.

Criticality Safety Software Quality Assurance

Criticality Safety Software Quality Assurance was assessed (IAS111705) per LWP-13620, "Software Quality Assurance." The assessment used Form 220.25, which contains 18 lines of inquiry. These included training, configuration control, verification activities and process improvements. The assessment determined that the Criticality Safety Engineering Software is compliant to Laboratory Requirements. Process improvements identified included several

editorial improvements to the software quality assurance plan, NS-18211, "Criticality Safety Analysis Software," the procurement of uninterruptible power supplies and another network attached storage device. The completed checklist is attached in the "Assessments" section.

Protection of Controlled Unclassified Information

Protection of Controlled Unclassified Information was assessed via an inspection (IAS11714) per LWP-11202, "Controlled Unclassified Information Program." The assessment used Form 220.23 for lines of inquiry. A walk-down of the criticality safety area was performed and three organizational members were interviewed. No issues were identified. The completed checklist is attached in the "Assessments" section of the Appendix.

Summary

The assessments described here were performed according to NS-18202, "Criticality Safety Assessments," and Laboratory procedures such as LWP-13760, "Performing Independent Reviews and Assessments." NS-18202 was revised and issued in October of 2011.

Although several issues were identified in the above described assessments, no issues or combination of issues indicate an ineffective Criticality Safety Program. The assessments show that an assessment program is important to the overall health and effectiveness of the INL Criticality Safety Program.

Issues and Corrective Actions

A search of the Laboratory Issues and Corrective Action Management System (ICAMS) was performed for criticality safety related issues to determine trends or areas of weakness. The search looked for Issues/Observations (IOs) that were either "open" or "closed" in CY2011. The criticality safety related issues and corrective action items in ICAMS are summarized here and listed in the "Issues and Corrective Actions" section of the Appendix. The listing in the appendix includes all criticality safety related 2011 issues and action items (open and closed) with ICAM number, title, description, and status.

There are relatively few criticality safety related issues in the ICAMS system. Most issues are actively being resolved. Many of the issues were identified from Criticality Safety Program assessment activities. There are no issues that are an imminent criticality concern. The important issues are discussed below.

(1) C**riticality Safety Officer Program**. There are two issues that identify improvement in the MFC Criticality Safety Officer (CSO) program, particularly the CSO at HFEF. A new CSO was appointed at HFEF with time available to perform expected roles and responsibilities. An improvement was made to the qualification plan for CSOs (NS-18204) that requires the Criticality Safety Engineering Manager to interview the prospective CSO to validate CSO familiarity/understanding of the facility criticality safety program. Two criticality safety engineers were appointed to assist FCF and HFEF operations personnel in understanding their facility programs. There is one remaining action item that requires the Criticality Safety Manager to meet with MFC CSOs and discuss criticality safety issues. To date, half of the CSOs have been contacted. This action is expected to be complete by the end of CY2011.

(2) **Criticality Control Area Issues**. Criticality Control Area inspections resulted in areas for improvement at HFEF and FMF. The definition of moderator in the CHCS at HFEF was revised to be specific to hydrogenous liquid. This issue is closed. New missions at FMF and ZPPR will require special reflector controls. A criticality safety evaluation was completed that defines special reflectors. Action items remain open to revise the criticality controls at FMF and ZPPR. These actions are scheduled for closure in early CY2012.

(3) **Mass Tracking System (MTG) at FCF.** The MTG contains conservative mass factors that are used to conservatively implement controls in the absence of analytical data. An issue was entered to update the conservative mass factor for salt in the MK-V electrorefiner. The processing of FFTF fuel resulted in numerous samples taken of the salt during the campaign and analysis of the samples at the Analytical Laboratory. The analysis demonstrated that the process model accurately predicts the plutonium concentration. Criticality Safety engineering issued a report (TEV-1359) recommending the actions required to reduce the conservative mass factor from 1.1 to 1.0 for plutonium in the MK-V electrorefiner. The action is complete but the mass factor in the MTG has not been modified.

(4) **Criticality Safety Principles Training. "**Criticality Safety Principles" is a training model used for fissionable material handlers, criticality safety officers, system engineers, safety analysts, and other disciplines. This web-based training and its companion study guide INL/INT-06-01183 have not been revised since 2006. A review of comments from those who have taken the training and test question performance, has identified areas for improvement. Significant improvements have been made and are in the process of being programmed into the training and study guide. The revisions are expected to be complete in early CY2012.

(5) **ATRC Fissionable Material Handler Training.** A 2010 review of the ATRC fissionable material handler training identified an area for improvement by creating a unique Lesson Plan for ATRC. The ATRC training was using the documents and scenarios for ATR. A new ATRC specific Lesson Plan was created by ATR training personnel with review and concurrence by Criticality Safety Engineering. This action item is closed.

(6) **Response to Criticality Alarms (CASs) at MFC.** There are currently four facilities at MFC with CASs - FCF, FMF, TREAT, and ZPPR. The CPP-651 project is currently planning to have a CAS, but it is not yet installed. FCF has been shown to be "well shielded" and the approved "Upgraded" DSA does not require the CAS. Criticality in TREAT has been shown to be "incredible" with the types of materials allowed and implementation of controls. The "Upgraded" DSA for TREAT does not require a CAS. In the very near future there will only be CASs at FMF and ZPPR. The current response to a CAS at MFC is immediate evacuation of the affected facility. An MFC-wide voice announcement states that there is a criticality in the affected facility and directs personnel to evacuate. Affected facility personnel evacuate to a staging area outside the immediate evacuation zone (12 Rad-in-air boundary). The Emergency Action Manager (EAM) activates the ECC. Unaffected personnel are trained to "not approach" the affected facility but are not required to "TAKE SHELTER." Personnel in facilities and buildings with staging areas stage at the appointed area and prepare to evacuate. Nuclear facilities shutdown important equipment/activities, stage at the appointed area and prepare to evacuate. All facilities/buildings that stage do so no matter how close they are to the affected facility. Nuclear Facilities shutdown their facility, stage and prepare to evacuate while personnel outside continue to perform construction work or walk around.

Criticality Safety Engineering recommended that MFC response to a facility criticality alarm include:

a. Immediate evacuation of the affected facility beyond the immediate evacuation zone (12 Rad-in-air boundary).

b. A voice announcement stating that a criticality alarm has occurred in the affected facility (the existing voice announcement is adequate).

c. Personnel be trained to avoid the affected facility (the fence around FMF and ZPPR is adequate to protect personnel) – "MFC access training" (MFC00003) should be revised to include this training.

d. Facilities (other, Radiological and Nuclear) determine whether they have processes that need orderly shut-down or curtailment. Criticality Safety Engineering does not believe that ALL facilities should shut-down and stage for evacuation (a requirement for TAKE SHELTER), however there may be some facilities that wish to respond (e.g., SSPSF may wish to stop/shutdown activities/processes for a response to a CAS alarm at ZPPR because of its proximity to ZPPR). Facility Managers should evaluate activities within their facilities and determine their response. "Criticality Alarms at MFC" training (MFC00175) should be revised to be consistent with this approach.

e. No requirement for office/maintenance buildings to stage and prepare for evacuation.

f. A revision to the existing EAL that requires "immediate facility evacuation" and criteria for determining whether a criticality has occurred.

The recommended actions will require a change to the generic EAL for unplanned criticality at MFC and facility specific Emergency Alarm Response procedures. A new EAL has been drafted and is under review.

Status of Issues Listed in 2010

1) *Criticality Safety Engineering has not participated in the evaluation of the fissionable material handler training as recommended by LRD-18001, section 3.9. In addition, the criticality accident scenarios are not always a part of the fissionable material handler training as required by LRD-18001.* Corrective actions have been identified and listed in ICARE (DR 42158) (Action Items 42230, 31 - 37, 39, 40, 41). This issue predated ICAMS and was issued under the ICARE system. All facility training reviews have been completed.

2) *The CSO at HFEF and other MFC facilities does not have adequate resources to perform roles/responsibilities.* (IO-004035, Action Item AI-02543). The Criticality Safety Officer (CSO) training was strengthened by requiring the CSO to meet with the Manager of Criticality Safety Engineering to ensure facility familiarization. This item was closed in November of 2010. The final Action Item (AI-02546) to meet with MFC CSOs is scheduled to be closed by December 15, 2011. IO-004035 can then be closed.

3) *Revise the HFEF CHCS to change the definition of "moderator" to "liquid moderator" in the next revision.* (IO-005849, Action Item AI-02542) The CHCS was revised and this action has been closed (May of 2011).

Infractions

There was one criticality safety violation in 2011. On January 18, 2011, it was discovered that a fuel plate bundle in the Nuclear Materials Inspection and Storage (NMIS) facility exceeded the fissionable mass limit, resulting in a technical safety requirement (TSR) violation. The TSR limits fuel plate bundles to 1085 grams U-235, which is the maximum loading of an ATR fuel element. ATR fuel plates vary in width and U-235 loading. The overloaded fuel plate bundle contained 1097 grams U-235 and was assembled under an 1100 gram U-235 limit in 1982 at INTEC (CPP-651). In 2003, the limit was reduced to 1085 grams citing a new criticality safety evaluation for ATR fuels. The fuel plate bundle inventories were not checked for compliance prior to implementing the reduced limit. A subsequent review of the NMIS inventory did not identify further violations.

The overloaded fuel plate bundle was repackaged under an existing handling limit into two separate bundles and placed into storage according to TSR loading limits.

See Occurrence Report NE-ID-BEA-ATR-2011-0003, “Nuclear Materials Inspection and Storage (NMIS) Facility Fuel Storage Safety Analysis Report (SAR)-154 Administrative Control Limit Exceeded” included in the Appendix.

Requirements Management

The INL Criticality Safety Program is organized and well documented. Other DOE contractors contact the INL asking for advice and examples of documents demonstrating compliance. The requirements for the INL Criticality Safety Program are documented in LRD-18001, "INL Criticality Safety Program Requirements Manual." LRD-18001 contains requirements and recommendations that are in compliance with 10 CFR 830.204, DOE Orders, mainly DOE Order 420.1B, Chapter III. "Nuclear Criticality Safety," DOE Standards, industry standards, and best management practices used at the INL and throughout the DOE complex. The source requirement documents are listed in the "Requirements Management" section. Following each requirement and recommendation in LRD-18001 is a reference in parentheses listing the source document(s) or BMP for Best Management Practice. A unique document was created that demonstrates complete requirements roll-down for all source requirements. This document, NS-18210, "Criticality Safety Program Requirements Identification and Implementation Document," has a matrix for each source requirement and a reference to where in the program the requirement is implemented. NS-18210 effectively demonstrates that the program is in compliance with all source requirements.

The majority of criticality safety source requirements are contained in DOE Order 420.1B because it invokes all of the ANSI/ANS 8-Series Standards. In addition to ANSI/ANS Standards, DOE Order 420.1B also invokes several DOE Standards, including DOE-STD-3007, "Guidelines for Preparing Criticality Safety Evaluations at Department of Energy Non-Reactor Nuclear Facilities."

DOE Order 420.1B also contains requirements for DOE "Heads of Field Elements" to approve the criticality safety program and specific elements of the program, namely, the qualification of criticality staff and the method for preparing criticality safety evaluations. This was accomplished by the approval of SAR-400, "INL Standardized Nuclear Safety Basis Manual," Chapter 6, "Prevention of Inadvertent Criticality," which was first submitted to DOE-ID in June, 2006. Chapter 6 of SAR-400 contains sufficient detail and/or reference to the specific DOE and contractor documents that adequately describe the INL Criticality Safety Program per the elements specified in DOE Order 420.1B. The DOE Safety Evaluation Report for SAR-400 states that the approval of SAR-400 approves the INL Criticality Safety Program. This demonstrates clear DOE approval of the INL Criticality Safety Program.

A new software quality assurance and configuration management plan was issued in 2010. This document meets DOE and Laboratory quality assurance requirements. Verification and validation documentation was completed for the most recent versions of MCNP and SCALE in 2011. This effort also addressed new hardware and software.

A complete list of all INL Criticality Safety Program documents is contained in NS-18209, "List of Criticality Safety Program Documents," and is included in the Appendix.

Several criticality safety program documents were improved in 2011. The program documents revised in 2011 include:

- NS-18202, ”Criticality Safety Assessments”
- NS-18209, “List of Criticality Safety Program Documents”
- INL/INT-10-19661, “MCNP5 1.51 Verification and Validation for the Criticality Safety Analysis Software Application
- INL/INT-11-22236, “SCALE 6.0 Verification and Validation for the Criticality Safety Analysis Software Application

Training

Criticality safety training is a strength of the INL program, but there is always room for improvement. Criticality Safety Engineering review of the facility specific training materials was identified as a previous issue. ICARE item DR 42158 was initiated to address this issue. Reviews of all fissionable material handler training programs at the INL were scheduled. To date, reviews of the Fuel Conditioning Facility, Fuel Manufacturing Facility, Hot Fuel Examination Facility, Nuclear Material Inspection and Storage facility, Radioactive Scrap and Waste Facility, Space and Security Power Systems Facility, Transient Reactor Test Facility, Zero Power Physics Reactor, Advanced Test Reactor and Advanced Test Reactor Critical facility have been completed. The reviews documented criticality scenarios and identified areas for improvement. These reviews strengthened operator understanding of criticality safety for their facilities and minimize violations.

Criticality Safety training has been developed for many employee positions, including *fissionable material handlers*, *facility managers*, *criticality safety officers*, *firefighters*, and *criticality safety engineers*.

The training for *firefighters* was introduced to the INL in 2007. Besides responding to fires, firefighters are the first responders to a criticality alarm or accident. The training (0INL1226, "Criticality Safety for Firefighters") is web-based and includes a companion study guide, INL/EXT-07-12074, "Criticality Safety Basics for INL Emergency Responders." The training explains why fire-fighting restrictions may be in place, provides examples of restrictions, and helps first responders learn and recognize the effects of direct neutron/gamma radiation resulting from a criticality accident. Feedback from the firefighters has been very positive. An update to this training module is planned for FY2012 to incorporate comments and improve understanding.

Fissionable Material Handler training continues to improve at the INL. Standardized training on the principles of criticality safety was developed in 2006 (00INL189, "INL Criticality Safety Principles"). This web-based training is much more efficient for most handlers and provides better training than that received previously at some facilities. Since its inception in 2006, hundreds of INL personnel have taken 00INL189. The study guide that accompanies the training, INL/EXT-06-01183, "Criticality Safety Basics for INL FMHs and CSOs," has been well received. Hundreds of copies of the study guide have been given to FMHs by facility management and training personnel. A review of comments from those who have taken the training and test question performance has identified areas for improvement. A major improvement effort was planned for FY2011, but was delayed due to emerging work. Several improvements have been made that better address basic physics, more emphasis on parameter control factors, and more examples for solid systems rather than solutions. The changes are currently being programmed into the training and the revision is expected to be complete in early 2012. Facility specific training on new and existing criticality controls was provided by Criticality Safety Engineering to operators in classroom settings for FCF, FMF, HFEF, TREAT, and ZPPR.

Criticality Safety Engineers again provided numerous training sessions for FMHs at MFC. This has been beneficial to both Criticality Safety Engineering and Nuclear Operations. The technicians have learned new concepts, criticality safety engineers have learned more about the facilities, and a positive relationship continues to develop between the organizations.

The criticality safety training for *Facility Managers* (00INL618, "Criticality Safety Training for Facility Managers") continues to have a positive effect on the Criticality Safety Program. This training focuses on criticality safety roles and responsibilities and has created an ownership role in line management that is the strength of the INL Criticality Safety Program. 00INL618 is a course taught by the Criticality Safety Engineering Department Manager and results in a positive relationship between the organizations. An update of the training was made in 2011.

The criticality safety training for *Criticality Safety Officers* (0INL1134, "INL Criticality Safety Officer Training") has also had a positive impact on the Criticality Safety Program. This training focuses on criticality safety roles and responsibilities for CSOs and creates an ownership role within the facility. 0INL1134 is a course taught by the Criticality Safety Engineering Department Manager and results in a positive relationship between the Department and the CSO. Improvements to 0INL1134 were again made in 2011. The CSO qualification standard was revised in 2010 to require an interview of the trainee by the Criticality Safety Engineering Manager. This change was made to strengthen the CSO's knowledge and understanding of facility specific controls and their implementation. The CSOs are an extremely important element of the INL Criticality Safety Program.

Criticality safety engineer training and qualification is documented in NS-18203, "Criticality Safety Engineer Qualification Plan." This qualification was written to, and meets requirements of DOE Order 426.2, DOE-STD-1135, "Guidance for Nuclear Criticality Safety Engineer Training and Qualification," and ANSI/ANS-8.26-2007, "Criticality Safety Engineer Training and Qualification Program." NS-18203 was revised in 2009 to include additional required training courses available in the DOE Complex for engineers to attend. A revision to NS-18203 was planned for 2011 but did not occur. Newly hired criticality safety engineers in the Department are working on their qualification (QNCRITEG). The existing plan assumes a certain level of experience and is not adequate for engineers out of college. The qualification needs to be strengthened to help new engineers realize expectations.

A new training module was developed in 2009 by Criticality Safety Engineering to supplement MFC training for certified fissionable material handlers (operators). The training, "*Applied Science of Criticality Safety,"* builds upon the existing training and gives the operators a better understanding of criticality accidents and how controls are derived. The training was significantly revised in 2011 to include more accidental criticality information and presented in August of 2011.

A new training course was developed for the Nuclear Infrastructure Assessment and Disablement Team (NIAD). The course was coordinated with National Nuclear Safety Administration (NNSA) and included the following topics: 1) Principles of Criticality Safety, 2) Criticality Accidents, 3) Criticality safety limits and their use, and 4) Applications. The training was well received by the customer, the U.S. Army. This training module was revised in 2011 to incorporate recovery actions from accidental criticalities and taught to the NIAD in April of 2011.

Programmatic Support

The major deliverable of the INL Criticality Safety Engineering Department is performing criticality safety evaluations (CSEs) that support work. There is little need for a criticality safety organization if there isn't a need to handle and store fissionable material. CSEs derive administrative and engineered criticality controls and limits. The CSEs support changes to Documented Safety Analyses (DSAs) and Criticality Control Lists (LST) that document the facility specific controls.

Seventeen CSEs (includes revisions to existing CSEs) were completed in support of ATR Complex, MFC and CPP-651 operations. Other reports were issued for training and software qualification and verification. In addition to these technical reports, all DSA revisions and upgrades (TREAT and ZPPR) were reviewed by criticality safety personnel to ensure that CSEs were used correctly. Fifteen CHCS and LST revisions were written and approved in 2011 to support new work at MFC (including Inter-facility Transfers, FCF, FMF, HFEF, TREAT, and ZPPR facilities). Many of the revisions involved follow up training of operators by criticality safety engineers.

No new CCAs were created in 20011, but seven new Criticality Safety Officers were appointed, trained, and qualified. There are currently 26 CCAs that are located at ATR Complex, MFC, PBF and REC.

All of the work was planned and scheduled. A list of documents issued by the Criticality Safety Engineering Department is included in the "Programmatic Support" section. The Criticality Safety Engineering Department hired two recent graduates in 2010 and used two subcontractors to augment staff in 2011. The contractors completed their assignments in early 2011, and have taken employment elsewhere. One of those engineers left the INL in 2011. The existing staffing level is projected to be adequate for the projected 2012 workload.

A significant upgrade was completed for the Criticality Safety Computational Network. A new network storage device and uninterruptible power supplies were installed. This equipment greatly reduced the effort to manage the system. In addition, a new more powerful workstation with multiple processors was procured and installed. This system was needed to support the computational intensive criticality alarm detector and accident evaluations for ZPPR and CPP-651. The latest versions of SCALE and MCNP were installed and verified for the network. The latest version of SCALE was used for burnup calculations in support of the EBR-II fuel returns from INTEC.

The INL Criticality Safety Engineering Department met all commitments and supported all Laboratory milestones. 2011 was a very successful year.

Appendix

Integrated Assessment Schedule for Criticality Safety 2011

Current Assessment Schedule

AS ID	IAS11714 - Protection of Controlled Unclassified Information				
	Risk Level: Low	**Risk Description:**		**Performing Organization:** W310 - CRITICALITY SAFETY ENGINEERING	
	Assessment Lead: Taylor, Joseph Todd	**Resp Mgr:** Taylor, Joseph Todd	**AC:** French, Mary Ellen	**Assessment Type:** Inspection	
	Scheduled Start: 10/07/2010	**Scheduled End:** 09/30/2011	**Report Date:** 09/21/2011	**Status:** Closed	**Rqrd:** Y
	Facility: REC/WCB	**Assessed Organization:** W300 - Nuclear Safety Engineering		**Work Evolution Observation:** No	
AS ID	IAS11702 - Criticality Control Area (CCA) Inspections				
	Risk Level: Low	**Risk Description:**		**Performing Organization:** W310 - CRITICALITY SAFETY ENGINEERING	
	Assessment Lead: Taylor, Joseph Todd	**Resp Mgr:** Taylor, Joseph Todd	**AC:** French, Mary Ellen	**Assessment Type:** Inspection, Surveillance	
	Scheduled Start: 10/11/2010	**Scheduled End:** 09/30/2011	**Report Date:** 09/29/2011	**Status:** Completed	**Rqrd:** Y
	Facility: REC Labs MFC ATR Complex	**Assessed Organization:** C000 - Nuclear Science & Technology GC00 - MFC Nuclear Operations D000 - National & Homeland Security GB00 - ATR Programs		**Work Evolution Observation:** No	
AS ID	IAS11711 - Criticality Safety Program Effectiveness Review				
	Risk Level: Moderate	**Risk Description:**		**Performing Organization:** W310 - CRITICALITY SAFETY ENGINEERING	
	Assessment Lead: Taylor, Joseph Todd	**Resp Mgr:** Taylor, Joseph Todd	**AC:** French, Mary Ellen	**Assessment Type:** Independent	
	Scheduled Start: 10/18/2010	**Scheduled End:** 12/15/2011	**Report Date:**	**Status:** Planned	**Rqrd:** Y
	Facility: MFC MFC/SSPSF	**Assessed Organization:** GC00 - MFC Nuclear Operations		**Work Evolution Observation:** No	

AS ID	IAS111705 - Assessment of Criticality Safety SQA				
	Risk Level: Moderate	**Risk Description:**		**Performing Organization:** W310 - CRITICALITY SAFETY ENGINEERING	
	Assessment Lead: Taylor, Joseph Todd	**Resp Mgr:** Taylor, Joseph Todd	**AC:** French, Mary Ellen	**Assessment Type:** Inspection	
	Scheduled Start: 08/26/2011	**Scheduled End:** 09/30/2011	**Report Date:** 09/29/2011	**Status:** Closed	**Rqrd:** Y
	Facility: REC Other	**Assessed Organization:** W300 - Nuclear Safety Engineering		**Work Evolution Observation:** No	

AS ID	IAS1236 - Criticality Safety Program Performance Review (CDRL)				
	Risk Level: Low	**Risk Description:**		**Performing Organization:** W310 - CRITICALITY SAFETY ENGINEERING	
	Assessment Lead: Taylor, Joseph Todd	**Resp Mgr:** Taylor, Joseph Todd	**AC:** French, Mary Ellen	**Assessment Type:** Management	
	Scheduled Start: 10/03/2011	**Scheduled End:** 12/23/2011	**Report Date:**	**Status:** Planned	**Rqrd:** Y
	Facility: Lab-wide	**Assessed Organization:** G600 - Nuclear Safety Engineering W300 - Nuclear Safety Engineering		**Work Evolution Observation:** No	

5 record(s).

IAS11702
“Criticality Control Area Inspections”

INTEROFFICE MEMORANDUM

Idaho National Laboratory INL

Date: October 3, 2011

To: J. T. Taylor MS 3458 6-9656

From: A. B. Hoffman MS 3458 6-1252

Subject: Completion of 2011 CCA Inspections – Closeout IAS11702– ABH-01-2011

Criticality Control Areas (CCAs) at the INL (see the CCA Master List in the Attachment) have been inspected by Criticality Safety Engineering per LWP-18003, "Establishing, Operating, and Deleting Criticality Control Areas (CCAs)" and NS-18202, "Criticality Safety Assessments". These annual reviews are to ensure that process conditions have not been altered to affect the criticality safety evaluations. No conditions were identified that would invalidate a criticality safety evaluation.

Currently there are a total of 26 CCAs at MFC, PBF (CITRC), ATR Complex, and STC. These operations or processes involve significant quantities of fissionable material and require criticality controls. The inspections included a facility walk down and interviews with personnel, usually the Criticality Safety Officers (CSOs), per the requirements of LWP-18003. Inspections were documented on Form 431.03, "Criticality Control Area (CCA) Inspection Checklist", per NS-18202. The checklists used in the inspections are maintained in the Criticality Safety Group per NS-18305, "Records Management Plan for Nuclear Safety Engineering" and copies have been forwarded to the CSOs and their respective facility managers or laboratory managers. A summary listing of the checklists is included in the Attachment. Improvements and recommendations identified by the inspections were screened using LWP-13840, "Management of Issues, Observations, and Noteworthy Practices".

Items corrected immediately included suggested CCA Master List improvements such as updating control list documents, updating names of CSOs and alternates, and CCA Line Managers. Recommendations made by Criticality Safety Engineering included the following:

An inspection at HFEF (CSI11102) determined that a Mass limit CCA, located in room 125 within the HFEF Procedure CCA be eliminated since the majority of the material has been transferred to another CCA at MFC. This required a revision to the HFEF CHCS document, HFEF-OI-1020, which has been submitted to HFEF for review. Most of the material in room 125 was transferred into the Electron Microscopy Lab (EML) CCA at MFC/ANLW-774.

Criticality Safety Engineering made a recommendation at CITRC CCAs (CSI11105) that the Laboratory Instruction (LI) for work in this CCA be revised to reflect moderated fissionable equivalent (MFE), which was implemented in several INL facilities in 2010. Homeland Security has a project planned, contingent on funding, to conduct detection of fissionable material (DTRA-LEU) using active-interrogation at the SOX range. This material would have little effect on the current inventory. Criticality Safety has requested to review and approve the LI before the exercise is approved for funding.

During a CCA inspection at ATRC (CSI11101), Criticality Safety Engineering observed CSOs transfer material to authorized UN Type A 7A drums in preparation of receiving the AFIP-7 experiment.

Material handling and calculation of CSIs were observed and were in compliance with ATRC criticality safety limits.

At FMF, an inspection (CSI11117) identified the need to address the "no liquid" control for approved storage as well as the need for identification of special reflectors in the next LST-386 revision. This has been documented in ICAMS per LWP-13840, "Management of Issues, Observations, and Noteworthy Practices".

In addition to the CCA inspections, per NS-18202, "Criticality Safety Assessments", section 4.2.2, an annual review was completed of information from Safeguards and Security of all Material Balance Areas (MBAs) at INL facilities that contain 15 grams or greater of fissionable material. The MBA information provided a list of fissionable material, custodians, facility, building and location for the following areas: ATR Complex (includes CFA, IF town facilities and CITRC), MFC and PBF. As a result of this review, all MBAs were reviewed. An MBA at CFA-625 containing radioactive sources stored in a cargo container that is used for research experiments was re-evaluated. The material inventory was previously evaluated in 2008 (JTT-11-08) and was determined that a CCA is not necessary per LRD-18001 and LWP-18003 requirements.

Criticality Safety Engineering has concluded that all areas with an inventory of 15 grams or greater have been evaluated for designation as Criticality Control Areas (CCA) per LWP-18003 "Establishing, Operating, and Deleting Criticality Control Areas (CCAs)"and no conditions exist that invalidate the existing criticality safety evaluations.

It should be noted that the specific MBA information is Official Use Only and is not included in this correspondence. If you have any questions regarding this effort, please call J. T. Taylor (6-9656) or A. B. Hoffman
(6-1252).

Attachment

Uniform File Code: 7651
Disposition Authority: ENV1-b-4-a
Retention Schedule: Review annually. Cutoff when superseded, obsolete or cancelled. Destroy 75 years after cutoff.

NOTE: Original disposition authority, retention schedule, and Uniform Filing Code applied by the sender may not be appropriate for all recipients. Make adjustments as needed.

Building No.	Area Description (CCA Name)	Line Manager	CCA Type M/P	Critcality Safety Officer (CSO)	Control Identification Document	CAS Y/N	List # After SAR Upgrade	LRD-18001 Implementation Document	OI/TPR Proc. #	CCA Inspection
MFC/ANLW-704	FMF	J. E. Mayer (3-7999)	P	C. S. Brower (3-7044)	LST-386	Yes	NA	IAS07196	FMF-OI-005	CSI11117
MFC/ANLW-720	TREAT	S. S. Cunningham (3-7969)	P	K. L. Brinker (3-7287)	TREAT-OI-1014	Yes	LST-387	TBD	TREAT-OI-1015	CSI11116
MFC/ANLW-723	TREAT-WH	P. J. Crane (3-7179)	P	J. L. Shriver (3-8012)	TREAT-OI-1017	No	SAR-410	TBD	TREAT-OI-1021, TREAT-OI-2360	CSI11115
MFC/ANLW-752	Analytical Laboratories	T. C. Couch (3-7944)	P	G. I. Dexter (3-8029)	INL/INT-08-14953	No	LST-389	TBD	AL-6000-OI-001	CSI11114
MFC/ANLW-765	FCF	P. J. Crane (3-7179)	P	J. L. Shriver (3-8012)	F0000-0026-ES	Yes	LST-390	TBD	FCF-OI-1302	CSI11113
MFC/ANLW-771	RSWF	P. J. Crane (3-7179)	P	J. Blankenship (3-7059)	LST-391	No	NA	IAS0888	RSWF-OI-001, Storage Operations, RSWF-OI-003, Material Acceptance	CSI11112
MFC/ANLW-772	Radiography Lab Rm 103 (EDL)	S. L. Winn (3-7814)	M	J. J. Green (3-8092)	LWP-18003	No	NA	NA	NA	CSI11111
MFC/ANL-W-774	Electron Microscopy Lab (EML)	L. T. Evens (3-8036)	P	J. C. Merrill (3-7809) M. A. Osment (3-7424)	INL/INT-10-18996	No	NA	NA	SD-37.1.4	CSI11121
MFC/ANLW-775/776	ZPPR Work Room Vault, and Cell	J. E. Mayer (3-7999)	P	C. S. Brower (3-7044)	W0430-0006-KH	Yes	LST-392	TBD	ZPPR-OI-005	CSI11110
MFC/ANLW-785	HFEF	R. L. Casler (3-7621)	P	K. L. Kynaston (3-7680)	HFEF-OI-1020	No	LST-393	TBD	HFEF-OI-1302	CSI11109
MFC/ANLW-785	HFEF Room 125 (incl 127 and 129)	R. L. Casler (3-7621)	M	K. L. Kynaston (3-7680)	LWP-18003	No	NA	NA	LWP-18003	CSI11102
MFC/ANLW-787	FASB	L. T. Evens	P	J. J. Green (3-8092)	INL/INT-10-18996	No	NA	TBD	SD-37.1.4	CSI11107
MFC/ANLW-792A	SSPSF	R. A. Gunderson (3-8045)	P	R. P. Gomez (3-8088)	LST-395	No	NA	TBD	SSPSF-OI-21160	CSI11106

Building No.	Area Description (CCA Name)	Line Manager	CCA Type M/P	Critcality Safety Officer (CSO)	Control Identification Document	CAS Y/N	List # After SAR Upgrade	LRD-18001 Implementation Document	OI/TPR Proc. #	CCA Inspection
MFC/ANLW-797	ORSA	P. J. Crane (3-7179)	P	J. Blankenship (3-7059)	INL/INT-09-15995	No	NA	NA	TSD-OI-004	CSI11122
MFC/ANLW-794	CESB	L. T. Evens (3-8036)	P	J. J. Green (3-8092)	INL/INT-09-15995	No	NA	NA	CESB-OI-001, TSD-OI-004	CSI11123
MFC/ANL-W-1702	Radiochemistry Lab (RCL)	L. T. Evens (3-8036)	M	J. C. Merrill (3-7809) J. J. Green (3-8092)	LWP-18003	No	NA	NA	SD-37.1.4	CSI11124
IRC/IF-638	Lab Room 115	L. D. Smith* (6-1182)	M	S. C. Taylor (6-6125) G. L. Seal (6-7838) (alt.)	LWP-18003	No	NA	NA	LWP-18003, LI 1139-07-STC	CSI11118
IRC/IF-603	Lab C-6	L. D. Smith* (6-1182)	M	S. C. Taylor (6-6125) G. L. Seal (6-7838) (alt.)	LWP-18003	No	NA	NA	LWP-18003, LI 1138-07-IRC	CSI11119
PBF/PER-612	CITRC	D. G. Blatter (6-5100)	P	D. R. Norman (6-3953)	JTT-05-09	No	NA	TBD	LI-399	CSI11105
PBF/PER-613	CITRC	D. G. Blatter (6-5100)	P	D. R. Norman (6-3953)	JTT-05-09	No	NA	NA	LI-399	CSI11103
PBF/PER-622	CITRC	D. G. Blatter (6-5100)	P	J. O. Thalgott (3-7624) J. A. Turnage (3-7716) (alt.)	JTT-05-09	No	NA	NA	LI-399	CSI11120
RTC/TRA-621	NMIS	E. J. Schuebert (3-4246)	P	K. L. Zimmer (3-4063)	SAR-154-6A, TSR-154	Yes	NA	TBD	DOP-7.11	CSI11104
RTC/TRA-670	ATR Critical Facility	E. J. Schuebert (3-4246)	P	C.D. Jackson (3-4755)	SAR-192-10, TSR-192	No	NA	TBD	SD-17.3.2, OP-3.7, OP-3.10	CSI11101
RTC/TRA-670	ATR Facility	E. J. Schuebert (3-4246)	P	S. L. Denison (3-4433)	SAR-153-9, TSR-186	No	NA	TBD	TOC 182, 184, 185	CSI11100

As of 10/3//2011
*Facility Manager for CCA with a Tenant Use Agreement
**Training in progress
Note: Fire fighting restrictions have been removed from this list as none are derived from Criticality Safety requirements.

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: September 28, 2011 Inspector: C. E. Stuart

CCA(s): ATR Reactor Area/Canal Building: TRA-670

CSO: S. L. Denison Organization Name: ATR Operations staff

(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 9/19/2011
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering? Entire Building (with the exception of the ATRC facility) constitutes the ATR CCA.
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). SAR-153 Section 9.1 & TSR-186
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☒	☐	☐	5.	How is inventory of fissionable material items maintained? ATR is a Procedure CCA Total(g): N/A
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☒	☐	☐	7.	Were fissionable materials visibly labeled where practical?
	☐	☒	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☒	☐	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

All action items from the previous CCA inspection were listed as "suggestions" and did not require corrective action.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

No changes that affect criticality safety have been made to the ATR facility since the last CCA inspection.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

The ATR is an operating test reactor with underwater storage racks within the canal. During the CCA inspection, the ATR was in an outage and no fissile material activities were in progress.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
September 29, 2011	C. E. Stuart	CSI11100

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: 22 March 2011 Inspector: Valerie L. Putman

CCA(s): ATRC Building: TRA-670

CSO: Craig D. Jackson Organization Name: ATR/ATRC Operations

(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: *14 March 2011*
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering? *Entire ATRC Facility, consistent with description since establishment with CCA approval CCA98021 of 21 September 1998*
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). *SAR-192 Chapter 10 and TSR-192 AC 5.192.4*
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly? *CCA identification signs are unnecessary and not posted for ATRC*
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☐	☒	☐	5.	How is inventory of fissionable material items maintained? *See comment 5 on page 2* Total (g): *about 427 g U-235 in cabinet by 4 p.m. Other stored material not subject to mass limits*
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) Reference #:
☒	☐	☐	7.	Were fissionable materials visibly labeled where practical? *See comment 7 on page 2*
	☐	☒	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2) *References: SAR/TSR-192 for controls; SD-17.3.2, OP-3.7, OP-3.10 for instructions/documentation*
☐	☒	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

1. Suggested CCA Master List Improvement incorporated 23 March 2011: Update the telephone number listed for the CSO, from 3-4756 to 3-4755.
5. For information only: The CSO maintains an inventory list and he periodically reconciles the list with LANMAS data using a Safeguards printout of ATRC-specific data. In addition, a reactor status board identifies the locations of each element in the reactor. Another status board is available for tracking out-of-storage fuel when the 365 g handling limit applies and for tracking the cumulative CSI.
7. For information only: ATR elements and various materials include an engraved identification number. Flux wires are stored in numbered "bottles." ATRC staff members do not need labels that specifically identify fuel items as fissionable, except when required for shipping packages.
10. No fuel was out of storage in the canal during the inspection. Safeguards inventory records indicate the material in the reactor, racks, and cabinet comply with their respective limits (TSR-192 AC 5.192.4). The status board indicates the cumulative CSI is less than 100. See the *current activities* question below for further information.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

Craig D. Jackson was assigned as ATRC CSO on 15 February 2011, replacing Kirk D. Stueve who is still available to assist with ATRC operations. Jackson completed CSO training on 10 March 2011. Jackson previously qualified as an ATRC Reactor Supervisor, which incorporates FMH Supervisor qualification, on 15 June 2010.

FUTURE CHANGES:

Criticality Safety Engineering is drafting updates for SAR-192-10 and TSR-192 AC 5.192.4 to incorporate a definition of U-235 equivalence consistent with the definition used at the ATR and NMIS Facilities: "1 gram of Pu = 1 gram of U-233 = 2 grams of U-235." Future drafts will also update criticality accident scenario and contingency scenarios for consistency with the ATR and NMIS Facilities and to simplify the scenario descriptions and criticality safety controls.

New FMH and FMH Supervisor training (part of ATRC Reactor Operator and ATRC Reactor Supervisor training) will also be developed to resolve issues identified in an assessment of ATR and ATRC criticality safety training materials (VLP-04-10). The development may include the above-mentioned safety-basis updates, depending on when those updates will be approved.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

Also see comment 10 above.

This inspection occurred while Craig D. Jackson and Kirk D. Stueve (current and former ATRC CSOs) transferred material from the cabinet to authorized UN Type A 7A drums in accordance with Work Order 152747-01, Prepare for Receipt of AFIP-7. Francisca H. Gutierrez (Safeguards), Stacy W. Meyer (ATR Crafts), Edward G. Waters (Senior Radiological Control Technician), Daniel B. McDonald (shipping engineer), and Susan M. Case (representing Robert Roesener of Irradiation Testing) assisted. Putman observed loading three of the four drums involved. Jackson and Stueve (qualified ATRC FMH Supervisors), performed all fissionable material handling and, working off separate copies of the Work Order, calculated the drum and cumulative CSIs. At the end of the process, ATRC had a cumulative CSI of 28.3 and about 427 g ^{235}U in the cabinet, in compliance with ATRC criticality safety limits (TSR-192 AC 5.192.4).

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
16 June 2011	Valerie L. Putman Valerie L Putman	CSI11101

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: June 1, 2011 Inspector: C. E. Stuart

CCA(s): HFEF Rm 125 Building: MFC/ANLW-785

CSO: K. L. Kynaston Organization Name: Hot Cell Services
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 5/02/2011
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering? Room 125 only
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). LWP-18003
☐	☒	☐	4.	If the CCA is posted, is the CCA posted correctly?
☐	☐	☒		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☐	☒	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☒
☐	☒	☐	5.	How is inventory of fissionable material items maintained? Excel spreadsheet Total(g): 52.0 g TFM
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☒	☐	☐	7.	Were fissionable materials visibly labeled where practical? material was locked within a storage cabinet
	☐	☒	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☒	☐	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

1. The current CCA posting lists the previous CSO and alternate, rather than the current CSO (K. L. Kynaston). A new CCA posting sign (Form 431.08) has been sent to the CSO in order to post the CCA properly.

2. The listed CSO (K. L. Kynaston) is currently in the process of completing qualification training in order to become certified as a Mass CCA CSO. In order to address this deficiency, Room 125 will be asborbed into the HFEF Procedure CCA and eliminated as an individual Mass CCA. Fissionable material controls for Room 125 will be incorporated into the HFEF CHCS (HFEF-OI-1020).

3. The current fissionable material inventory is maintained in an Excel Spreadsheet but did not include a total inventory mass. Incorporating Room 125 into the HFEF Procedure CCA (as suggested in item #2 above) will take care of this concern.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

The key to the CCA and the inventory was obtained from the former Criticality Safety Officer, Chris McGrath.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

ACTION ITEM (Improvements, corrections, etc)

☐ None

☒ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
June 15, 2011	C. E. Stuart	CSI11102

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: August 17, 2011 Inspector: J. T. Taylor/A. B. Hoffman

CCA(s): CITRC Building: 613

CSO: D. R. Norman Organization Name: Sensor Technologies
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
☐	☐	☒	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 05/02/2011 replaced D. G. Blatter as Line Manager per LWP-18005
☐	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
☐	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE).
☐	☒	☐	4.	If the CCA is posted, is the CCA posted correctly?
☐	☒	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☐	☒	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☐	☐	☐	5.	How is inventory of fissionable material items maintained? see attached inventory form Total(g): 156.00g (PuBe source)
☐	☐	☒	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☐	☒	☐	7.	Were fissionable materials visibly labeled where practical?
☐	☐	☒	8.	Does the CCA have a Criticality Alarm System?
☐	☒	☐		a) Are calibrations and testing current? References:
☐	☒	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
☐	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☐	☐	☒	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☐	☒	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
☐	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

PuBe source is contained in a cargo container at Building 613.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

NA

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

NA

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
August 18, 2011	J. T. Taylor/A. B. Hoffman	CSI11103

Appendix A – CITRC Criticality Control Areas Inventory Record

Criticality Safety Officer Signature: [signature] Date: 8/17/2011 Time: 13:45
Transfer Verification Signature: [signature] Date: 8-17-11 Time: 13:47

FACILITY – IRTTC (PBF-609, 622, 623, and 641) Inventory
Total U-235 Equivalent Mass must be less than 700 grams

Item Number	Description	U-235 mass (g)	*U-233, Pu-239, Pu-241 mass (g)	U-235 Equivalent mass
* NOTE : For U-233, Pu-239, and Pu-241 the mass must be multiplied by 2 to obtain the U-235 Equivalency mass			Total mass (g)	

FACILITY – SPF (PBF-612) Inventory
Total U-235 Equivalent Mass must be less than 700 grams

Item Number	Description	U-235 mass (g)	*U-233, Pu-239, Pu-241 mass (g)	U-235 Equivalent mass
225-20-08454-61039	HEU Plate	268.66	—	268.66
225-20-8454-60930	HEU Plate	268.32	—	268.32
* NOTE : For U-233, Pu-239, and Pu-241 the mass must be multiplied by 2 to obtain the U-235 Equivalency mass			Total mass (g)	536.98

FACILITY – NCDTC (PBF-613) Inventory
Total U-235 Equivalent Mass must be less than 700 grams

Item Number	Description	U-235 mass (g)	*U-233, Pu-239, Pu-241 mass (g)	U-235 Equivalent mass
M-549	PuBe Source	—	78	156.00
* NOTE : For U-233, Pu-239, and Pu-241 the mass must be multiplied by 2 to obtain the U-235 Equivalency mass			Total mass (g)	156.00

Transfer Inventory
Total U-235 Equivalent Mass must be less than 350 grams too and from

Item Number	Transfer From	Transfer To	U-235 mass (g)	*U-233, Pu-239, Pu-241 mass (g)	U-235 Equivalent mass
* NOTE : For U-233, Pu-239, and Pu-241 the mass must be multiplied by 2 to obtain the U-235 Equivalency mass				Total mass (g)	

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: September 13, 2011 Inspector: C. E. Stuart

CCA(s): NMIS Facility Building: TRA-621

CSO: K. L. Zimmer Organization Name: ATR/ATRC Operations
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 9/19/2011
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering? Entire Building TRA-621 constitutes the NMIS CCA.
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). SAR-154-6A & TSR-154
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☒	☐	☐	5.	How is inventory of fissionable material items maintained? NMIS is a Procedure CCA Total(g): N/A
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #: NMIS pre-incident plan, Sept. 2007
☐	☒	☐	7.	Were fissionable materials visibly labeled where practical? CSIs appropriately labeled on packages
☐	☒	☐	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☒	☐	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

All action items from the previous CCA inspection were listed as "suggestions" and did not require corrective action.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

Since the last CCA inspection, the most current annual update to the NMIS safety basis (SAR-154, TSR-154) eliminated the requirement for the criticality alarm system (CAS) within the facility. With that change, periodic testing and calibration requirements for the CAS are no longer necessary.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

NMIS is predominately a storage facility for ATR fuel elements in support of the ATR. No activities were in progress within NMIS during the CCA inspection.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP 13840

_____
(Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
September 29, 2011	C. E. Stuart	CSI11104

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: August 17, 2011 Inspector: J. T. Taylor/A. B. Hoffman

CCA(s): CITRC Building: 612

CSO: D. R. Norman Organization Name: Sensor Technologies
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
☐	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 05/02/2011 replaced D. G. Blatter as Line Manager per LWP-18005
☒	☐	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
☒	☐	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE).
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☐	☐	☐	5.	How is inventory of fissionable material items maintained? see attached inventory form Total(g): 536.98g
☐	☐	☒	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☒	☐	☐	7.	Were fissionable materials visibly labeled where practical?
☐	☒	☐	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
☒	☐	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☐	☒	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
☒	☐	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

CSO, Daren Norman is currently revising LI-399, "Procedure Criticality Control Areas at CITRC." The purpose of the revision is to address fissionable controls at other facilities for DTRA activities including the SOX Range. This will require development and approval of a Hazard Assessment Document, establishing a new CCA at SOX, implementation of "Criticality Safety Evaluation for the DTRA Low-Enriched Uranium Inspection Object" and a revision to JTT-05-09, "Criticality Safety Controls for CITRC CCAs (revision 1).

It is also recommended that the U-235 equivalency be modified to be consistent with the new INL standard moderated fissionable equivalency (MFE). Criticality Safety Engineering will work closely with the CSO to modify equivalency during the review/approval of LI-399, "Procedure Criticality Control Areas at CITRC".

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

CSO, Daren Norman, is actively pursuing obtaining another uranium metal plate (≤200g U-235) to add to his fissionable material inventory at building PER-612.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

The facility was undergoing a Safeguards and Security nuclear materials inventory.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
August 18, 2011	J. T. Taylor/A. B. Hoffman	CSI11105

Appendix A – CITRC Criticality Control Areas Inventory Record

Criticality Safety Officer Signature: [signature] Date: 8/17/2011 Time: 13:45
Transfer Verification Signature: [signature] Date: 8-17-11 Time: 13:47

FACILITY – IRTTC (PBF-609, 622, 623, and 641) Inventory
Total U-235 Equivalent Mass must be less than 700 grams

Item Number	Description	U-235 mass (g)	*U-233, Pu-239, Pu-241 mass (g)	U-235 Equivalent mass
* NOTE : For U-233, Pu-239, and Pu-241 the mass must be multiplied by 2 to obtain the U-235 Equivalency mass			Total mass (g)	

FACILITY – SPF (PBF-612) Inventory
Total U-235 Equivalent Mass must be less than 700 grams

Item Number	Description	U-235 mass (g)	*U-233, Pu-239, Pu-241 mass (g)	U-235 Equivalent mass
225-20-8454-61039	HEU Plate	268.66	—	268.66
225-20-8454-60930	HEU Plate	268.32	—	268.32
* NOTE : For U-233, Pu-239, and Pu-241 the mass must be multiplied by 2 to obtain the U-235 Equivalency mass			Total mass (g)	536.98

FACILITY – NCDTC (PBF-613) Inventory
Total U-235 Equivalent Mass must be less than 700 grams

Item Number	Description	U-235 mass (g)	*U-233, Pu-239, Pu-241 mass (g)	U-235 Equivalent mass
M-549	PuBe Source	—	78	156.00
* NOTE : For U-233, Pu-239, and Pu-241 the mass must be multiplied by 2 to obtain the U-235 Equivalency mass			Total mass (g)	156.00

Transfer Inventory
Total U-235 Equivalent Mass must be less than 350 grams too and from

Item Number	Transfer From	Transfer To	U-235 mass (g)	*U-233, Pu-239, Pu-241 mass (g)	U-235 Equivalent mass
* NOTE : For U-233, Pu-239, and Pu-241 the mass must be multiplied by 2 to obtain the U-235 Equivalency mass				Total mass (g)	

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: 6/15/2011 Inspector: L. R. Flatten

CCA(s): SSPSF Building: MFC-792-A

CSO: R. P. Gomez Organization Name: Fuel Manufacturing
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 6/09/2011
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). LST-395, Criticality Controls for SSPSF, Rev. 0, May 11, 2011
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☐	☒	☐	5.	How is inventory of fissionable material items maintained? Local database Total(g): 28 pieces
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☒	☐	☐	7.	Were fissionable materials visibly labeled where practical? No fissionable material was visible
	☐	☒	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2) See page 2.
☒	☐	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

5 - Controls based on item piece counts. Locally controlled Access Database maintains inventory of material.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

The upgraded Documented Safety Analysis (SAR/TSR-408) was approved by DOE December 2010 and implemented in the facility May 11, 2011. LST-395, Criticality Controls for SSPSF, was created and identified controls are implemented through SSPSF-OI-21160, Nuclear-Material Handling, and FRM-550, SSPSF Nuclear Material Transfer Form.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

- Maintenance activities were in progress in SSPSF at the time of the inspection.
- A new glovebox for the building of Stirling Generators is being installed within the SSPSF to be completed in FY-11. Use of the new glovebox in FY-12 will introduce vaporized Hydrogen Peroxide into the facility.
- There is one Advanced Stirling Radioisotope Generator (ASRG) build planned in SSPSF for FY-12.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
6/16/2011		CSI 11106

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: September 13, 2011 Inspector: A. B. Hoffman/J. T. Taylor

CCA(s): FASB Building: MFC/ANL W-787

CSO: J. J. Green Organization Name: FASB/EML/RCL/CESB Operations
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 08/31/11
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). INL/INT-10-18996,"Criticality Safety Evaluation for 700 Gram Moderated Fissionable Equivalent (MFE) Criticality Control Areas (CCAs)", SD-37.1.4 "Radiological Material Tracking For FASB/EML/RCL/CESB
	☒	☐	4.	If the CCA is posted, is the CCA posted correctly?
	☒	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
	☒	☐	5.	How is inventory of fissionable material items maintained? CSO maintains inventory in electronic Database Total(g): 555.82 g
		☒	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
	☒	☐	7.	Were fissionable materials visibly labeled where practical?
	☐	☒	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
	☒	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

N/A

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

CSO J. Green states that waste drums usually go to directly to ORSA and are not kept at FASB.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
September 13, 2011	A. B. Hoffman	CSI11107

FASB CCA inventory Summary

LEU	253.13
HEU	299.13
Hold-Up	3.56g
Total	555.82

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Page 1 of multiple pages

INVENTORY

Sum Fraction Total	2.10E-02
MFE total	555.82

Desc. Cont.	Comments	Project ID	Misc.	Unique ID	DATE	STORAGE LOCATION	CT	BATCH NUMBER	
		Alloy 332			12/22/09	D1		86-20-60879	
		Alloy 333			12/22/09	D1		86-20-60880	
		Alloy 334			12/22/09	D1		N/A per Safeguards	
		Alloy 336			12/22/09	D1		N/A per Safeguards	
		Alloy 337			1/7/10	D1		N/A per Safeguards	
		Alloy 338			12/22/09	D1		140-20-8454-62701	
		Alloy 339			12/22/09	D1		N/A per Safeguards	
		Alloy 350			12/22/09	D1		N/A per Safeguards	
RERTR-12		Alloy 351			12/22/09	D1		N/A per Safeguards	
		Alloy 352			12/22/09	D1		N/A per Safeguards	
		Alloy 353			12/22/09	D1		N/A per Safeguards	
		Alloy 354			12/22/09	D1		N/A per Safeguards	
		Alloy 355			12/22/09	D1		N/A per Safeguards	
FB-132		Alloy 308			7/23/09	D2		140-60-60282	
		Alloy 309			12/3/09	D2		140-60-60282	
		Alloy 309			11/30/09	D2		140-60-60282	

		Alloy 309			11/30/09	D2		140-60-60282
		Alloy 309			11/30/09	D2		140-60-60282
		Alloy 309			1/7/10	D2		140-60-60282

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: June 1, 2011 Inspector: A. Hoffman/C. E. Stuart

CCA(s): HFEF Building: MFC-785

CSO: K. L. Kynasten Organization Name: Hot Cell Services
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 05/02/2011
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering? HFEF building
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). HFEF-OI-1020-Rev 8
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☒	☐	☐	5.	How is inventory of fissionable material items maintained? Total(g): HFEF is a procedure CCA
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #: Pre incident Plan MFC-785 HFEF
☐	☒	☐	7.	Were fissionable materials visibly labeled where practical?
☐	☒	☐	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☐	☒	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☐	☒	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

1) The 2010 CCA inspection (CSI10109) noted Rick Casler as acting CSO, while K. L. Kynasten was completing training to qualify as HFEF CSO. K. L. Kynasten has completed all required CSO training. The current CCA master list identifies K. L. Kynasten as the HFEF CSO.

2) The 2010 CCA inspection recommended a revision to the CHCS to clarify the definition of "moderator". This change has been incorporated into Revision 8 of the HFEF CHCS.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

1) The FACS furnace is being installed in Zone 6M. The HFEF CHCS has already been revised to cover the new equipment and process within the zone.

2) CHCS has been revised (see item number 2. above)

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

1) Assay work was being performed in Zone 7M. Assay work involved a single FFTF limit and was within limits for Zone 7M.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
June 7, 2011	C. E. Stuart	CSI11109

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: April, 28, 2011 Inspector: W. W. Scates

CCA(s): ZPPR Workroom, Vault, Cell Building: MFC-775/776

CSO: C. S. Brower Organization Name: Fuel Manufacturing

(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 3/23/11
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering? ZPPR Workroom, Vault, Cell
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). W0430-0006-KH Rev. 3 8/3/2010
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☒	☐	☐	5.	How is inventory of fissionable material items maintained? Safeguards Database Total(g):
☐	☒	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☒ Yes ☐ No Reference #: ANL-W 775 ZPPR Workroom/ Experiment Room ZX-MIA-708A & 708B; ANL-W 776 Zero Power Physics Reactor Cell ZX-MIA-706A & 706B
☐	☒	☐	7.	Were fissionable materials visibly labeled where practical?
	☒	☐	8.	Does the CCA have a Criticality Alarm System?
☐	☒	☐		a) Are calibrations and testing current? References: See Attached
☐	☒	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2) ZPPR-OI-005
☒	☐	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

☒ ☐ 12. Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

ADDITIONAL INFORMATION AND COMMENTS

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

Repacking Clamshells

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Report Date	Assessor(s)	Inspection Record No.
4/28/11		CSI11110

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: September 14, 2011 Inspector: A. B. Hoffman

CCA(s): EDL Building: MFC/ANL-W 1702

CSO: J. J. Green Organization Name: FASB/EML/RCL/CESB Operations
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
☐	☐	☒	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 8/31/11 (the following correction was made: S. L. Winn has replaced C. Collard as Line Manager of this CCA)
☐	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
☐	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). LWP-18003
☐	☐	☒	4.	If the CCA is posted, is the CCA posted correctly?
☐	☒	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☐	☒	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐ **See Back**
☐	☒	☐	5.	How is inventory of fissionable material items maintained? Electronic database Total(g): 0 grams
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☒	☐	☐	7.	Were fissionable materials visibly labeled where practical?
☐	☒	☐	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
☒	☐	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2) CCA is used for radiography of material from FASB CCA
☒	☐	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
☒	☐	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

4. b) The posting on the CCA door was outdated (Rev 5) and was immediately replaced with a new sign (Rev 6) by the CSO (J. Green) during the inspection. No further action is required.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

N/A

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

EDL was established a CCA for radiography of material from FASB. The facility contained no material at the time of the inspection.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
September 14, 2011	A. B. Hoffman	CSI11111

EDL Summary Sheet

LEU 0g

HEU 0g

Hold-Up 0g

Total = 0g

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: 6/15/2011 Inspector: L. R. Flatten

CCA(s): RSWF Building: MFC-771

CSO: J. C. Blankenship Organization Name: Hot Cell Services
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 6/09/2011
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). LST-391, Radioactive Scrap and Waste Facility (MFC-771) Criticality Control List, Rev. 1, March 02, 2011
	☒	☐	4.	If the CCA is posted, is the CCA posted correctly?
	☒	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
	☒	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
	☐	☒	5.	How is inventory of fissionable material items maintained? Liner records maintained at TSD Facilities Total(g): N/A
	☒	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
	☒	☐	7.	Were fissionable materials visibly labeled where practical? Underground storage of fissionable material
	☐	☒	8.	Does the CCA have a Criticality Alarm System?
	☒	☐		a) Are calibrations and testing current? References:
	☒	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2) See page 2.
	☒	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
	☒	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

- Controls based on package and configurations per liner. Individual liner records are kept at Treatment Storage and Disposal (TSD) Facilities offices.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

A gate has been added to the North portion of the security fence. Twelve liners have been excavated and removed from the facility, the holes were backfilled with soil.

LST-391, Radioactive Scrap and Waste Facility (MFC-771) Criticality Control List, was revised March 02, 2011 to allow removal of SNL Transport Containers.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

- Continuing RH-TRU waste retrievals for disposal. Twenty one RH-TRU retrievals have been completed in FY-11; 12 large liners, 8 SLSF waste cans and the EBR-II Donut. One more item to be removed in FY-11 to meet milestone.
- Removal of SNL Transport Containers scheduled for the week of June 20th.
- Storage of remote handled waste.
- Retrieval of EBR-II spent fuel for processing at FCF.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
6/16/2011	[signature]	CSI11112

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: September 22, 2011 Inspector: Paul Sentieri

CCA(s): Fuel Conditioning Facility Building: Building 765

CSO: Jeff Shriver Organization Name: Laboratory Hot Cell Fuel Services
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: September 19, 2011.
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). F0000-0026-ES, "Fuel Conditioning Facility Criticality Control Hazards Statement", Rev. 39, August 8, 2011.
	☒	☐	4.	If the CCA is posted, is the CCA posted correctly?
	☒	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
	☒	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
	☐	☒	5.	How is inventory of fissionable material items maintained? FCF is a Procedure CCA fissonable material tracked in Material Tracking System and listed at workstations in Zone Inventory Postiings. Total(g): N/A
	☐	☒	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☒ No Reference #: Pre-Incident Plan, MFC 765 Fuel Cinditioning Facility, Effective Date September 2011
	☐	☒	7.	Were fissionable materials visibly labeled where practical? Inventories for zones posted at each zone location.
	☒	☐	8.	Does the CCA have a Criticality Alarm System?
	☐	☒		a) Are calibrations and testing current? References: FCF-MI-8630A, WO 153721 Completed on March 29, 2011.
	☐	☒		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
	☐	☒	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
	☒	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

☒ ☐ 12. Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

ADDITIONAL INFORMATION AND COMMENTS

Reviewed all Posted Operator Aids (POAs) and were found to be current.

The criticality detector unit in the RLWS is in a contamination area whithin a shielded room. Visual inspection of the unit was not possible at the time of the inspection. All other units were free from obstructions. It should be noted that the criticaltiy alarm system will be removed with the implementation of the new DSA.

#6 As previously noted CSI(10113) firefighting restriction in the pre-incident fire plan restricts water in the SERA and high bay during fire fighting activities. This restriction is not being driven by criticality prevention therefore no change to the pre-incident fire plan is necessary.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

Conditoning of spent sodium bonded fuel for storage.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Report Date	Assessor(s)	Inspection Record No.
September 26, 2011	Paul Sentieri	CSI11113

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: 9/14/2011 Inspector: L. R. Flatten

CCA(s): Analytical Laboratories Building: MFC-752

CSO: G. I. Dexter Organization Name: Fuel Manufacturing
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 8/31/2011
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). INL/INT-08-14953, Criticality Safety Evaluation for Analytical Laboratories
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☐	☒	☐	5.	How is inventory of fissionable material items maintained? Excel Spreadsheet Total(g): 673.4g - Facility < 350g per zone
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☒	☐	☐	7.	Were fissionable materials visibly labeled where practical? No fissionable material was visible.
	☒	☐	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☒	☐	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

11 - Portable waste water tank is still in use in the transfer zone. Work continues on installation of new waste water tanks. Facility identified there is no fissionable material in portable waste water tank. Implementation of new controls associated with SAR-401 will include tracking of fissionable material hold-up in equipment to include waste water tanks.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection

Work continues to replace waste water tanks in the basement of AL.

Several new pieces of scientific equipment have been and continue to be installed in the facility.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

Normal laboratory analysis operations.

AL will implement upgraded DSA (SAR-401) to include simplified criticality control in FY-12.

Note: SAR-401 submitted to DOE for approval in FY-11.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
9/15/2011	Loren R. Flatten	CSI 11114

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: September 13, 2011 Inspector: Wade Scates

CCA(s): TREAT Warehouse Building: MFC 723

CSO: J. L. Shriver Organization Name: Hot Cell Services
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 8/31/2011
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). TREAT-IO-1017, " Criticality Hazards Control Statement for TREAT Warehouse (BLDG 723)"
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☐	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☐	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☒	☐	☐	5.	How is inventory of fissionable material items maintained? TREAT Warehouse is a Procedure CCA Total(g):
☐	☐	☒	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☐	☒	☐	7.	Were fissionable materials visibly labeled where practical?
	☐	☒	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☒	☐	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

no changes

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

no activities

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
9/13/11		CSI11115

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: September 13, 2011 Inspector: Ning Zhang and Paul Sentieri

CCA(s): TREAT Building: MFC 720

CSO: Kent L Brinker Organization Name: Laboratory Hot Cell Services

(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: August 31, 2011
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). "Criticality Hazards Control Statement for TREAT Reactor Building 720", Rev. 5, Effective date 05/25/2011
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☐	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☐	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☒	☐	☐	5.	How is inventory of fissionable material items maintained? TREAT is a procedure CCA inventory is tracked in an Access Database Total(g):
☐	☐	☒	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #: Pre-Incident Plan, MFC 720 TREAT Facility Reactor Building, June 2008
☐	☒	☐	7.	Were fissionable materials visibly labeled where practical?
	☒	☐	8.	Does the CCA have a Criticality Alarm System?
☐	☒	☐		a) Are calibrations and testing current? References: See ADDITIONAL INFORMATION AND COMMENTS Section
☐	☒	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☐	☒	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☐	☒	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

Checklist Item #6 - A firefighting restriction in the pre-incident fire plan restricts water around the reactor and computer room during fire fighting activities. This restriction is not being driven by criticality prevention therefore no change to the pre-incident fire plan is necessary

Checklist Item#8

TREAT-MI-3330A - Annual calibration of the criticality alarm system is documented in the Work Order package 00149178 on November 16, 2010

TREAT-MI-3330B - Monthly calibration of the criticality alarm system is documented in the Work Order package 00161536 on August 8,2011

TREAT-MI-3330C - Quarterly calibration of the criticality alarm system is documented in the Work Order package 00159981 on July 18, 2011

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

Added Zone 11 (area outside 720 inside perimeter fence).

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

Static fissionable material storage and Homeland security training.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
September 13, 2011	Ning Zhang	CSI11116

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: August 23, 2011 Inspector: J. T. Taylor

CCA(s): FMF Building: MFC/ANL-W-704

CSO: C. S. Brower Organization Name: Operations/Fuel Manufacturing
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 09/19/2011
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). LST-386
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☒ or ≤ 250 g limit ☐
☐	☒	☐	5.	How is inventory of fissionable material items maintained? LANMAS Total(g):
☐	☒	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☒ Yes ☐ No Reference #: Pre Incident Plan for ANL-W-704
☒	☐	☐	7.	Were fissionable materials visibly labeled where practical?
	☒	☐	8.	Does the CCA have a Criticality Alarm System?
☐	☒	☐		a) Are calibrations and testing current? References: FMF-MITA-701B (7/20/11)
☐	☒	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☐	☒	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

The next revision of LST-386 needs to address "no liquid" in approved storage and identify the special reflectors.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

-Installation of the SNM glovebox.

-Receipt of numerous 7A drums with uranium clamshells. 45 clamshells have been processed.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

-SNM glovebox is in final stages of installation. LST-386 has been revised to allow work in glovebox.

-Vault CSI at time of inspection was 60.

ACTION ITEM (Improvements, corrections, etc)

☐ None

☒ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
August 25, 2010	J. T. Taylor	CSI1117

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: September 15, 2011 Inspector: A. B. Hoffman/J. T. Taylor

CCA(s): Lab Room 115 Building: IRC-638

CSO: G. L. Seal (alternate) Organization Name: Reactor Physics Analysis and Design
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 09/142011 (minor change - L. D. Smith has been changed to S. Lindberg)
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). LWP-18003, "Establishing, Operating, and Deleting CCAs"
☐	☒	☐	4.	If the CCA is posted, is the CCA posted correctly?
☐	☒	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☐	☒	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☒ or ≤ 250 g limit ☐
☐	☒	☐	5.	How is inventory of fissionable material items maintained? Form 431.06 approved database Total(g): 295.27
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☒ No Reference #:
☒	☐	☐	7.	Were fissionable materials visibly labeled where practical? locked in cabinet
	☐	☒	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2) 1351-07-STC, "Ultrasonic Testing for Fuel Development in IF-638"
☐	☒	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.
No changes to the facility.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)
NA

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840

(Response Due Date)

☐ As documented elsewhere. Reference:

Report Date	Assessor(s)	Inspection Record No.
September 15, 2011	A. B. Hoffman/J. T. Taylor	CSI11118

CCA00404
INVENTORY RECORD

Control Area Description: IF 638, CCA 00404

CCA Officer Signature: 5/12/2011, Glenna Seal

Enter ^{235}U amount in Column C[2]. Enter ^{233}U, ^{239}Pu, and ^{241}Pu amount in Column D.

A	B	C	D	E	F
			^{235}U Equivalency[3]		
Item Identifier	Description	^{235}U (g)	^{233}U, ^{239}Pu, or ^{241}Pu (g)	^{235}U Equivalent (g)	Total Fissile Mass (g)
50-026-18	MUR plate, 10/14/04	41.80		0.00	41.80
26-067-06	MIT plate, 10/14/04	33.89		0.00	33.89
24-101-04	598 plate, 10/14/04	9.25		0.00	9.25
26 coupons	from ANL W, 1/6/05	34.39		0.00	34.39
26 coupons	to ANL W, 1/18/05	-34.39		0.00	-34.39
12 coupons	from ANL W, 1/21/05	15.25		0.00	15.25
4 coupons	to ANL W, 1/25/05	-5.18		0.00	-5.18
8 coupons	to ANL W, 4/5/05	-10.07		0.00	-10.07
5 cans	from RTC, 7/20/2006	38.00		0.00	38.00
84-165-16	FL plate, 10/17/2006	12.48		0.00	12.48
84-166-03	FL plate, 10/17/2006	12.48		0.00	12.48
2TT	from MFC, 1/22/2008	19.47		0.00	19.47
2BZ	from MFC, 1/22/2008	17.81		0.00	17.81
AP 250	Pu239 NAD, 1/23/2008 (gamma safe)		1.00	2.00	2.00
AP 251	Pu239 NAD, 1/23/2008 (gamma safe)		1.00	2.00	2.00
AP 252	Pu239 NAD, 1/23/2008 (gamma safe)		1.00	2.00	2.00
AP 254	Pu239 NAD, 1/23/2008 (gamma safe)		1.00	2.00	2.00
AP 255	Pu239 NAD, 1/23/2008 (gamma safe)		1.00	2.00	2.00
2TT	to RTC, 1/30/2008	-19.47		0.00	-19.47
2BZ	to RTC, 1/30/2008	-17.81		0.00	-17.81
5 cans	to Lab C-6, 3/3/2008	-38.00		0.00	-38.00
AP 254	to Lab C-6, 3/3/2008		-1.00	-2.00	-2.00
AP 255	to Lab C-6, 3/3/2008		-1.00	-2.00	-2.00
84-165-16	to B&W, 7/17/08	-12.48		0.00	-12.48
84-166-03	to B&W, 7/17/08	-12.48		0.00	-12.48
LEUMO-M9WO	Archive Foil Plate, from B&W, 5/13/10	19.79		0.00	19.79
LEUMO-181	Archive Foil Plate, from B&W, 5/13/10	19.50		0.00	19.50
DUMO-LPNM	Scrap DU Foil Plate, from B&W, 5/13/10	0.21		0.00	0.21
LEUMO-M9WO	Archive Foil Plate, to MFC, 11/2/10	-19.79		0.00	-19.79
LEUMO-181	Archive Foil Plate, to MFC, 11/2/10	-19.50		0.00	-19.50
16 coupons	HIP series 81-84, from MFC, 1/6/11	6.15		0.00	6.15
84-195-23	Purdue Plate from B&W, 1/20/11	12.47		0.00	12.47
84-165-16	Florida Plate from B&W, 1/20/11	12.48		0.00	12.48
47-033-13	MURR Plate from B&W, 1/20/11	38.47		0.00	38.47
79-073-02	ATR Plate from B&W, 1/20/11	52.53		0.00	52.53
26-127-22	MIT Plate from B&W, 1/20/11	33.86		0.00	33.86
61-090-06	ATR Plate from B&W, 1/20/11	24.26		0.00	24.26
65-089-09	ATR Plate from B&W, 1/20/11	52.00		0.00	52.00

CCA00404
INVENTORY RECORD

A	B	C	D	E	F
			^{235}U Equivalency[3]		
Item Identifier	Description	^{235}U (g)	^{233}U, ^{239}Pu, or ^{241}Pu (g)	^{235}U Equivalent (g)	Total Fissile Mass (g)
50-026-18	MUR plate to Lab C-6, 5/4/2011	-41.80			-41.80
26-067-06	MIT plate to Lab C-6, 5/4/2011	-33.89			-33.89
24-101-04	598 plate to Lab C-6, 5/4/2011	-9.25			-9.25
LEUMO-RIX4	LEU U-Moly Archive Plate from B&W, 5/12/2011	56.83			56.83
					0.00
					0.00
					0.00
				0.00	0.00
				Total:	295.27

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: September 15, 2011 Inspector: A. B. Hoffman/J. T. Taylor

CCA(s): Lab C-6 Building: IRC/IF-603

CSO: G. L. Seal (alternate) Organization Name: Reactor Phyiscs Analysis and Design
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
☐	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 09/14/11 (minor change - L. D. Smith has been changed to: S. Lindberg)
☒	☐	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering? Lab C-6 only
☒	☐	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). LWP-18003, "Establishing, Operating, and Deleting CCAs"
☐	☒	☐	4.	If the CCA is posted, is the CCA posted correctly?
☐	☒	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☐	☒	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☒ or ≤ 250 g limit ☐
☐	☒	☐	5.	How is inventory of fissionable material items maintained? Form 431.03 Total(g): 126.94 g
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☒ No Reference #:
☐	☒	☐	7.	Were fissionable materials visibly labeled where practical? 5 safeguards cans and 3 plates
☐	☒	☐	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
☒	☐	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2) 1338-07-IRC "Radiation Instrumentation and Measurement R&D -IRC-C6" SEE BACk
☒	☐	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
☒	☐	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

9. CSO, Glenna Seal said the LI for this facility will be revised to reflect the fissionable limit of 350 grams instead of 250 grams. NOTE: The 250 gram limit was put in place in the document by the old facility manager).

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

No changes to the facility.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

NA

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840

(Response Due Date)

☐ As documented elsewhere. Reference:

Report Date	Assessor(s)	Inspection Record No.
September 15, 2011	A. B. Hoffman/J. T. Taylor	CSI11119

CCA00404
INVENTORY RECORD

Control Area Description: IF 603 Lab C-6, CCA 08001

CCA Officer Signature: 5/4/2011, Glenna Seal

Enter ^{235}U amount in Column C[2]. Enter ^{233}U, ^{239}Pu, and ^{241}Pu amount in Column D.

A	B	C	D	E	F
			^{235}U Equivalency[3]		
Item Identifier	**Description**	**^{235}U (g)**	**^{233}U, ^{239}Pu, or ^{241}Pu (g)**	**^{235}U Equivalent (g)**	**Total Fissile Mass (g)**
CAN 101	Sealed metal can	6.00		0.00	6.00
CAN 1330s	Sealed metal can	13.00		0.00	13.00
CAN 1331s	Sealed metal can	3.00		0.00	3.00
CAN 1333s	Sealed metal can	7.00		0.00	7.00
CAN 1334s	Sealed metal can	9.00		0.00	9.00
AP 254	Pu239 NAD, (gamma safe)		1.00	2.00	2.00
AP 255	Pu239 NAD, (gamma safe)		1.00	2.00	2.00
50-026-18	MUR plate from IF 638, 5/4/2011	41.80		0.00	41.80
26-067-06	MIT plate from IF-638, 5/4/2011	33.89		0.00	33.89
24-1-1-04	598 plate from IF-638, 5/4/2011	9.25		0.00	9.25
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				0.00	0.00
				Total:	126.94

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: August 17, 2011 Inspector: J. T. Taylor/A. B. Hoffman

CCA(s): CITRC Building: 622

CSO: D. R. Norman Organization Name: Sensor Technologies
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
☐	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 05/02/2011 replaced D. G. Blatter as Line Manager per LWP-18005
☒	☐	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
☒	☐	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE).
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☐	☐	☐	5.	How is inventory of fissionable material items maintained? see attached inventory form Total(g): 0
☐	☐	☒	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☒	☐	☐	7.	Were fissionable materials visibly labeled where practical?
☐	☒	☐	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
☒	☐		9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☐	☒	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
☒	☐		12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

No material is being stored currently at this CCA location.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

NA

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

NA

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
August 18, 2011	J. T. Taylor/A. B. Hoffman	CSI11120

Appendix A – CITRC Criticality Control Areas Inventory Record

Criticality Safety Officer Signature: _____ Date: 8/17/2011 Time: 13:45
Transfer Verification Signature: _____ Date: 8-17-11 Time: 13:47

FACILITY – IRTTC (PBF-609, 622, 623, and 641) Inventory
Total U-235 Equivalent Mass must be less than 700 grams

Item Number	Description	U-235 mass (g)	*U-233, Pu-239, Pu-241 mass (g)	U-235 Equivalent mass
* NOTE : For U-233, Pu-239, and Pu-241 the mass must be multiplied by 2 to obtain the U-235 Equivalency mass			Total mass (g)	

FACILITY – SPF (PBF-612) Inventory
Total U-235 Equivalent Mass must be less than 700 grams

Item Number	Description	U-235 mass (g)	*U-233, Pu-239, Pu-241 mass (g)	U-235 Equivalent mass
225-20-8454-61039	HEU Plate	268.66	—	268.66
225-20-8454-60930	HEU Plate	268.32	—	268.32
* NOTE : For U-233, Pu-239, and Pu-241 the mass must be multiplied by 2 to obtain the U-235 Equivalency mass			Total mass (g)	536.98

FACILITY – NCDTC (PBF-613) Inventory
Total U-235 Equivalent Mass must be less than 700 grams

Item Number	Description	U-235 mass (g)	*U-233, Pu-239, Pu-241 mass (g)	U-235 Equivalent mass
M-549	PuBe Source	—	78	156.00
* NOTE : For U-233, Pu-239, and Pu-241 the mass must be multiplied by 2 to obtain the U-235 Equivalency mass			Total mass (g)	156.00

Transfer Inventory
Total U-235 Equivalent Mass must be less than 350 grams too and from

Item Number	Transfer From	Transfer To	U-235 mass (g)	*U-233, Pu-239, Pu-241 mass (g)	U-235 Equivalent mass
* NOTE : For U-233, Pu-239, and Pu-241 the mass must be multiplied by 2 to obtain the U-235 Equivalency mass				Total mass (g)	

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: September 14, 2011 Inspector: A. B. Hoffman

CCA(s): EML Building: MFC/ANL-W 1702

CSO: J. C. Merrill Organization Name: FUEL MANUFACTURING
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 8/31/11
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). INL/INT-10-18996, "CSE for 700 Gram MFE Criticality Control Areas (CCAs)"
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☐	☒	☐	5.	How is inventory of fissionable material items maintained? See Back Total(g): 484.98
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☒	☐	☐	7.	Were fissionable materials visibly labeled where practical? No fissionable materials were observed at the time of inpection.
	☐	☒	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2) INL/INT-10-18996, "CSE for 700 Gram MFE CCAs", SD-37.1.4
☐	☒	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

5. CSO J. Merrill is maintaining the inventory in a computer database. A new database has been developed recently for calculating Hazard Categorization, etc.and is still in the QA review and approval process It is anticipated that the new database will be used at EML when the implementation process is complete.

10. Tom O'Holleran was bagging up material (typically U, Pu, and Am samples due to Hazard Categorization level restrictions) out of a glovebox in EML at the time of the CCA inspection.

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

A new Glove Box has already been erected outside of the lab and is covered in plastic. There are plans for construction of a new addition to the facility contingent upon more funding.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

Most of the material from HFEF Room 125 Mass Limit CCA has been transferred into the EML.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
September 14, 2011	A. B. Hoffman	CSI11121

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INVENTORY ITEMS EML

Sum Fraction Total [redacted] 87.22%

IWTS Barcode #	Transfer Doc	MATL TYPE		Unique ID	DATE	STORAGE LOCATION	CT	BATCH NUMBER	Description
	SPEC-67				8/11/98		2	632-690-60002-00000	2 PLATINUM STRIPS FOR ELECTRO ECHING/POLISHING
	PMI				9/8/03			636-690-8-0	RTG Precious Metal Inventory Platinum
	PMI				9/8/03			636-720-0-0	RTG Precious Metal Inventory Iridium
	PMI				9/8/03			636-730-1-0	RTG Precious Metal Inventory Rhodium
EML080005	TT-6138IS110			TO-157	9/13/89	[redacted]	1	223-690-60110-80367	(1) Pu PELLET/EPOXY MET MOUNT
EML080010	LS-268			JS-214	11/14/00	[redacted]	1	[redacted]	Du-9 WDS Standard
EML080017	LS-976			DK-272	1/9/03	[redacted]	1	[redacted]	FSWD10-01 MET-D
EML080023	LS-1050			RF-285	5/5/04	[redacted]	1	[redacted]	P18 ATOM
									Holdup measurement of U-235 in EML, Assay # 2622, Per J.D. Sanders memo dated May 11, 2009.
EML080025	LS-1184			CC302	3/11/05	Cabinet 1	1	140-20-60764-60840	MET-L2F010
EML080029	LS-1201			CC307	5/4/05	Cabinet 1	1	140-20-60801-60845	RERTR MET Sample N1F0708
EML080031	LS-1201			CC308	5/4/05	Cabinet 1	1	140-20-60801-60843	RERTR MET Sample L1F080
EML080033	LS-1201			CC311	5/4/05	Cabinet 1	1	140-20-60801-60841	RERTR MET Sample N1F070
EML080036	LS-1323			JJ-340	3/8/06	Cabinet 1	1	[redacted]	78-B MET 2
EML080042	LS-1515			JJ-396	5/16/07	Cabinet 1	1	[redacted]	RERTR-9-143 MET MOUNT
EML080043	LS-1515			JJ-397	5/16/07	Cabinet 1	2	140-20-60913-61009	RERTR-9-144 MET MOUNTS
EML080044	LS-1515			JJ-398	5/16/07	Cabinet 1	1	140-20-60913-61010	RERTR-9-145 MET MOUNT
EML080045	LS-1515			JJ-399	5/16/07	Cabinet 1	1	[redacted]	RERTR-9-146 MET MOUNT
EML080046	LS-1515			JJ-400	5/16/07	Cabinet 1	1	[redacted]	RERTR-9-147 MET MOUNT
EML080047	LS-1515			JJ-401	5/16/07	Cabinet 1	2	140-20-60913-61011	RERTR-9-148 MET MOUNTS
EML080048	LS-1519			JJ-402	8/23/07	Cabinet 1	1	[redacted]	Doug-0128-3-A 3-B, 3-C, 9-A, 9-B met mounts
EML080049	LS-1519			JJ-404	9/23/07	Cabinet 1	2	[redacted]	JF-0140-A1, JF-0140-B1
EML080050	LS-1563			RP-417	10/22/07	Cabinet 1	1	[redacted]	Doug 0107,1009,0111,0115,0120 Met Mounts
EML080051	LS-1563			RP-418	10/22/07	Cabinet 1	1	[redacted]	RERTR 150,151,152,141,159, Disc1 Disc2 Met Mounts
EML080052	LS-1588			JJ-419	11/13/07	Cabinet 1	2	[redacted]	Y-12-2-169 #1 bonded and debonded and 169 #2
EML080053	LS-1591			JJ-422	11/16/07	Cabinet 1	1	[redacted]	Y-12-2-169 #1 and #2 Met Mounts
EML080054	LS-1594			JJ-423	11/28/07	Cabinet 1	1	[redacted]	Y-12-DU-177 MET MOUNT
EML080055	LS-1599			JJ-424	11/29/07	Cabinet 1	1	[redacted]	Y-12-DU-178 MET MOUNT
EML080056	LS-1600			JJ-425	11/29/07	Cabinet 1	1	[redacted]	Y-12-DU-178 (HF ACID CLEANED) MET MOUNT
EML080057	LS-1601			JJ-426	12/6/07	Cabinet 1	1	[redacted]	Y-12-2-169 #3 AND #4 in a single met mount
EML080057	LS-1601			JJ-427	12/6/07	Cabinet 1	1	[redacted]	Y-12-17-173 #1 AND #2 in a single met mount
EML080058	LS-1606			JJ-430	12/18/07	Cabinet 1	1	[redacted]	Doug-107,109,111,115,120 Samples
EML080059	LS-1606			JJ-431	12/18/07	Cabinet 1	1	[redacted]	RERTR-159,150,151,152,141 Samples
EML080060	AM-1491			JG-432	5/11/09	Cabinet 1	1	[redacted]	Du Tem Samples A1,A2,B1,B2,D1,D2
EML080060	AM-1491			JG-432-1	5/14/09	Cabinet 1	1	[redacted]	Du Tem Samples
EML080062	LS-1634			JG-441	4/7/08	Cabinet 1	1	[redacted]	RERTR-125-9 R2 1259 MET MOUNT
EML080062	LS-1634			JG-441-1	4/7/08	Cabinet 1	2	[redacted]	RERTR-125-9 R2 1259 MET MOUNT Punches
EML080065	LS-1625			JJ-440	3/6/08	Cabinet 1	1	[redacted]	Y-12-DU-170 MET MOUNTS
EML080066	LS-1625			JJ-439	3/5/08	Cabinet 1	1	[redacted]	Y-12-DU-178 MET MOUNTS
EML080067	LS-1634			JJ-443	4/7/08	Cabinet 1	1	140-20-60831-61065	RERTR-184 L&T MET MOUNT
EML080068	LS-1634			CC-444	4/7/08	Cabinet 1	7	140-20-60825-61060	GTL-1 UNO2ES, US05CS, USO1H2 MET MOUNTS
EML080070	LS-1643			JJ-442	4/18/08	Cabinet 1	4	[redacted]	RERTR-215, 186, 187, 188 MET MOUNTS
EML080072	LS-1668			JJ-451	5/15/08	Cabinet 2	6	[redacted]	HIP-40-1,2,3,4, Met Mount
EML080073	LS-1668			JJ-451	5/15/08	Cabinet 2	2	[redacted]	HIP-40-5,6, Met Mount
EML080078	LS-1692			JJ-456	6/12/08	Cabinet 1	1	[redacted]	HIP-43-1 Met Mount Sample
EML080082					8/28/08	[redacted]		[redacted]	H371-381-401SEM TO-132
EML080083					8/28/08	[redacted]		[redacted]	H2391ASEM-00000 TO-133
EML080084					8/28/08	[redacted]		[redacted]	H2391RSEM-00000 TO-134
EML080085		NDA source			8/28/08	[redacted]		181-150-095-0	142u11
EML080086		Q-080 (ZCL)			9/24/08	[redacted]		181-150-095-0	Q-080
EML080087					9/24/08	[redacted]		[redacted]	RERTR 6 punchings
EML080088		FTC-CF-1818			9/24/08	[redacted]		181-190-052-0	565
EML080090		N-6842			9/24/08	[redacted]		[redacted]	NDA-N3
EML080091		352/42			9/24/08	[redacted]		[redacted]	RX-21
EML080092		1395/92			9/24/08	[redacted]		[redacted]	RX-22
EML080093		S-2033			9/24/08	[redacted]		[redacted]	RX-23
EML080094					9/24/08	[redacted]		[redacted]	690-80-39
EML080095					9/24/08	[redacted]		[redacted]	678-20-1
EML080096					9/24/08	[redacted]		[redacted]	678-20-3
EML080097					9/24/08	[redacted]		[redacted]	678-20-4
EML080098					9/24/08	[redacted]		[redacted]	678-20-6
EML080099					9/24/08	[redacted]		[redacted]	660-50-21
EML080100					9/24/08	[redacted]		[redacted]	585-74-12
EML080101					9/24/08	[redacted]		[redacted]	FTC-CF-1818
EML080102					9/24/08	[redacted]		[redacted]	HP Sources
EML080103					9/24/08	[redacted]		[redacted]	boric acid crystals (SONGS)
EML080104					9/24/08	[redacted]		[redacted]	metal silver (SONGS)
EML080105					9/24/08	[redacted]		[redacted]	TEM Samples from FFTF
EML080106					9/24/08	[redacted]		[redacted]	U. of W. H+ irradiated TiN coated HT-9 TEM samples
EML080107	LS-1707			RP-461	7/22/08	Cabinet 1	1	[redacted]	DOUG-107 Leftover Scrap
EML080108	LS-1707			RP-462	7/22/08	Cabinet 1	1	[redacted]	DOUG-109 Leftover Scrap
EML080109	LS-1707			RP-463	7/22/08	Cabinet 1	1	[redacted]	DOUG-111 Leftover Scrap
EML080110	LS-1707			RP-464	7/22/08	Cabinet 1	1	[redacted]	DOUG-115 Leftover Scrap
EML080111	LS-1707			RP-465	7/22/08	Cabinet 1	1	[redacted]	DOUG-120 Leftover Scrap
EML080112	LS-1707			RP-466	7/22/08	Cabinet 1	1	[redacted]	RERTR-9-0141-E Leftover Sample

Page printed from EML database from J. Merrill (CSD)

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CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: September 14, 2011 Inspector: L. R. Flatten

CCA(s): ORSA Building: MFC/ANLW-797

CSO: J. Blankenship Organization Name: Hot Cell Services
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 8/31/2011
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). INL/INT-09-15995/TSD-OI-004/FRM-323
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly?
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☐	☒	☐	5.	How is inventory of fissionable material items maintained? IWTS Total(g): 325 g
☐	☐	☒	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☐	☒	☐	7.	Were fissionable materials visibly labeled where practical?
	☐	☒	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☒	☐	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS
None

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

No changes

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

Continuing storage of Low Level Waste prior to shipment off-site and storage of RERTR material. Majority of fissionable material in CCA associated with RERTR project.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
9/15/2011	Loren R. Flatten	CSI 11122

Inventory Limits - Unit Level
BEA : MFC : ANL Bldg 797 Outside Radioactive Storage Area (ORSA)
Evaluated On: 12-Sep-2011

Version 3.0

	Location Type	Location Abbr	Inventory Value	Cmp	Limit Value	Limit Unit	% of Limit	Check Status
Cat 3 (no release fractions) Check	UNIT	ANL797_ORS	5.9129E-02	<=	1.00E+00	%	5.91E+00	
Fissile Limit Gram Check (High Vol)	UNIT	ANL797_ORS	3.25E+02	<=	7.00E+02	FGE	4.64E+01	

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: August 23, 2011 Inspector: J. T. Taylor

CCA(s): CESB Building: MFC/ANL-W Bdg 794

CSO: J. J. Green Organization Name: FASB/EML/RCL/CESB
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date:
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). Currently operating with INL/INT-09-15995, "Criticality Safety Controls for the ORSA and CESB CCAs"
☐	☒	☐	4.	If the CCA is posted, is the CCA posted correctly?
☐	☒	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☒ or ≤ 250 g limit ☐
☐	☐	☐	5.	How is inventory of fissionable material items maintained? approved electronic database inventory Total(g): 602.96 MFE
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☐	☒	☐	7.	Were fissionable materials visibly labeled where practical? The plates and coupons inspected were all labelled.
	☐	☒	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2) The inventory is less than 700 g U235 MFE.
☐	☒	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS

Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection.

RERTR fuel program is in place in CESB.

What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

CESB will be downgraded to a less than Hazard Category 3 Nuclear facility. RERTR activities are taking place now in CESB. The CSE for FASB (INL/INT-10-18996, Criticality Safety Evaluation for 700 Gram Moderated Fissionable Equivalent (MFE) Criticality Control Areas (CCA)", will be used at CESB to make implementation easier for S & T and Operations.

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
August 29, 2011	J. T. Taylor	CSI11123

Sum Fraction Total	1.88E-01
MEI total	602.96

WTS #	TID	Project ID	CT	Drum #	Date	STORAGE LOCATION	CT	BATCH NUMBER
CESB100001	13139M		7 Gal	CESB-100	2/4/2010			140-60-60289-0
CESB100015	NTS	Alloy 383		CESB100015	5/24/2010	CSL		140-20-60966-62906
CESB100015		Alloy 383		A-383-1	7/14/2011	CSL		140-20-60966-62904
CESB100015	NTS	Alloy 383		A-383-1-scrp	7/19/2011	CSL		140-20-60966-63228
CESB100015		Alloy 383		A-383-2	7/14/2011	CSL		140-20-60966-62905
CESB100015	NTS	Alloy 383		A-383-2-scrp	7/19/2011	CSL		140-20-60966-63229
ORSA0005	ORSA		55 Gal	2614 tid 6586	6/8/2010			140-20-60981-62929
ORSA0005	ORSA		55 Gal	2614 tid 6586	6/8/2010			140-20-60982-62930
ORSA0005	ORSA		55 Gal	2614 tid 6586	6/8/2010			140-20-60980-62931
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60956-62909
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60956-62917
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60956-62910
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60956-62918
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60958-62911
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60959-62919
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60959-62920
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60960-62912
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60961-62921
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60962-62913
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60963-62914
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60963-62915
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60963-62922
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60974-62916
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60974-62923
CESB100018	E-8844		5 Gal	FASB-10-54	10/27/2010			140-20-60975-62924
CESB100019	E-8843		5 Gal	CESB100019	10/27/2010			140-20-60983-63037
CESB100019	E-8843		5 Gal	CESB100019	10/27/2010			140-20-60983-63036
CESB100019	E-8843		5 Gal	CESB100019	10/27/2010			140-20-60983-63039
CESB100019	E-8843		5 Gal	CESB100019	10/27/2010			140-20-60983-63038
CESB100019	E-8843		5 Gal	CESB100019	10/27/2010			86-20-60384-63026
CESB100019	E-8843		5 Gal	CESB100019	10/27/2010			86-20-60384-63029

Page 1 of CESB inventory spread sheet

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

Date: September 14, 2011 Inspector: A. B. Hoffman

CCA(s): RCL Building: MFC/ANL-W 1702

CSO: J. C. Merrill Organization Name: FUEL MANUFACTURING
(or representative)

INSPECTION PURPOSE

Criticality Safety Engineering inspections of CCAs are performed to determine compliance with applicable requirements and to ensure that process conditions have not changed that would affect the Criticality Safety Evaluations (CSEs).

FACILITY STATUS, SUMMARIZE CHECKLIST ACTIVITIES

Record additional information and comments on page 2. Notify facility management of any imminent safety hazards

N/A	YES	NO		
	☒	☐	1.	Is CCA information listed correctly on the CCA master list? (Access the master list via https://nucleus.inl.gov/portal/server.pt?open=512&objID=369&mode=2) Master list date: 9/14/11
	☒	☐	2.	Are the boundaries identified and consistent with CCA information on file with Criticality Safety Engineering?
	☒	☐	3.	Is the most current and applicable governing criticality safety document in use at the time of this inspection of the CCA? List applicable documents (e.g., DSA, CHCS, LST, or CSE). LWP-18003
☒	☐	☐	4.	If the CCA is posted, is the CCA posted correctly? ***See Back***
☒	☐	☐		a) Is the CSO identified on posting(s) and, if applicable, Alternate?
☒	☐	☐		b) Correct mass limit identified (applies to Mass CCAs only): ≤350 g ☐ or ≤ 250 g limit ☐
☐	☒	☐	5.	How is inventory of fissionable material items maintained? Database spreadsheet - attached Total(g): 60.670 MFE
☒	☐	☐	6.	If there is a criticality control that affects emergency response, has the CSO reviewed the pre-incident plan? (on file with the INL Fire Department) ☐ Yes ☐ No Reference #:
☒	☐	☐	7.	Were fissionable materials visibly labeled where practical?
	☐	☒	8.	Does the CCA have a Criticality Alarm System?
☒	☐	☐		a) Are calibrations and testing current? References:
☒	☐	☐		b) Are detectors free from any obstruction(s) that could impair criticality accident detection?
	☒	☐	9.	Are activities within facility, equipment, or procedures enveloped by the current and approved criticality safety documents (for example, DSAs, CSEs, applicable approval letter, and/or CHCS/LST of criticality controls) (Notify Facility management immediately if there is a safety concern) : (Describe on page 2)
☒	☐	☐	10.	Were observed in-progress activities in compliance with criticality safety limits? Describe details on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)
☒	☐	☐	11.	Was satisfactory progress made on action items noted during previous inspections? Summarize items and progress on page 2 if applicable.
	☒	☐	12.	Was the facility free from observable criticality safety problems, other than those described above? Describe items on page 2 if applicable. (Notify facility management immediately if there is a safety concern.)

CRITICALITY CONTROL AREA (CCA) INSPECTION CHECKLIST

ADDITIONAL INFORMATION AND COMMENTS
4. Access to the CCA was restricted due to construction so postings were not inspected, however new signs were given to CSO.
Summarize the changes that have been made to the facility, equipment and/or procedures since the last CCA inspection. Note: As recommended in last year's inspection, only one posting be used for the door where materials/shipments will be coming into or going out of the RCL instead of the current practice of posting all fire doors.
What are the current activities in the CCA? Describe: (refer to item #9 from page 1)

ACTION ITEM (Improvements, corrections, etc)

☒ None

☐ As documented in ICAMS system per LWP-13840 _____ (Response Due Date)

☐ As documented elsewhere. Reference: _____

Report Date	Assessor(s)	Inspection Record No.
October 3, 2011	A. B. Hoffman	CSI11124

RCL inventory

[redacted]

IWTS Barcode #	STORAGE LOCATION	CT	BATCH NUMBER	Description
RCL100001			N/A	Mounted in LSC, 2 Perkin Elmer LSC Stand
	LWR		251-010-60008-00000	INTEC smples for McGrath, B58-A
	LWR		251-010-60008-00000	INTEC smples for McGrath, B58-B
	LWR		251-010-60008-00000	INTEC smples for McGrath, B59-A
	LWR		251-010-60008-00000	INTEC smples for McGrath, B59-B
	LWR		251-010-60007-00000	INTEC smples for McGrath, B60-A
	LWR		251-010-60007-00000	INTEC smples for McGrath, B60-B
	LWR		251-010-60008-00000	INTEC smples for McGrath, B61-1
	LWR		251-020-60008-00000	INTEC smples for McGrath, B47-A
	LWR		251-020-60008-00000	INTEC smples for McGrath, B47-B
	LWR		251-020-60008-00000	INTEC smples for McGrath, B47-C
B5	LWR		244-020-60009-00000	INTEC smples for McGrath, B49-1
	LWR		244-010-60009-00000	INTEC smples for McGrath, B56-A
	LWR		244-010-60009-00000	INTEC smples for McGrath, B56-B
	LWR		244-010-60009-00000	INTEC smples for McGrath, B56-C
	LWR		244-010-60009-00000	INTEC smples for McGrath, B56-D
	LWR		244-010-60009-00000	INTEC smples for McGrath, B56-E
	LWR		244-010-60009-00000	INTEC smples for McGrath, B56-F
	LWR		251-010-60012-00000	INTEC smples for McGrath, B64-A
	LWR		251-010-60012-00000	INTEC smples for McGrath, B64-B
	LWR		251-010-60012-00000	INTEC smples for McGrath, B64-C
	LWR		251-010-60012-00000	INTEC smples for McGrath, B64-D
	LWR		251-010-60012-00000	INTEC smples for McGrath, B64-E
	LWR		251-010-60013-00000	INTEC smples for McGrath, B65-A
	LWR		251-010-60013-00000	INTEC smples for McGrath, B65-B
	LWR		251-010-60013-00000	INTEC smples for McGrath, B65-C
	LWR		251-010-60013-00000	INTEC smples for McGrath, B65-D
	LWR		251-010-60013-00000	INTEC smples for McGrath, B65-E
	LWR		251-010-60014-00000	INTEC smples for McGrath, B66-A
	LWR		251-010-60014-00000	INTEC smples for McGrath, B66-B
	LWR		251-010-60014-00000	INTEC smples for McGrath, B66-C
	LWR		251-010-60014-00000	INTEC smples for McGrath, B66-D
	LWR		251-010-60014-00000	INTEC smples for McGrath, B66-E
	LWR		244-010-60015-00000	INTEC smples for McGrath, B67-1
	LWR		244-010-60015-00000	INTEC smples for McGrath, B67-2
	LWR		244-010-60015-00000	INTEC smples for McGrath, B67-3
	LWR		244-010-60015-00000	INTEC smples for McGrath, B67-4
	LWR		244-010-60015-00000	INTEC smples for McGrath, B67-5
	LWR		244-010-60015-00000	INTEC smples for McGrath, B67-6
	LWR		244-010-60016-00000	INTEC smples for McGrath, B68-A
	LWR		244-010-60016-00000	INTEC smples for McGrath, B68-B
	LWR		244-010-60016-00000	INTEC smples for McGrath, B68-C
	LWR		244-010-60016-00000	INTEC smples for McGrath, B68-D
	LWR		244-010-60016-00000	INTEC smples for McGrath, B68-E
	LWR		244-010-60016-00000	INTEC smples for McGrath, B68-F
	LWR		244-010-60017-00000	INTEC smples for McGrath, B70-A
	LWR		244-010-60017-00000	INTEC smples for McGrath, B70-B
	LWR		244-010-60017-00000	INTEC smples for McGrath, B70-C
	LWR		244-010-60017-00000	INTEC smples for McGrath, B70-D
	LWR		244-010-60017-00000	INTEC smples for McGrath, B70-E
	LWR		223-010-60018-00000	INTEC smples for McGrath, B73-2
	LWR		223-010-60018-00000	INTEC smples for McGrath, B73-3
	LWR		223-010-60019-00000	INTEC smples for McGrath, B74-2
	LWR		223-010-60019-00000	INTEC smples for McGrath, B74-3
	LWR		223-010-60019-00000	INTEC smples for McGrath, B74-1
	LWR		223-010-60020-00000	INTEC smples for McGrath, B75-1
	LWR		223-010-60021-00000	INTEC smples for McGrath, B76-2
	LWR		223-010-60021-00000	INTEC smples for McGrath, B76-3
	LWR		223-010-60022-00000	INTEC smples for McGrath, B77-1
	LWR		223-010-60022-00000	INTEC smples for McGrath, B77-2
	LWR		223-010-60022-00000	INTEC smples for McGrath, B77-3

	LWR		251-010-60007-00000	INTEC smples for McGrath, GO2
	LWR		251-010-60009-00000	INTEC smples for McGrath, B57-A
	LWR		251-010-60010-00000	INTEC smples for McGrath, B57-B
	LWR		251-010-60010-00000	INTEC smples for McGrath, B57-C
	LWR		251-010-60011-00000	INTEC smples for McGrath, B63-A
	LWR		251-010-60011-00000	INTEC smples for McGrath, B63-B
	LWR		251-010-60011-00000	INTEC smples for McGrath, B63-C
	B7		Non Accountable	Peter Zalupski U-238
	B7		Non Accountable	Peter Zalupski Np-237
	B7		Non Accountable	Peter Zalupski Pu-239
	B7		Non Accountable	Catherine Riddle AM-243 Oxide 3mlHNO3
	Counter 1		Non Accountable	RAD-NP-L0002, 74507B-370
	Counter 1		Non Accountable	RAD-NP-L0002, 69565-370
	Counter 1		Non Accountable	RAD-NP-L0002 72131-370
	B7		Non Accountable	Eu-154 Source
	B7		Non Accountable	Cm 248 solution 25mL (0.165 mg/ml) for Leigh Martin
	B8		Non Accountable	Riddle Pu-239 Vial 1, 20 mL (20Mg Pu + 100Mg of 8M HNO3)
	B8		244-100-156-0	NP-237 in 52 mL solution
	B8		244-120-156-0	NP-237 For Mincher .01g
	B7		Non Accountable	Am-243 ICPMS Liquid
	B7		Non Accountable	Am-243 ICPMS Liquid CR sample
Off Site Vendor			Non Accountable	Specific Isotopes Eu-154
Off Site Vendor			Non Accountable	Specific Isotopes Np-237
Off Site Vendor			Non Accountable	Specific Isotopes Pu-239
Off Site Vendor			Non Accountable	Specific Isotopes U-233

RCL INVENTORY ITEMS

Fraction Fault [redacted]

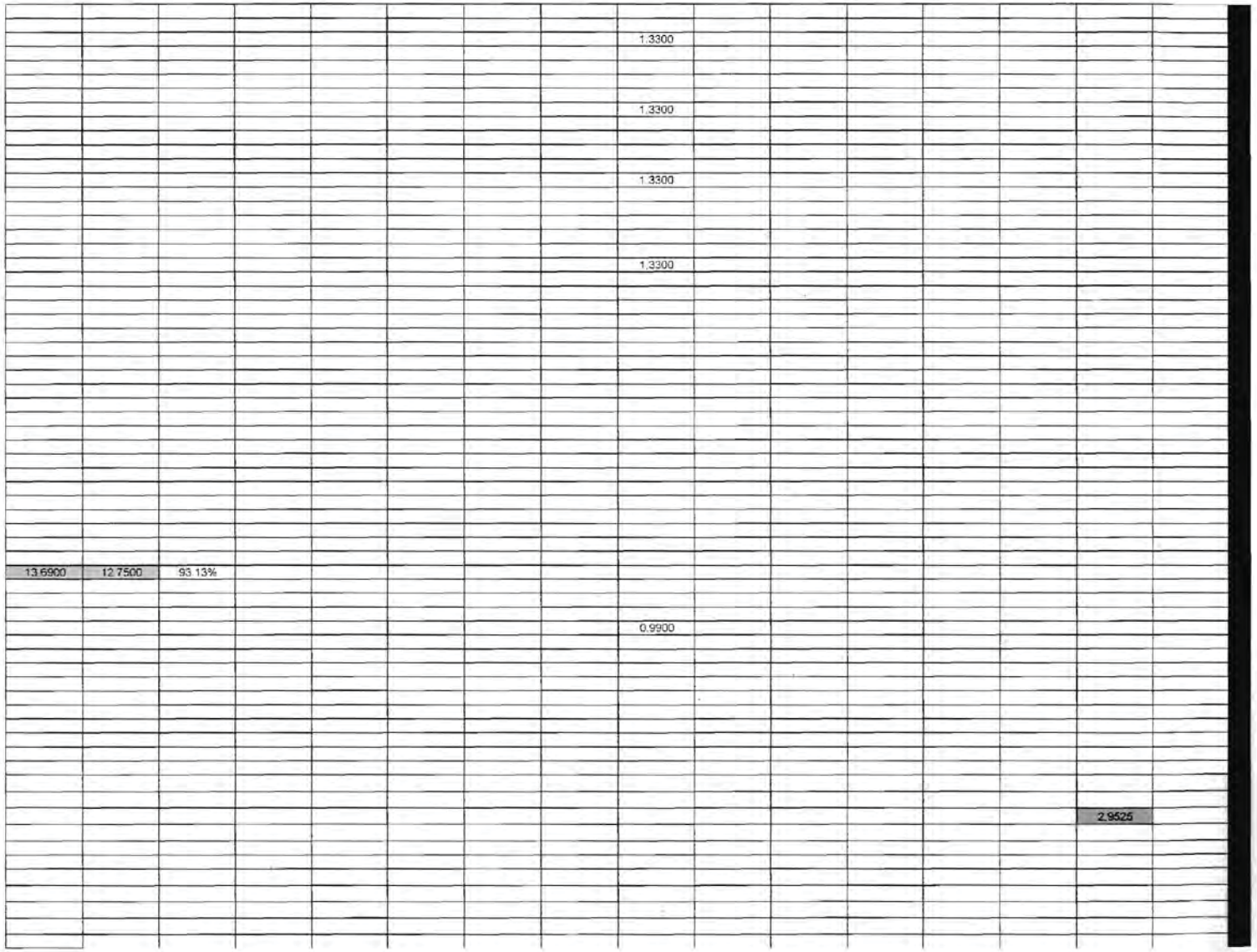
Unique ID		DATE	IWTS Barcode #	STORAGE LOCATION	CT	BATCH NUMBER	Description
		7/27/10	RCL100001			N/A	Mounted in LSC, 2 Perkin Elmer LSC Stand.
CM-10-1-1		10/6/10		LWR		251-010-80006-00000	INTEC smples for McGrath, B58-A
CM-10-1-2		10/6/10		LWR		251-010-80006-00000	INTEC smples for McGrath, B58-B
CM-10-2-1		10/6/10		LWR		251-010-80008-00000	INTEC smples for McGrath, B59-A
CM-10-2-2		10/6/10		LWR		251-010-80008-00000	INTEC smples for McGrath, B59-B
CM-10-3-1		10/6/10		LWR		251-010-80007-00000	INTEC smples for McGrath, B60-A
CM-10-3-2		10/6/10		LWR		251-010-80007-00000	INTEC smples for McGrath, B60-B
CM-10-4		10/6/10		LWR		251-010-80005-00000	INTEC smples for McGrath, B61-1
CM-10-5-1		10/6/10		LWR		251-020-50885-00000	INTEC smples for McGrath, B47-A
CM-10-5-2		10/6/10		LWR		251-020-50885-00000	INTEC smples for McGrath, B47-B
CM-10-5-3		10/6/10		LWR		251-020-50885-00000	INTEC smples for McGrath, B47-C
CM-10-6		10/6/10		LWR		244-020-50885-00000	INTEC smples for McGrath, B49-1
CM-10-7-1		10/6/10		LWR		244-010-80009-00000	INTEC smples for McGrath, B56-A
CM-10-7-2		10/6/10		LWR		244-010-80009-00000	INTEC smples for McGrath, B56-B
CM-10-7-3		10/6/10		LWR		244-010-80009-00000	INTEC smples for McGrath, B56-C
CM-10-7-4		10/6/10		LWR		244-010-80009-00000	INTEC smples for McGrath, B56-D
CM-10-7-5		10/6/10		LWR		244-010-80009-00000	INTEC smples for McGrath, B56-E
CM-10-7-6		10/6/10		LWR		244-010-80009-00000	INTEC smples for McGrath, B56-F
CM-10-8-1		10/6/10		LWR		251-010-80012-00000	INTEC smples for McGrath, B64-A
CM-10-8-2		10/6/10		LWR		251-010-80012-00000	INTEC smples for McGrath, B64-B
CM-10-8-3		10/6/10		LWR		251-010-80012-00000	INTEC smples for McGrath, B64-C

This is [redacted] pages from elec. database inventory at RCL
Sent by J. Merrill (CSO)

CM-10-8-4		10/6/10		LWR		251-010-60012-00000	INTEC smples for McGrath, B64-D						
CM-10-8-5		10/6/10		LWR		251-010-60012-00000	INTEC smples for McGrath, B64-E						
CM-10-9-1		10/6/10		LWR		251-010-60013-00000	INTEC smples for McGrath, B65-A	LS-2304		IV	E		
CM-10-9-2		10/6/10		LWR		251-010-60013-00000	INTEC smples for McGrath, B65-B						
CM-10-9-3		10/6/10		LWR		251-010-60013-00000	INTEC smples for McGrath, B65-C						
CM-10-9-4		10/6/10		LWR		251-010-60013-00000	INTEC smples for McGrath, B65-D						
CM-10-9-5		10/6/10		LWR		251-010-60013-00000	INTEC smples for McGrath, B65-E						
CM-10-10-1		10/6/10		LWR		251-010-60014-00000	INTEC smples for McGrath, B66-A	LS-2304		IV	E		
CM-10-10-2		10/6/10		LWR		251-010-60014-00000	INTEC smples for McGrath, B66-B						
CM-10-10-3		10/6/10		LWR		251-010-60014-00000	INTEC smples for McGrath, B66-C						
CM-10-10-4		10/6/10		LWR		251-010-60014-00000	INTEC smples for McGrath, B66-D						
CM-10-10-5		10/6/10		LWR		251-010-60014-00000	INTEC smples for McGrath, B66-E						
CM-10-11-1		10/6/10		LWR		244-010-60015-00000	INTEC smples for McGrath, B67-1	LS-2304		IV	E		
CM-10-11-2		10/6/10		LWR		244-010-60015-00000	INTEC smples for McGrath, B67-2						
CM-10-11-3		10/6/10		LWR		244-010-60015-00000	INTEC smples for McGrath, B67-3						
CM-10-11-4		10/6/10		LWR		244-010-60015-00000	INTEC smples for McGrath, B67-4						
CM-10-11-5		10/6/10		LWR		244-010-60015-00000	INTEC smples for McGrath, B67-5						
CM-10-11-6		10/6/10		LWR		244-010-60015-00000	INTEC smples for McGrath, B67-6						
CM-10-12-1		10/6/10		LWR		244-010-60016-00000	INTEC smples for McGrath, B68-A	LS-2304		IV	E		
CM-10-12-2		10/6/10		LWR		244-010-60016-00000	INTEC smples for McGrath, B68-B						
CM-10-12-3		10/6/10		LWR		244-010-60016-00000	INTEC smples for McGrath, B68-C						
CM-10-12-4		10/6/10		LWR		244-010-60016-00000	INTEC smples for McGrath, B68-D						
CM-10-12-5		10/6/10		LWR		244-010-60016-00000	INTEC smples for McGrath, B68-E						
CM-10-12-6		10/6/10		LWR		244-010-60016-00000	INTEC smples for McGrath, B68-F						
CM-10-13-1		10/6/10		LWR		244-010-60017-00000	INTEC smples for McGrath, B70-A						
CM-10-13-2		10/6/10		LWR		244-010-60017-00000	INTEC smples for McGrath, B70-B						
CM-10-13-3		10/6/10		LWR		244-010-60017-00000	INTEC smples for McGrath, B70-C						
CM-10-13-4		10/6/10		LWR		244-010-60017-00000	INTEC smples for McGrath, B70-D						
CM-10-13-5		10/6/10		LWR		244-010-60017-00000	INTEC smples for McGrath, B70-E						
CM-10-14-1		10/6/10		LWR		223-010-60018-00000	INTEC smples for McGrath, B73-2						
CM-10-14-2		10/6/10		LWR		223-010-60018-00000	INTEC smples for McGrath, B73-3						
CM-10-15-1		10/6/10		LWR		223-010-60019-00000	INTEC smples for McGrath, B74-2						
CM-10-15-2		10/6/10		LWR		223-010-60019-00000	INTEC smples for McGrath, B74-3						
CM-10-15-1		10/6/10		LWR		223-010-60019-00000	INTEC smples for McGrath, B74-1						
CM-10-16		10/6/10		LWR		223-010-60020-00000	INTEC smples for McGrath, B75-1						
CM-10-17-1		10/6/10		LWR		223-010-60021-00000	INTEC smples for McGrath, B76-2						
CM-10-17-2		10/6/10		LWR		223-010-60021-00000	INTEC smples for McGrath, B76-3						
CM-10-18		10/6/10		LWR		223-010-60022-00000	INTEC smples for McGrath, B77-1						
CM-10-18-1		10/6/10		LWR		223-010-60022-00000	INTEC smples for McGrath, B77-2						
CM-10-18-2		10/6/10		LWR		223-010-60022-00000	INTEC smples for McGrath, B77-3						
CM-10-19		10/6/10		LWR		251-010-60007-00000	INTEC smples for McGrath, GO2	LS-2304		IV	E		
CM-10-20		10/6/10		LWR		251-010-60010-00000	INTEC smples for McGrath, B57-A						
CM-10-20-1		10/6/10		LWR		251-010-60010-00000	INTEC smples for McGrath, B57-B						
CM-10-20-2		10/6/10		LWR		251-010-60010-00000	INTEC smples for McGrath, B57-C						
CM-10-21		10/6/10		LWR		251-010-60011-00000	INTEC smples for McGrath, B63-A	LS-2304		IV	E		
CM-10-21-1		10/6/10		LWR		251-010-60011-00000	INTEC smples for McGrath, B63-B						
CM-10-21-2		10/6/10		LWR		251-010-60011-00000	INTEC smples for McGrath, B63-C						
PZ-10-22		10/11/10		B7		Non Accountable	Peter Zalupski U-238						
PZ-10-23		10/11/10		B7		Non Accountable	Peter Zalupski Np-237						
PZ-10-24		10/11/10		B7		Non Accountable	Peter Zalupski Pu-239						
CR-10-25		10/11/10		B7		Non Accountable	Catherine Riddle AM-243 Oxide 3mlHNO3						
CR-10-26		11/2/10		Counter 1		Non Accountable	RAD-NP-L0002, 74507B-370						
CR-10-27		11/2/10		Counter 1		Non Accountable	RAD-NP-L0002, 69565-370						
CR-10-28		11/2/10		Counter 1		Non Accountable	RAD-NP-L0002, 72131-370						
PZ-11-29		2/22/11		B7		Non Accountable	Eu-154 Source						
LM-11-30		4/15/11		B7		Non Accountable	Cm-248 solution 25mL (0.165 mg/ml) for Leigh Martin						
CR-11-31		4/15/11		B8		Non Accountable	Riddle Pu-239 Vial 1, 20 mL (20Mg Pu + 100Mg of 8M HNO3)						
CR-11-33		4/27/11		B8		244-105-156-0	NP-237 in 5Z mL solution	LS-2446					
CR-11-33-1		5/3/11		B8		244-105-156-0	NP-237 For Mincher .01g						
PZ-11-34		9/23/11		B7		Non Accountable	Am-243 ICPMS Liquid						0.036
PZ-11-34-1	QSU	8/17/11		B7		Non Accountable	Am-243 ICPMS Liquid CR sample						0.004
PZ-11-35		8/15/11	Off Site Vendor			Non Accountable	Specific isotopes Eu-154						
PZ-11-36		8/15/11	Off Site Vendor			Non Accountable	Specific isotopes Np-237						
PZ-11-37		8/15/11	Off Site Vendor			Non Accountable	Specific isotopes Pu-239						
PZ-11-38		8/15/11	Off Site Vendor			Non Accountable	Specific isotopes U-233						

												0.000	0.040

	NonAccountable
	Enriched Uranium
	Natural Uranium
	Depleted Uranium
	Sources
	Other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1.3300
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13.6900
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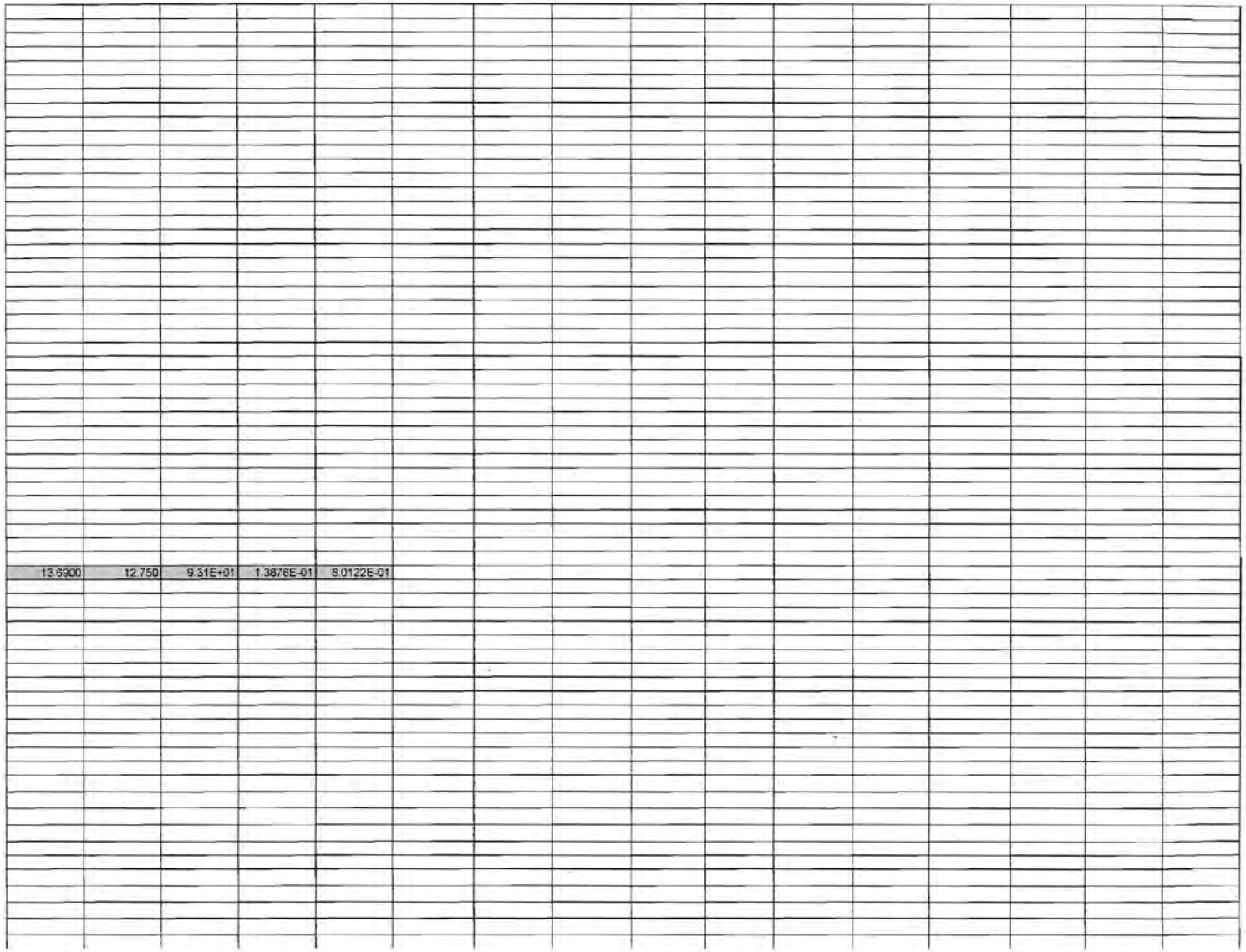

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16.002	13.017		0.141	2.844	0.000	0.000		0.000	0.000	0.000	0.000		0.000	0.000	0.000

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IAS11714
“Protection of Controlled Unclassified Information”

IDAHO NATIONAL LABORATORY
CONTROLLED UNCLASSIFIED INFORMATION (CUI)
WALKTHROUGH DATA COLLECTION FORM

Organization	Date	Facility	Management Lead
W310	09/16/11	WCB	J. T. Taylor

Team Members

1. Mary French	4.
2.	5.
3.	6.

General Instructions

Controlled Unclassified Information walkthroughs are performed to verify the protection of Controlled Unclassified Information that an organization or program utilizes. When conducting a Controlled Unclassified Information Walkthrough, management and/or employees should observe their specific area through the eyes of an adversary.

It is recommended that any identified concerns found during the walkthrough requiring immediate attention should be addressed the next business day.

Waste Management	YES	NO
1. Are paper recycling boxes/containers free of Controlled/Sensitive Information?	☒	☐
2. Are waste paper receptacles by copiers/offices free of Controlled/Sensitive Information?	☒	☐
3. Were phone messages, correspondence, etc., found that contained Controlled Unclassified Information?	☐	☒

Shredder Placement and Utilization	YES	NO
1. Is it in a high volume/administrative area?	☐	☒
2. Is it near a copier or fax machine?	☒	☐
3. Is there another location that is more suitable? If yes, where?	☐	☒
4. Are more shredders needed? If yes, where?	☐	☒
5. Locations of shredder(s). Record room numbers: WCB 2E12		

Fax Machine(s) Placement and Utilization none	YES	NO
1. Is it in a high volume/administrative area?	☐	☐
2. How often is it being utilized? **Describe:**		
3. Is there another location that is more suitable? If yes, where?	☐	☐
4. Location of fax machine(s). Record room numbers:		

Computer Security Access (IT)	YES	NO
1. When left unattended, do computer monitors display data?	☐	☒
2. Are users protecting Sensitive data?	☒	☐
3. Do computers have a password protected screen saver that activates in 15 minutes or less?	☒	☐
4. Look around employee's work area for passwords to access computers. **Results:** None found		

IAS 11-14

IDAHO NATIONAL LABORATORY
CONTROLLED UNCLASSIFIED INFORMATION (CUI)
WALKTHROUGH DATA COLLECTION FORM

Controlled Unclassified Documents	YES	NO
1. Are Controlled Unclassified documents left unattended?	☐	☒
2. Do visitors have access to Controlled Unclassified materials located in the lobby/hallway/desk?	☐	☒
3. Are extra copies shredded? or put in OUO container for shredding	☒	☐
4. Walk around the offices and look for any unattended Controlled Unclassified documents. **Results:** none found		

Bulletin Boards	YES	NO
1. Is too much information listed concerning current projects?	☐	☒
2. Are senior management phone numbers listed?	☐	☒
3. Observe posted material on bulletin boards for its content. **Results:**		

Conference/Meeting Rooms n/a	YES	NO
1. Observe presentation/meeting material left on white boards. **Results:**		
2. Check regular trash receptacles for discarded material. **Results:**		
3. Is data/information being left on flip charts?	☐	☐
4. Is there a poster displayed to remind personnel to clean the room when finished?	☐	☐

Data Collection Section

Employee's Name	Organization	Building	Room	Concerns
Loren Flatten	W310	WCB	2EJ206	None
Wade Scates	W310	WCB	2EJ401	None
Ning Zhang	W310	WCB	2EJ305	None

Comments

Talked with employees listed and asked about screen savers, password protection, and control of OUO. All had screen savers that activitated after 15 minutes of no activity and they were locking computers when they left the area. All new what to do with OUO when not in their offices. Also questioned about strangers in the area, response was ask if they needed help and not let them wonder around the area unescorted. This area has a cypher lock on the door, when the area is unoccupied the door is closed. During the day when occupied the door is open.

IAS111705
“Assessment of Criticality Safety Software Quality Assurance (SQA)”

INL SQA ASSESSMENT CHECKLIST

Assessment Planning

1. Integrated Assessment System (IAS) Number: 111705	**2. Evaluation Dates:** June 20, 2011 **to** September 30, 2011	**3. Assessment Type:** ☐ Independent ☐ Surveillance ☐ Management ☒ Inspection

4. Assessment Title: Assessment of Criticality Safety SQA

5. Purpose and Scope: (facility, areas, process, activity, and/or topics to be evaluated.)
Evaluate and document the compliance of the Criticality Safety Analysis Software Application and its components with applicable Software Quality Assurance requirements identified by INL Form 562.33 Rev. 7

6. Source Requirements: DOE O 414.1C, NQA-1-2000	**7. Procedures used to evaluate conditions during inspection:** LWP-13620 Rev. 11, LWP-13740 Rev. 2, NS-18211 Rev. 0, NS-18201 Rev. 4

8. Personnel performing assessment: Valerie L. Putman

9. Application(s): Criticality Safety Analysis Software (EA ID 229244)	**10. Quality Level:** Quality Level 2	11. **Safety Classification:** Safety and Hazard Analysis and Design Software	**12. Software Type:** Acquired

13. Interviewee(s)/Organization/Functional Title:

Interviewee #1:	Leland M. Montierth	Criticality Safety Engineering	Software Technical Lead (STL)	June 20 – 30, 2011
	Printed Name	Organization	Functional Title	Date
Interviewee #2:	Paul J. Sentieri	Criticality Safety Engineering	Test Case Engineer (TCE)	July 12, 2011
	Printed Name	Organization	Functional Title	Date
Interviewee #3:	Ning Zhang	Criticality Safety Engineering	TCE, Criticality Safety Engineer	June 21, 2011
	Printed Name	Organization	Functional Title	Date
Interviewee #4:	Andrea B. Hoffman	Criticality Safety Engineering	Quality Level Analyst	June 22, 2011
	Printed Name	Organization	Functional Title	Date
Interviewee #5:	Charles E. Stuart	Criticality Safety Engineering	Criticality Safety Engineer	June 22, 2011
	Printed Name	Organization	Functional Title	Date

14. Management Concurrence of Assessment Plan and Checklist

J. Todd Taylor		June 16, 2011
Printed Name	Signature	Date:

Assessment Summary

15. Summary of Potential Issues, Observations, and Noteworthy Practices:

The Criticality Safety Analysis application complies with the identified, applicable requirements. There are no potential issues or adverse observations.

This inspection identifies several suggestions for improvement of plan NS-18211. These suggestions may be evaluated during the next regularly scheduled plan review.

16. Approval of Assessment Results:

Assessment Team Lead:			
Valerie L. Putman	Valerie L Putman	Sept 29, 2011	
Printed Name	Signature	Date:	
Cognizant Director / Manager:			
J. Todd Taylor		9/29/2011	
Printed Name	Signature	Date:	

INL SQA ASSESSMENT CHECKLIST

No.	Item	Requirement	Results	Objective Evidence
Planning				
1	Has the software been categorized appropriately per LWP-13620 for being non-safety or safety software? *[Safety software determinations (SSD) must be documented and approved in the SSD database.]*	LWP-13620 Step 4.1.3 LRD-13600, Step 3.1.4 DOE O 414.1C Att 2 Section 2a(1), 5b DOE G 414.1-4 App F Section F.5.2, F.5.7 NQA-1 2000 Req't 2 Para 100(a), Req't 3 Para 801.4	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	SSD Number: SSD-000171, "Criticality Safety Analysis Software," Rev. 0, 25 Jan 2010. Safety Software Category: Safety & Hazard Analysis Software & Design Software Discussion:
2	Has the Quality Level (QL) been determined per LWP-13014 "Determining Quality Level Determinations" for the applied use(s) that the software is being developed for? *[Ensure potential software risks are identified as required by the grading level.* *Ensure that the likelihood and consequences of software failure are determined and documented.]*	LWP-13620 Step 4.1.4 LRD-13600, Step 3.1.4 DOE O 414.1C Att 2 Section 2a(1), 5b DOE G 414.1-4 App F Section F.5.2, F.5.7 NQA-1 2000 Req't 2 Para 100(a), Req't 3 Para 801.4	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	Quality Level ID: ALL-000637, "Quality Level Determination, Safety Software Analysis, Criticality Safety Analysis Software," Rev. 1, 11 Jan 2010. Quality Level: 2 Discussion:
3	Has the software type been determined per the "INL Software Type Hierarchy" for the applications being reviewed or audited?	LWP-13620 Step 4.1.13 LRD-13600, Step 3.1.4 DOE O 414.1C Att 2 Section 2a(1), 5b DOE G 414.1-4 App F Section F.5.2, F.5.7 NQA-1 2000 Req't 2 Para 100(a), Req't 3 Para 801.4	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	Software Type: Each software package is acquired, analysis software. Each operating system is acquired, support system software. Discussion: NS-18211, "Criticality Safety Analysis Software," §4.2 identifies each type. The identification could be improved if it appeared in §4.1, rather than §4.2, of NS-18211 and if the text included the phrase, "Software Type Hierarchy." Criticality Safety Engineering should also consider incorporating, during the next revision of NS-18211, the phrase, "commercial off-the-shelf software," to further clarify reasons NS-18211 does not include some SQA activities.
4	Has the required training been completed for safety and/or non-safety software? *[Ensure a training or indoctrination program exists for*	LWP-13620 Step 4.1.7, Table 2 LRD-13600 Step 3.1.4 DOE O 414.1C Att 2	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	EA Number: 229244 Training Plan: NS-18211 §3

No.	Item	Requirement	Results	Objective Evidence

Evaluation Comments:

The Criticality Safety Analysis application complies with the identified, applicable requirements.

This inspection identifies several suggestions for potential improvement of NS-18211. These suggestions may be evaluated for incorporation during the plan's next regularly scheduled review/revision:

- In §3.3, §3.4, §3.5, and §3.7, explicitly include a phrase such as, "training required by LWP-13620," to provide flexibility if the QA organization adds or changes course numbers required for SQA training. (NS-18211 §3.6 already provides similar flexibility for quality-level-analyst training by citing LWP-13014.)
- To improve flexibility in §3.2, allow the manager to assign TCEs who are not qualified criticality safety engineers, but who have adequate knowledge, experience, and independence.
- Move identification of the software type from §4.2 to §4.1 to make the documentation easier to find.
- Include the phrase, "Software Type Hierarchy," in the software type identification to improve consistency with current SQA nomenclature.
- Consider including the phrase, "commercial off-the-shelf software," with the software type identification to further clarify reasons NS-18211 does not include some SQA activities.

Criticality Safety Engineering also pursues other application improvements independent of this inspection:

- Reliability will be improved with the acceptance of a second NAS. V&V report revisions documenting the successful acceptance testing of the NAS, named ramses, will be completed in October 2011.
- Reliability was improved with the installation, testing, and acceptance of uninterruptable power supplies.
- The manager, SPM, and STL are investigating the possibility of having Information Technology specialists maintain this application's hardware in the specialist's secure area. This investigation is ongoing.
- The SPM and STL regularly seek and assess the possible impact of information regarding software package development, revision, updates, upgrades, and issues. Such activities are ongoing.

No.	Item	Requirement	Results	Objective Evidence
	safety software analysis, development, operations and use, and assessment/evaluation. *Ensure the training program provides for continuing education and is adequate for the scope, complexity, and importance of the tasks being performed.* *Ensure training is commensurate with the education, experience, and proficiency of the person.]*	Section 3b, 5d(10) DOE G 414.1-4 App F Section F.5.10 NQA-1 2000 Req't 2 Para 200		Discussion: NS-18211 §3.1 defers to NS-18203, "Criticality Safety Engineer Qualification Plan," (qualification QNCRITEG) for most user training. Other users may perform and review criticality safety evaluations with supervision (see NS-18201 and NS-18203) or are not allowed to perform such work. On 27 June 2011, the STL generated the user list (people who have user IDs with active passwords) copied below. It is annotated with QNCRITEG statuses from TRAIN: • Lee Montierth, qualified • Paul Sentieri, qualified • Valerie Putman, qualified • Chuck Stuart, qualified • Wade Scates, qualified • Chad Pope, qualified • Ning Zhang, not yet qualified • Emily Flora, not qualified, since removed from list • Nick Schira, not qualified, since removed from list NS-18211 §3.2 defers to NS-18203 for TCE training or qualification, but personnel may have appropriate knowledge without such training. Allowing the manager to assign other appropriate personnel as TCEs would allow more flexibility. NS-18211 §3.3 through §3.7 specify training for other personnel involved with software QA (SQA). The descriptions would be improved by explicitly citing LWP-13620 to accommodate SQA training changes controlled by the QA organization. As of 20 June 2010, TRAIN and the EA Repository show Taylor completed Manager and Owner training (0INL1445 and 0INL1446), Putman completed software project manager training (0INL1447), and

No.	Item	Requirement	Results	Objective Evidence
				Montierth completed STL training (0INL1448). The criticality safety analysis application does not require a content manager or software developers. As of 28 September 2011, all application users and personnel involved with the application's SQA have qualification QNSQASSQ.
5	Has the appropriate software application information been entered into the Enterprise Architecture (EA) Repository and is it complete, up-to-date, and verified? *[The EA record must be verified to ensure completeness. For safety software, ensure the application software is included on the safety software list].*	LWP-13620 Step 4.1.14 LWP-1313 LRD-13600 Step 3.1.4 DOE O 414.1C Att 2 Section 5b DOE G 414.1-4 App F Section F.5.1 NQA-1-2000 Subpart 2.7 Para 400	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	EA Number: 229244 Discussion: The SPM last verified baseline data, as listed in the EA Repository, on 26 April 2011. She incorporated the following updates since then: • 15 June 2011: linked the SCALE 6.0 software package to the application. • 20 June 2011: submitted a records analysis, which is now approved. • 27 June 2011: retired the SCALE 5.1 (EA ID 202165) and PARTISN 4.0 (EA ID 202166).
6	Are management plans (i.e., software management plans, software quality assurance plans, software configuration management plans, software test plans) or equivalent implemented and controlled for managing the software application lifecycle and approved by management? *[Ensure software project management and quality planning has been implemented depicting organization structure, responsibilities, and authorities for those managing, performing and assessing the software projects.]*	LWP-13620 Step 4.5.1.4 EXH-13620-1, EXH-13620-2, EXH-13620-3 LRD-13600, Steps 3.1.1, 3.1.2 DOE O 414.1C Att 2 Section 3d, 5d(1) DOE G 414.1-4 App F Section F.5.1 NQA-1-2000 Subpart 2.7 Para 400	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	Software Management Plan: NS-18211, especially §1, §4 and Attachment C. Software Configuration Management Plan: NS-18211, especially §7, §8, §9, and Attachment C. Software Quality Assurance Plan: NS-18211, especially §5.6, §6, §9, §10, Attachment A, and Attachment D Software Test Plan: NS-18211 §5 and Attachment E Discussion:
7	Are records (e.g., management plans, configuration item lists, approved user lists) being maintained according to the organization, program, or project records management plan?	LWP-13620 Step 4.5.1.6 LWP-1202 LRD-1201 DOE O 414.1C Att 2 Section 3d, 5d(1)	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	Records Coordinator: Mary E. French Records Management Plan: NS-18305. NS-18211 Attachment B provides supplemental information/instructions.

No.	Item	Requirement	Results	Objective Evidence
		DOE G 414.1-4 App F Section F.5.1 NQA-1-2000 Req't 6, 17		EA Number for Records Analysis: 29244 Discussion: The following representative records were checked to judge adequacy. The records are appropriately marked and maintained in accordance with NS-18305 or its predecessors and, where applicable, the supplementary instructions of NS-18211: • Plans/instructions NS-18201 Rev 4, NS-18203 Rev 1, NS-18211 Rev 0, and NS-18305 Rev 4. • Records listed as configuration items for the application and its software in the EA repository (see the evidence of checklist item 13) • Retirement notifications VLP-01-10, VLP-03-11, and VLP-04-11. • CSEs, produced since NS-18211 development began, that incorporate software calculations: ECAR-1486, EDF-6824 Rev. 3, INL/INT-07-13228 Rev. 1, INL/INT-08-13704, Rev 1, INL/INT-08-14302 Rev 2, INL/INT-08-14320 Rev 3 and 4, INL/INT-09-15364 Rev 1, INL/INT-09-15665 Rev 2 and 3, INL/INT-10-17782, INL/INT-10-18250, INL/INT-10-18614, INL/INT-10-18996, INL/INT-10-18730, INL/INT-10-19056, INL/INT-10-19145, INL/INT-10-19169, INL/INT-10-19432, INL/INT-10-19658, INL/INT-10-20323, INL/INT-11-20982, INL/INT-11-21023, INL/INT-11-21186, and INL/INT-11-21441. • The STL generated an approved user list (see evidence for checklist item 4) upon request on 27 June 2011.
8	Are requirements including access control being adequately captured, documented, approved by the Software Owner, and managed based on the quality level	LWP-13620 Step 4.5.2.1, EXH-13620-1, EXH-13620-2,	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	Document Identifier: NS-18211 §4.3, §8.4, and Attachments A and D.

No.	Item	Requirement	Results	Objective Evidence
	and software type (e.g., is the requirements baseline up-to-date)? *[Ensure software functions, requirements, and their bases are defined, documented and managed throughout the software life-cycle. Changes to requirements must be reflected in all documentation. For safety software, software requirements must be consistent with system safety basis.]*	EXH-13620-3 LRD-13600, Step 3.3.2 DOE O 414.1C Att 2 Section 3d, 5d(5) DOE G 414.1-4 App F Section F.5.5 NQA-1-2000 Req't 3 Para 801.1, Subpart 2.7 Para 401 NQA-1-2000 Subpart 2.7 Para 405		Discussion:
9	Has the system design been adequately captured and documented based on the quality level and software type? *[Ensure the design is described in a manner suitable for translating into computer codes. The design, including interfaces and data structures, must be correct, consistent, clearly presented, and feasible.* *Design should include a description of major safety components; a technical description of the software with respect to control flow, logic, mathematical model, data structure and integrity, and interface; a description of inputs and outputs including allowable or prescribed ranges for inputs and outputs; a description of error handling strategies and the use of the interrupt protocols.]*	LWP-13620 Step 4.5.3.1, EXH-13620-1, EXH-13620-2, EXH-13620-3 LRD-13600, Step 3.3.3 DOE O 414.1C Att 2 Section 3d, 3f, 5d(6) DOE G 414.1-4 App F Section F.5.6 NQA-1-2000 Req't 3 Para 801.2, Subpart 2.7 Para 402	☐ Acceptable ☐ Unacceptable ☒ Not Applicable	Document Identifier: Discussion: Item 9 is N/A because the application uses only acquired, commercial off-the-shelf software. Code developers and/or distributors must provide the technical description. NS-18211 requires that acquired codes be well-characterized, which necessarily requires such technical descriptions.
10	Have design, programming, and database standards been followed? *[Ensure the design has been translated into computer program(s) using the organizations program standards and conventions?]*	LWP-13620 Step 4.5.4.3 LRD-13600, Step 3.5.1 DOE O 414.1C Att 2 Section 3f, 5d(6) DOE G 414.1-4 App F Section F.5.6 NQA-1-2000 Req't 3 Para 801.3, Subpart 2.7 403	☐ Acceptable ☐ Unacceptable ☒ Not Applicable	Document/Standard Identifier: Discussion: Item 10 is N/A because the application uses only acquired, commercial off-the-shelf software. Code developers must identify and apply appropriate standards, documenting such activities. The application currently includes SCALE 6.0, MCNP5 1.40, and MCNP5 1.51, developed by DOE contractors subject to DOE orders and guides as specified in their contracts: • SCALE developers comply with plan SCALE-QAP-005 Rev. 3 (http://www.ornl.gov/sci/scale/pubs/

No.	Item	Requirement	Results	Objective Evidence
				scale-qap-005r3.pdf), which invokes 10 CFR 830 Subpart A and ASME NQA-1-1994 part 1 and subpart 2.7. • MCNP developers comply with LANL procedure P1040 Rev. 1, "Software Quality Management", which invokes 10 CFR 830 Subpart A and DOE Order 414.1. Rev. 2, which invokes NQA-1 (no date) and DOE G 414.1-4, will be effective in September 2011. NS-18211 Attachment D requires each software package be well characterized, which necessarily requires the availability of this documentation. (See the suggested improvement for checklist item 9).
11	Is a user manual, on-line help, desktop procedures, or a training guide available? *[Ensure instructions for use of the software, within the limits of the system's capabilities, are available.]*	LWP-13620 Step 4.5.4.1, EXH-13620-1, EXH-13620-2, Step 4.2.3.1 B, 4.3.1 B LRD-13600, Step 3.2.2.4, 3.5.2 DOE O 414.1C Att 2 Section 3d, 3f, 5d(6) DOE G 414.1-4 App F Section F.5.6 NQA-1-2000 Subpart 2.7 Para 302, 403	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	Document Identifier: As identified in the V&V report and acceptance notification of each software package. Discussion: Plan NS-18211 Attachment D requires each software package have documentation to assist users. Item 6.6 of Table A1 in the plan requires acceptance notices identify such user aids.
12	Have verification (e.g., desktop reviews, inspections, unit tests, alternate calculations) activities been completed by personnel not involved with development of the work product and documented? NOTE: QL-1 V&V activities require an INL qualified Quality Engineer *[Ensure V&V activities are performed by competent staff other than those who developed the item being verified or validated.]*	LWP-13620 Step 4.5.4.3 LRD-13600. Step 3.5.1 DOE O 414.1C Att 2 Section 3f, 5d(6) DOE G 414.1-4 App F Section F.5.6 NQA-1-2000 Req't 3 Para 801.3, Subpart 2.7 403	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	Document Identifier: Representative documents: • Package-specific V&V reports for installation acceptance (see evidence for checklist item 13). • §4 of each CSE for evaluation-specific calculation validation (see evidence for checklist item 7). Discussion: Criticality Safety Engineering personnel, who perform acceptance tests, are independent of personnel who develop

No.	Item	Requirement	Results	Objective Evidence
				the acquired codes. NS-18201 specifies the independence needed for checking software calculations used in CSEs. Criticality Safety Engineering reviewed NS-18201 to determine if revision is needed to implement a proposed new instruction LWP-10106, "Checking and Verification," for verification of calculation results. V&V reports, NS-18211 and NS-18201 do not require a Quality Engineer review because the application and CSEs are QL-2 as determined with ALL-000637 and ALL-00507.
13	Was the software baseline established and placed under configuration management prior to acceptance testing? *[Ensure software configuration items properly identified, baselined, and controlled prior to acceptance testing and release].*	LWP-13620 Step 4.5.5.4 LRD-13600 Step 3.7.4 DOE O 414.1C Att 2 Section 3e, 5d(3) DOE G 414.1-4 App F Section F.5.3 NQA-1-2000, Req't 6, Subpart 2.7 Para 404	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	Configuration Item List (ie, document identifier, location): As identified in the EA Repository for the application. The reader must also follow the links to each software package to identify package-specific items. Discussion: As of 26 July 2011, the Repository provides the following configuration item lists: • Entire application EA ID 229244: plan NS-18211; user information INL/INT-06-01380, "Criticality Dose Calculation Methodology;" quality level determination ALL-000637; safety software determination number SSD-000171; server [NAS] tut; and software packages MCNP5 version 1.40, MCNP5 version 1.51, and SCALE version 6.0. • Software package MCNP5 1.40, EA ID 200510: servers aten, bacchus, beavis, buthead, dr-evil, dr-kim, dr-no, dr-ruth, frylock, itza, ra, the-dude , and tut; V&V report INL/INT-10-19660; acceptance notice VLP-02-10; and the product review of EDMS record 3298188.

No.	Item	Requirement	Results	Objective Evidence
				• Software package MCNP5 1.51, EA ID 232456: servers aten, bacchus, beavis, buthead, dr-evil, dr-kim, dr-no, dr-ruth, frylock, itza, ra, the-dude , and tut; V&V report INL/INT-10-19661; V&V supporting documentation EDMS record 3294808, acceptance notice VLP-02-10; and the product review of EDMS record 3298189. • Software package SCALE version 6.0, EA ID 237870: servers aten, bacchus, beavis, buthead, dr-evil, dr-kim, dr-no, dr-ruth, frylock, itza, ra, the-dude , and tut; V&V report INL/INT-11-22236; and acceptance notice VLP-02-11. Appendix B of each V&V report also lists a package-specific configuration item list applicable at the time of the V&V.
14	Has the appropriate acceptance test documentation been developed and executed by the customer based on the quality level and software type and are the test cases traceable to the requirements? *[Ensure documentation includes test plans, test cases including test data and expected results. Results documentation must demonstrate successful completion of all test cases or the resolution of unsuccessful test cases.]* *[Ensure design requirements are traceable throughout the lifecycle and that all requirements were validated.]* *[Ensure V&V activities are performed by competent staff other than those who developed the item being verified or validated.]* *[Ensure software configuration items properly identified, baselined, and controlled prior to acceptance testing and release].*	LWP-13620 Step 4.5.5.1, EXH-13620-1, EXH-13620-2, EXH-13620-3 LRD-13600, Step 3.7.7 DOE O 414.1C Att 2 Section 3h, 5d(8) DOE G 414.1-4 App F Section F.5.8 NQA-1-2000 Req't 11 Para 400/500, Subpart 2.7 Para 404	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	Document Identifier: • NS-18211 Attachment E for the acceptance testing plan of application items. • Software-package-specific V&V reports (see the evidence of checklist item 13). • NS-18201 §4.2.8 for CSE-specific calculations • §4 of each CSE (see the evidence of checklist item 7). Discussion:
15	Have problem reporting and corrective action methods been documented and implemented?	LWP-13620 Step 4.5.6.1, EXH-13620-1, EXH-13620-2,	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	Document Identifier: NS-18211 §5.6 Discussion: Duplicate EDMS Records

No.	Item	Requirement	Results	Objective Evidence
	[Ensure documented practices and procedures for reporting, tracking, and resolving problems or issues are defined and implemented. The documented procedures should address methods of promptly reporting to affected organizations. *Ensure organization responsibilities for reporting issues, approving changes, and implementing corrective actions are identified and found to be effective.* *For safety software, ensure errors are correlated with the proper software engineering element, identified for potential impact, and all users notified]*	EXH-13620-3 LRD-13600 Step 3.8 C, 3.14 DOE O 414.1C Att 2 Section 3c, 5d(9) DOE G 414.1-4 App F Section F.5.9 NQA-1-2000 Req't 16, Subpart 2.7 Para 204, 405		329188 (for MCNP5 1.40) and 3298189 (for MCNP5 1.51), are examples of effective implementation.
16	Are changes tracked with a description, rationale, affected baselines, verification, and acceptance test documentation? *[Ensure proposed changes are documented, evaluated, and approved prior to implementation.* *Ensure corrections and changes are verified for correct operation to ensure no side effects were introduced].*	LWP-13620 Step 4.5.6.1, EXH-13620-1, EXH-13620-2, EXH-13620-3 LRD-13600 Step 3.10.5.3 DOE O 414.1C Att 2 Section 3e, 5d(3) DOE G 414.1-4 App F Section F.5.3 NQA-1-2000 Req't 3 Para 802.2	☒ Acceptable ☐ Unacceptable ☐ Not Applicable	Change Management Tool: NS-18211 §8.2 and Attachment A. Discussion:
17	What SQA program requirements are subcontractors required to comply with when performing software management activities in support of your organization? *[Ensure procurement documents identify technical and quality requirements and problem reporting to and/from the supplier.* *Ensure acquired software meets requirements with the appropriate level of QA based on risk, safety, etc.* *Ensure the suppliers' QA program has been reviewed and meets or exceeds the procurement specification requirements.]*	LWP-13620 Step 4.2.2, 4.2.3 LRD-13600, Step 3.2.1 DOE O 414.1C Att 2 Section 3g, 5d(4) DOE G 414.1-4 App F Section F.5.4 NQA-1-2000 Subpart 2.7 Para 301, 302	☐ Acceptable ☐ Unacceptable ☒ Not Applicable	Contract / Agreement: Discussion: The application uses only commercial off-the-shelf software, without modification for INL use. INL subcontractors do not perform any software management activities with this application. Criticality Safety Engineering would revise NS-18211 to provide appropriate direction if it decides to use subcontractors for such activities in the future.
18	What activities are being performed for process	Best Practice	☒ Acceptable	Discussion:

No.	Item	Requirement	Results	Objective Evidence
	improvement (e.g., lessons learned, metrics, self-assessments)?		☐ Unacceptable ☐ Not Applicable	• Criticality Safety Engineering recently obtained and tested a second network attached storage (NAS) device, now named ramses, to reduce vulnerability and improve recovery activities. The V&V report revisions documenting successful testing will be completed in October 2011. • Criticality Safety Engineering recently installed, tested, and accepted seven uninterruptable power supplies to reduce vulnerability. • The manager, SPM, and STL are investigating the possibility of having Information Technology specialists maintain this application's hardware in the specialist's secure area. • The SPM and STL seek and assess the possible impact of information regarding software package development, revision, updates, upgrades, and issues. To this end, they are on distribution for SQA lessons learned reports generated within INL and DOE. They also subscribe to appropriate vendor (RSICC) and code developer newsletters and electronic forums for the application's current software packages (MCNP and SCALE). • Criticality Safety Engineering personnel communicate with code developers and their colleagues at other facilities to obtain information, advice, and assistance. Among other things, personnel learn hardware and software information that the application owner, SPM, and STL consider when deciding to update, upgrade, or assess the application or to train personnel.

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Criticality Safety ICAMS Issues/Actions

ICAMS Issues/Observations 2011

Tracking Number	Condition or Problem Title	Date Identified	Current Phase	Issue Type	Significance of Problem	Source Type	Source Title
IO-011577	Revise the HFEF CHCS (HFEF-OI-1020) to incorporate Room 125 Mass Limit CCA into the HFEF Procedure CCA	6/1/11	Closed	Observation		Company : Assessment or Review	CCA Inspection CSI11102
IO-004035	The CSO at HFEF and other MFC facilities does not have adequate resources to perform roles/responsibilities	8/6/10	Corrective Action Implementation	Observation		Unplanned Observation (Internally Identified)	Eric Papaioannou's Unplanned Observations
IO-014767	CCA Inspection at FMF identified need to clarify "no liquid" control for approved storage and clarify special reflectors.	8/23/11	Corrective Action Implementation	Observation		Company : Surveillance/Inspection	IAS11702 CCA Inspections
IO-008085	MTG Conservative Mass Factors May Need Updating	1/4/11	Corrective Action Implementation	Observation	Adverse	Unplanned Observation (Internally Identified)	Mass Limit Alert from the FCF Mass Tracking System
IO-008017	Revise 00INL189, "Criticality Safety Principles' web-based training.	12/17/10	Corrective Action Implementation	Observation		Company : Assessment or Review	2010 Annual Criticality Safety Program Performance Summary
IO-005849	Revise the HFEF CHCS to change the definition of "moderator" to "liquid moderator" in the next revision.	9/14/10	Closed	Observation		Company : Assessment or Review	Criticality Control Area (CCA) Annual Inspections
IO-008380	No assessment has been scheduled in FY11 for the QL-2 application, Criticality Safety Analysis application (EA ID: 229224).	12/16/10	Closed	Observation		Company : Management Assessment	Adequacy and Effectiveness of the Site Wide Implementation of Software Quality Assurance Program
IO-007770	Criticality Safety Engineering should define, or discontinue INL use of, the phrase "favorable geometry".	12/8/10	Closed	Observation		Company : Assessment or Review	Review of ATR and ATRC Facility Criticality Safety Training Materials - VLP-04-10
IO-007798	Criticality Safety Engineering should review LRD-18001 for the appropriateness of including "heterogeneity" as a factor to be included in FMH training.	12/8/10	Closed	Observation		Company : Assessment or Review	Review of ATR and ATRC Facility Criticality Safety Training Materials - VLP-04-10
IO-005819	HFEF CSO too busy to perform duties.	9/14/10	Closed	Observation		Unplanned Observation (Internally Identified)	2010 Annual Criticality Safety Program Performance Summary
IO-007763	ATRC-specific training is needed that specifically addresses ATRC safety basis documents, controls, bases for controls, and criticality accident scenarios that differ from ATR documents, controls, bases, and scenarios.	12/8/10	Closed	Observation		Company : Assessment or Review	2010 Annual Criticality Safety Program Performance Summary
IO-007808	ATR training should review training qualification criteria lists in TRAIN and the qualification checklist items on-the-job training and initial qualification checklists for adequacy.	12/8/10	Closed	Observation		Company : Assessment or Review	2010 Annual Criticality Safety Program Performance Summary
IO-008016	Revise NS-18202, "Criticality Safety Assessments"	12/17/10	Closed	Observation		Company : Assessment or Review	2010 Annual Criticality Safety Program Performance Summary
IO-012409	The Emergency Voice Announcement System at MFC is Less than Adequate	7/11/11	Open	Observation	Adverse	Unplanned Observation (Internally Identified)	Initial Notification Report (INR)

ICAMS Action Items 2011

Action Item Number	I/O Number	Responsible Manager	Actionee	Date Assigned	Due Date	Title	Action Description	Objective Evidence	Date Action Completed
AI-02546	IO-004035	W310 - Criticality Safety Engineering Issues Management Group	J T. Taylor	11/16/10	12/20/11	Strengthen CSO Program	Interview all CSOs at MFC to verify understanding of tracking significant quantities of fissionable material and discuss pertinent facility specific issues.	Letter documenting meetings.	
AI-03686	IO-008017	W310 - Criticality Safety Engineering Issues Management Group	Valerie L. Putman	2/23/11	6/30/12	Revise 00INL189 "Criticality Safety Principles" web-based training	Revise 00INL189 "Criticality Safety Principles" web-based training with improvements to strengthen fissionable material handler training.	Launch new version of "Criticality Safety Principles" web-based training.	
AI-05417	IO-011577	W310 - Criticality Safety Engineering Issues Management Group	Charles E. Stuart	7/22/11	9/30/11	Revise the HFEF CHCS	Revise the HFEF CHCS to include Room 125.	Room 125 will be absorbed into the HFEF Procedure CCA and eliminated as a Mass Limit CCA on the 2011 Master CCA List.	11/8/11
AI-06348	IO-008017	W310 - Criticality Safety Engineering Issues Management Group	J T. Taylor	10/17/11	3/31/12	Revise Study Guide INL/EXT-06-01183	Revise Study Guide INL/EXT-06-01183, "Criticality Safety Basics for INL FMHs and CSOs"	Provide draft copy of document to EDMS	
AI-06349	IO-014767	W310 - Criticality Safety Engineering Issues Management Group	J. T. Taylor	10/17/11	12/23/11	Issue CSE that defines special reflectors	Issue criticality safety evaluation that defines special reflectors	eCR report submitted to EDMS	11/10/11
AI-06350	IO-014767	W310 - Criticality Safety Engineering Issues Management Group	J T. Taylor	10/17/11	2/28/12	Provide a draft of revised LST-386 to Operations	Provide a draft of revised LST-386, "Fuel Manufacturing Facility Criticality Control List", to Operations to incorporate special reflector definition and resolution to "no liquids" definition.	Revised draft copy of LST-386	
AI-06371	IO-008017	W310 - Criticality Safety Engineering Issues Management Group	Andrea B. Hoffman	10/17/11	3/31/12	Revise INL/EXT-06-01183	Review LRD-18001 for the appropriateness of including "heterogeneity" as a factor to be included in FMH training.	Revise Section 4.1.7 in INL/EXT-06-01183 "Criticality Safety Basics for INL FMHs and CSOs" and address the terms "homogeneity" and "heterogeneity"	
AI-04855	IO-008085	GC00- INL MFC Nuclear Operations	P. J. Sentieri	5/27/11	9/30/11	Complete a TEV on the MkV Electrorefiner	Complete a TEV/ECAR that provides a basis to establish a value for the plutonium in the MK-V ER based upon the analytical data and process knowledge that will allow the return of two batches of condensate.	Attach TEV	11/2/11
AI-005740	IO-009673	GC00- INL MFC Nuclear Operations	Andrea B. Hoffman	8/24/11	7/2/12	Revise LRD-18001 for clarification periodic verification of CAS	Review ANSI Series 8 standards for CAS requirements and discuss issue with J. T. Taylor and the FMF cognizant system engineer (Charlie Lahm)	Revise LRD-18001 to clarify requirements for periodic testing of the entire FMF CAS. Provide any follow-on recommendations to revise MFC FMF CAS Testing procedures, as applicable, to the CSE.	
AI-003737	IO-008016	W310 - Criticality Safety Engineering Issues Management Group	Andrea B. Hoffman	12/17/10	9/1/11	Revise NS-18202 "Criticality Safety Assessments"	Laboratory assessment procedures have significantly changed and NS-18202 has not been revised since 2006.	Revised procedure on EDMS.	10/17/11

ICAMS Action Items 2011 (continued)

Action Item Number	I/O Number	Responsible Manager	Actionee	Date Assigned	Due Date	Title	Action Description	Objective Evidence	Date Action Completed
AI-02543	IO-004035	W310 - Criticality Safety Engineering Issues Management Group	Andrea B. Hoffman	11/16/10	11/3/10	Modify/strengthen Criticality Safety Officer Training	The Facility Familiarization Form for the CSO qualification process has been revised to include an approval sign-off of the Criticality Safety Manager.	Revised NS-18204, "Criticality Safety Officer Qualification Plan" (rev. 3) issued on EDMS.	11/3/10
AI-02547	IO-004035	W310 - Criticality Safety Engineering Issues Management Group	J T. Taylor	11/16/10	7/1/11	Strengthen CSO Program	Resolve the CSO inadequacy issues at FCF and HFEF.	JTT letter documenting results.	9/26/11
AI-02542	IO-005849	W310 - Criticality Safety Engineering Issues Management Group	Charles E. Stuart	11/16/10	5/31/11	Revise HFEF CHCS	Revise HFEF CHCS to change the definition of "moderator" to "liquid moderator" in the next revision.	Copy of the revised CHCS on EDMS	5/24/11
AI-03687	IO-008428	W310 - Criticality Safety Engineering Issues Management Group	V. L. Putman	2/23/11	6/1/11	Develop new criticality safety training for SSPSF.	Review criticality safety training developed to implement new DSA for SSPSF.	New training developed to implement new controls contained in revised DSA for SSPSF.	4/21/11
AI-04790	IO-007808	GB61 - Veryl Kirkpatrick Issues Management Group	Skeen Blair	10/27/11	11/30/11	Ensure SD-11.1.25, PDD-105 and qual checklists adequately include criticality safety training requirements.	Review ATR Operations qualification checklists to ensure they meet requirements for Criticality Safety training. Review the training qual paths (TRAIN) for the various ATR operations positions to ensure they meet criticality safety training requirements.	Lotus notes email to Issues Management documenting the results of the review.	11/15/11
AI-04791	IO-007763	GB61 - Veryl Kirkpatrick Issues Management Group	Skeen Blair	10/27/11	12/15/11	Develop an ATRC specific criticality safety lesson plan similar in scope to ATR Criticality Safety Lesson Plan TRA00013.	Include a discussion on SAR/TSR-192 criticality controls and bases for the controls. Discuss the various accident scenarios, their associated controls and bases.	Complete and approve the lesson plan to issues management.	11/15/11
AI-01932	IO-005496	W310 - Criticality Safety Engineering Issues Management Group	V. L. Putman	10/6/10	12/31/10	ATR/ATRC facility criticality safety training review/assessment	Review ATR and ATRC facility criticality safety training materials and provide consolidated criticality scenarios if necessary.	E-mail or report detailing the results of the review.	12/10/10
AI-06360	IO-012409	GC83-Fuel Mgmt Dept Issues Management Group	J. T. Taylor	10/17/11	1/31/12	Evaluate EAR/EAL for Criticality at MFC	For a criticality at MFC, 1) Evaluate the EAL against facility EAR's for consistency, 2) Correct the EAL (if required) and provide guidance to revise facility EARs/ONRIs to provide consistency for a criticality at MFC.	JTT-03-2011 "Response to Criticality Alarms at MFC"	12/8/11

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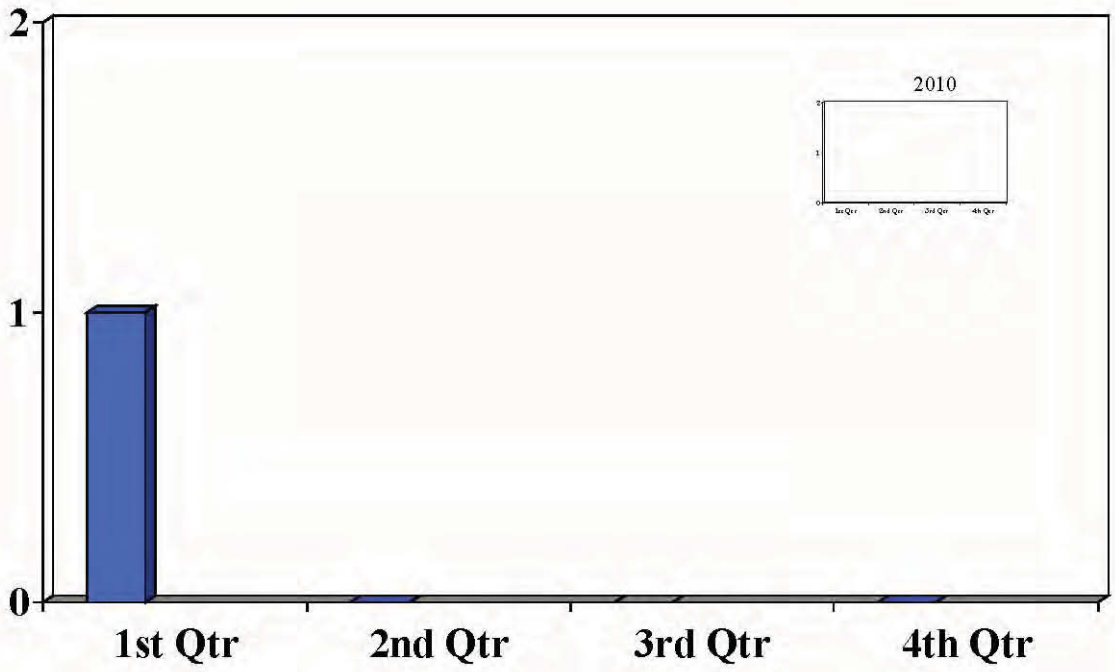
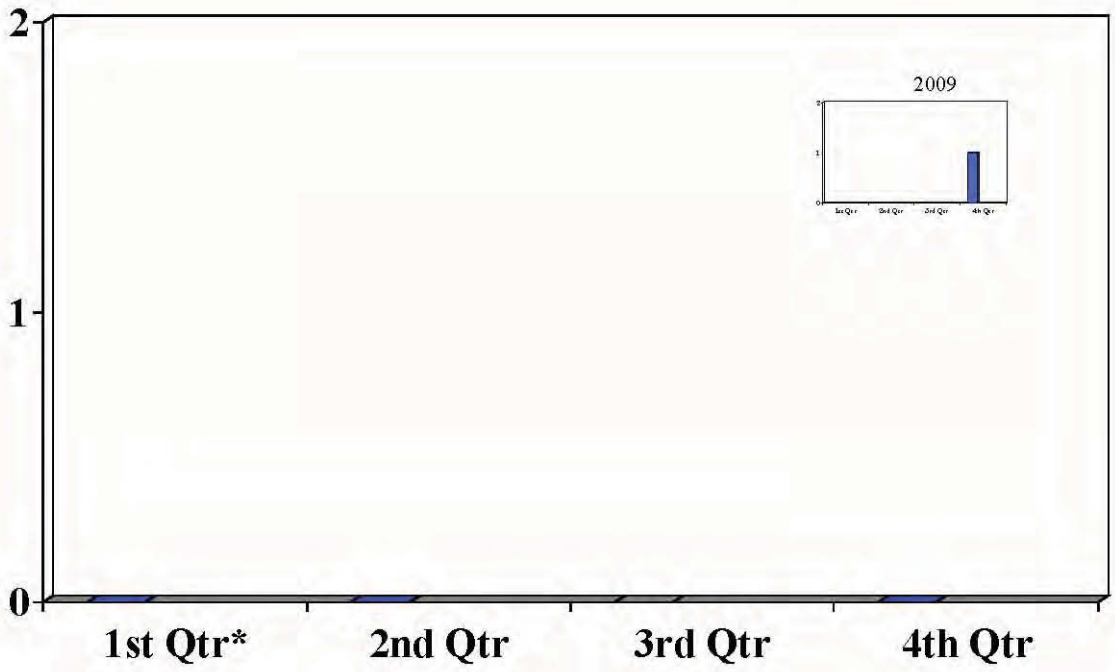
Criticality Safety Infractions CY-2011



On January 18, 2011, it was discovered that a fuel plate in the Nuclear Materials Inspection and Storage (NMIS) facility exceeded the fissionable mass limit, resulting in a technical safety requirement (TSR) violation The TSR limits fuel plate bundles to 1085 grams U-235, which is the maximum loading of an ATR fuel element. The fuel plate bundle contained 107 g U-235 and was assembled under a 1100 g U-235 limit in 1982 at INTEC (CPP-651). In 2003, the limit was reduced to 1085 g using a new criticality safety evaluation for ATR fuels. The fuel plate bundle inventories were not checked for compliance prior to implementing the reduced limit. A subsequent review of the NMIS inventory did not identify further violations.

Criticality Safety Infractions CY-2010



* On both January 21 and January 25, 2010, technical safety requirement violations occurred at the Radioactive Scrap and Waste Facility (RSWF) at the Materials and Fuels Complex (MFC). The violations involved Remote Handled Transuranic (RH-TRU) waste retrieval operations. During the retrieval of a waste canister, personnel failed to stop work when identification markings on the side of two waste canisters did not match the markings on the top of the canisters or on the list of containers approved for retrieval. The verification control is in place to ensure that only those waste canisters approved for transfer are removed and transferred. Subsequent investigation determined that the waste canisters in question had been analyzed and were approved for retrieval.

Occurrence Report NE-ID—BEA-ATR-2011-0003 “Nuclear Materials Inspection and Storage (NMIS) Facility Fuel Storage Safety Analysis Report (SAR)-154 Administrative Control Limit Exceeded”

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NE-ID--BEA-ATR-2011-0003 NOTIFICATION

Occurrence Report

After 2003 Redesign

Advanced Test Reactor

(Name of Facility)

Category "A" Reactors

(Facility Function)

Idaho National Laboratory Battelle Energy Alliance, LLC

(Site) (Contractor)

Name: SCHUEBERT, EDMOND J

Title: ATR Operations Facility Manager **Telephone No.:** (208) 533-4246

(Facility Manager/Designee)

Name: OWENS, MARJORIE A

Title: ATR OPERATIONS FACILITY ADMINISTRATI **Telephone No.:** (208) 533-4563

(Originator/Transmitter)

Name: E. Bruce Criswell **Date:** 01/19/2011

(Authorized Classifier (AC))

1. Occurrence Report Number: NE-ID--BEA-ATR-2011-0003

Nuclear Materials Inspection and Storage (NMIS) Facility Fuel Storage Safety Analysis Report (SAR)-154 Administrative Control Limit Exceeded

2. Report Type and Date: NOTIFICATION

	Date	**Time**
Notification:	01/19/2011	18:56 (ETZ)
Initial Update:		(ETZ)
Latest Update:		(ETZ)
Final:		(ETZ)

3. Significance Category: 2

4. Division or Project: ATR Programs

5. Secretarial Office: NE - Nuclear Energy, Science and Technology

6. System, Bldg., or Equipment: Nuclear Materials Inspection and Storage (NMIS)

7. UCNI?: No

8. Plant Area: NMIS

9. Date and Time Discovered: 01/17/2011 16:53 (MTZ)

10. Date and Time Categorized: 01/18/2011 18:20 (MTZ)

11. DOE HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

12. Other Notifications:

Date	Time	Person Notified	Organization
01/18/2011	20:00 (MTZ)	B. Boston	DOE-ID

13. Subject or Title of Occurrence:

Nuclear Materials Inspection and Storage (NMIS) Facility Fuel Storage Safety Analysis Report (SAR)-154 Administrative Control Limit Exceeded

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14. Reporting Criteria:

3A(2) - Any violation or noncompliance of a Hazard Category 1, 2, or 3 nuclear facility's Technical Safety Requirement (or Operational Safety Requirement) Limiting Control Setting, Limiting Condition for Operation, Administrative Control, or Surveillance Requirement.

Exception: An event consisting solely of a surveillance test performed after the prescribed surveillance period, and in which the equipment was found to be capable of performing its specified safety function. (See separate criterion for late surveillance tests below).

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15. Description of Occurrence:

On January 17, 2011, a Criticality Safety Engineer was performing a review of the NMIS fuel storage inventory in support of the next NMIS SAR update. After summing the data of fuel plates stored in one location, a discrepancy was noted between the inventory data and the approved fuel list (SAR-154-6A) requirements. This potential issue was reported to the Facility Manager at 1653.

At 1330 on January 18, 2011, the Facility Manager entered the NMIS to review the NMIS fuel storage database. This is a different database than the one reviewed by the engineer at a different location. It was verified that one bundle of Advanced Test Reactor (ATR) fuel element plates appears to have more than the allowed amount of fuel in this configuration.

SAR-154-6A, Revs. 0 (April 2003) through 6 (March 2010), specify a maximum number of plates containing a maximum quantity of fuel which is less than the value used prior to this SAR revision. If plates of more than one size number are included, they must be in their nested order. The cited Criticality Safety Evaluation (CSE) model ATR fuel with a maximum quantity of fuel per element based on the element design specifications.

The plates arrived at the Idaho National Laboratory (INL) from Rockwell International (Canoga Park, CA) in December 1982. It is likely that these plates have been in the same bundle since receipt because, with the exception of their plate size numbers, the sequential plate serial numbers indicate they belong in the same element, had fabrication reached that stage. It is not known who assembled this particular bundle (NMIS personnel, Chemical Processing Plant (CPP) personnel, or the shipper) or when. The fuel plates were stored at a storage facility at a different site location during the NMIS vault modification which allowed a higher fuel limit.

NMIS preparations to take back the fuel from CPP-651 included changing NMIS limits to be consistent with CPP-651 limits for plate-bundles. (SAR-36, Rev. 2, March 1990). The operational safety requirements (OSR) did not change with respect to the fuel limit afterwards. SAR-36, the NMIS SAR which predates NMIS SAR 154, refers to a higher fuel limit in some manner in each of its revisions since 1997. DOP 7.11.4, Rev. 1 (April 1997), required personnel assembling plate-bundles verify compliance with OSR mass limits, which it quotes.

The implementation of SAR-154-6A, Rev. 0 in April 2003 did not include a requirement to verify mass limits of all fuel storage locations in the NMIS to comply with the new CSE model and reduced fuel gram limit.

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16. Is Subcontractor Involved? No

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17. Operating Conditions of Facility at Time of Occurrence:

Normal conditions at NMIS facility.

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18. Activity Category:

03 - Normal Operations (other than Activities specifically listed in this Category)

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19. Immediate Actions Taken and Results:

Appropriate levels of BEA management and DOE-ID were notified of this event.

Declared a Technical Safety Requirement (TSR) violation of TSR-154 specific administrative control 5.154.1.

A critique of this event is planned during the week of 24 January 2011.

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20. ISM:

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21. Cause Code(s):

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22. Description of Cause:

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23. Evaluation (by Facility Manager/Designee):

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24. Is Further Evaluation Required?: No

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25. Corrective Actions
Local Tracking System Name: ICAMS

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26. Lessons Learned:

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27. Similar Occurrence Report Numbers:

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28. User-defined Field #1:

GB10

29. User-defined Field #2:

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30. HQ Keyword(s):

01C--Inadequate Conduct of Operations - Violation of Authorization Basis Elements
01J--Inadequate Conduct of Operations - Criticality Procedure Noncompliance
12L--EH Categories - Nuclear Criticality Safety Concern
14E--Quality Assurance - Work Process Deficiency

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31. HQ Summary:

On January 17, 2011, a Criticality Safety Engineer was performing a review of the NMIS fuel storage inventory in support of the next NMIS SAR update when, after summing the data of fuel plates stored in one location, a discrepancy was noted between the inventory data and the approved fuel list (SAR-154-6A) requirements. This potential issue was reported to the Facility Manager. On January 18, the Facility Manager entered the NMIS to review the NMIS fuel storage database. This is a different database than the one reviewed by the engineer at a different location. It was verified that one bundle of Advanced Test Reactor (ATR) fuel element plates appears to have more than the allowed amount of fuel in this configuration. A Technical Safety Requirement (TSR) violation of TSR-154 specific administrative control 5.154.1 was declared. A critique of this event is planned during the week of January 24.

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32. DOE Facility Representative Input:

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33. DOE Program Manager Input:

(tab)

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Source Requirement Documents in LRD-18001 (2011)

10 CFR, Section 830.204 Nuclear Safety Management

ANSI/ANS-8.1,1998, (R2007),"Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors"

ANSI/ANS-8.3-1997, (R2003), "Criticality Accident Alarm System"

ANSI/ANS-8.5-1996, (R2002), "Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material"

ANSI/ANS-8.6-1983, (R1988) (R1995), (R2001), "Safety in Conducting Subcritical Neutron-Multiplication Measurements in Situ"

ANSI/ANS-8.7-1998, "Guide for Nuclear Criticality Safety in the Storage of Fissile Materials"

ANSI/ANS-8.10-1983 (R1988) (R1999) (R2005), "Criteria for Nuclear Criticality Safety Controls in Operations with Shielding and Confinement"

ANSI/ANS-8.12-1987, (R2002), "Nuclear Criticality Control and Safety of Plutonium-Uranium Fuel Mixtures Outside Reactors"

ANSI/ANS-8.14-2004, "Use of Soluble Neutron Absorbers in Nuclear Facilities Outside Reactors

ANSI/ANS-8.15-1981, (R1987) (R1995), (R2005), "Nuclear Criticality Control of Special Actinide Elements"

ANSI/ANS-8.17-2004, "Criticality Safety Criteria for the Handling, Storage and Transportation of LWR Fuel Outside Reactors"

ANSI/ANS-8.19-2005," Administrative Practices for Nuclear Criticality Safety"

ANSI/ANS-8.20-1991, (R1999) (R2005), "Nuclear Criticality Safety Training"

ANSI/ANS-8.21-1995, (R2001),"Use of Fixed Neutron Absorbers in Nuclear Facilities Outside Reactors"

ANSI/ANS-8.22-1997, "Nuclear Criticality Safety Based on Limiting and Controlling Moderators"

ANSI/ANS-8.23-1997, "Nuclear Criticality Accident Emergency Planning and Response"

ANSI/ANS-8.24-2007, "Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations"

ANSI/ANS-8.26-2007, "Criticality Safety Engineer Training and Qualification Program"

DOE Order 420.1B, “Facility Safety,” Chapter III “Nuclear Criticality Safety,” 12-22-06

DOE Order 5480.19, “Conduct of Operations Requirements for DOE Facilities,” Change 2, 10-23-01

DOE-STD-1135-99, “Guidance for Nuclear Criticality Safety Engineer Training and Qualification,” September 1999

DOE-STD-3007-2007, “Guidelines for Preparing Criticality Safety Evaluations at Department of Energy Non-Reactor Nuclear Facilities,” February 2007

NS-18211, “Criticality Safety Analysis Software,” October 2010

INL/INT-10-19661, “MCNP5 1.51 Verification and Validation for the Criticality Safety Analysis Software Application,” October 2011

INL/INT-10-19660, “MCNP5 1.40 Verification and Validation for the Safety Analysis Software Application,” October 2011

INL/INT-11-22236, “SCALE 6.0 Verification and Validation for the Criticality Safety Analysis Software Application,” November 2011

CHAPTER 6

PREVENTION OF INADVERTENT CRITICALITY

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CONTENTS

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6. PREVENTION OF INADVERTENT CRITICALITY

6.1 Introduction

This chapter describes the INL Criticality Safety program. The purpose of the Criticality Safety program is to ensure appropriate actions are taken to prevent, and to mitigate the consequences of, a criticality accident. The requirements and recommendations of the Criticality Safety program are documented in Laboratory Requirements Document (LRD)-18001, "INL Criticality Safety Program Requirements Manual,"[1] and apply to all INL operations that contain or handle fissionable materials that pose a criticality accident hazard, with the exception of fissionable material in nuclear reactor cores, which is exempt.

6.2 Requirements

The following regulations, DOE orders, and industry standards apply to this chapter.

- 10 CFR 830, "Nuclear Safety Management"[2]
- DOE O 420.1B, Chapter III, "Nuclear Criticality Safety"[3]
- DOE-STD-3007-2007, "Guidelines for Preparing Criticality Safety Evaluations at Department of Energy Non-Reactor Nuclear Facilities"[4]
- American National Standards Institute/American Nuclear Society (ANSI/ANS) 8 Series Standards.[5]

Note that this chapter constitutes the INL Criticality Safety Program Description Document required by DOE O 420.1B Chapter III, Section 3.a.(3).

6.3 Criticality Concerns

The Criticality Safety program requires that criticality safety analysis be performed, with input from operations and other knowledgeable individuals, to document that a process will be subcritical under both normal and credible abnormal conditions before handling fissionable material in a facility or operation, or starting a new operation (including an existing operation that has been changed). Analyses are performed according to DOE-STD-3007-2007 and are governed by Laboratory procedures. The program also requires that the analysis identify the controlled parameters and the limits on these parameters. Discussion of the fissionable material available within a facility, including information on fissionable material form (e.g., chemical and/or physical, including isotopic content, concentration, densities), the location of potential criticality hazards (e.g., description, drawing), and maximum quantities involved, all of which form the basis of the criticality safety analyses, is provided in facility-specific safety basis documentation.

6.4 Criticality Controls

The INL Criticality Safety program uses a tiered approach to criticality control. Passive engineered controls, such as geometry control, are the preferred control method. Where passive engineered controls are not feasible, the preferred order of controls is active engineered controls, followed by administrative controls. In addition, the double contingency principle is applied to criticality accident scenarios to determine the required design features and administrative controls needed to prevent an inadvertent criticality.

Criticality controls are derived in accordance with Laboratory procedures. The procedures, which implement DOE-STD-3007-2007, require that criticality safety evaluations (CSEs) be reviewed and approved by safety analysis and line management personnel to ensure that the correct configurations were evaluated and that the derived limits and controls can be implemented. Other organizations, such as emergency preparedness, and engineering, may also be included in the review process.

CSEs provide the documented evaluation of facility activities and equipment involving fissionable material to establish a basis for criticality safety. As such, CSEs identify the engineered and/or administrative controls, and contingencies, necessary to ensure the consequences of criticality accidents are prevented and/or mitigated.

Chapter 6 of the facility-specific DSA presents an overview of the results of the applicable CSEs. The controls necessary to prevent and mitigate the criticality scenarios are evaluated in the facility-specific hazard/accident analysis to identify those controls that require selection as a technical safety requirement or a safety structure, system, and component (SSC). Factors such as: (1) engineered features that may themselves prevent criticality, (2) scenarios under single parameter administrative control, (3) system complexity, and (4) margin of sub-criticality, are considered in the selection process. Criticality controls may be specifically identified and described in the facility DSA and associated technical safety requirements, or they may be described in a more general manner in the facility DSA/TSRs, with specific details presented in a TSR-required contractor-approved list. When implemented through a contractor-approved list, the list will reference the CSEs from which the controls were derived; include the same organizations in the review and approval process as those used for the CSEs; and be developed and controlled in accordance with laboratory procedures. Responsibility for implementation of all criticality controls resides with facility management.

6.4.1 Engineered Controls

Laboratory procedures provide for the evaluation of engineered controls as part of the criticality safety program, including geometry, spacing, and neutron absorbers (both fixed and soluble). The use of engineered controls is based on factors such as feasibility of implementation and cost. Engineering controls important to criticality safety, as well as equipment used to store, handle, transport, or process fissionable material, are evaluated to determine configuration management needs. Detailed descriptions of engineered controls selected as safety SSCs for criticality safety are provided in facility-specific DSAs.

6.4.2 Administrative Controls

In addition to engineering controls, administrative controls that impose limits on fissionable material mass, moderator, reflector, concentration, and volume may be used to ensure criticality safety. Detailed descriptions of administrative controls elevated to a TSR for criticality safety are provided in facility-specific DSAs.

6.4.3 Application of Double Contingency Principle

The criticality safety principles and criteria that govern nuclear facility operations are contained in LRD-18001. The fundamental requirement for criticality safety is that before beginning a new operation with fissionable material, or before changing an existing operation, the entire process is determined to be subcritical under both normal and credible abnormal conditions. The double contingency principle is a tool used to develop criticality accident scenarios and identify the process conditions and parameters involved and the number of controls on each parameter necessary to obtain the desired margin of safety. The double contingency principle recommends that sufficient factors of safety be incorporated into design or procedures to require at least two unlikely, independent, and concurrent changes in process conditions before a criticality accident is possible. The double contingency principle is applied to criticality accident scenarios to determine the required engineered features and administrative controls needed to prevent an inadvertent criticality. The criticality process analysis is documented in CSEs and/or safety basis documents.

6.5 Criticality Safety Program

The purpose of the Criticality Safety program is to ensure that activities involving fissionable materials are conducted in such a way that a criticality accident is prevented and mitigated. The Criticality Safety program is described in program description document (PDD)-18001, "INL Criticality Safety Program."[6] Laboratory management is responsible for establishing a Criticality Safety program and for assigning, delegating, and accepting overall responsibility for criticality safety. Laboratory management is also responsible for establishing a program that includes personnel trained and qualified in criticality safety, for ensuring that the program is documented, and that a means for monitoring the effectiveness of the program exists. Facility management is responsible for the safe operation of facilities containing fissionable material.

A criticality safety program exists and provides the requirements for processes that involve transport, handling, processing, and storage of fissionable material. The determination of program requirements has been delegated to the Criticality Safety Engineering Group, which has documented a program compliant with applicable regulations, DOE orders, and industry standards, and includes best-management practices (LRD-18001).

Areas or processes that require criticality safety controls are designated as Criticality Control Areas (CCAs). The Criticality Safety program requires that areas or processes that contain greater than 15 g of fissionable material be evaluated for designation as CCAs. The purpose of the CCA program is to identify:

- Areas where criticality controls are needed
- The types of controls required to prevent and mitigate an accident

- The personnel responsible for the areas
- Training of personnel having line management responsibility for criticality safety.

There are two types of CCAs: "Mass" and "Procedure." Mass CCAs are controlled to less than half of the water-moderated and -reflected minimum critical mass. Procedure CCAs require facility-specific evaluation and controls. The CCA program is governed by Laboratory procedures.

6.5.1 Criticality Safety Organization

The Criticality Safety Engineering Department provides technical support to operations, and documents requirements for the Criticality Safety program. The Department is independent of facility line management, and performs many duties that include the following:

- Act as point of contact for all INL criticality safety issues
- Develop, document, and maintain an effective and compliant Criticality Safety program (documented in LRD-18001)
- Administer the CCA program and ensure that criticality controls are in place for facilities and operations involving significant quantities of fissionable material
- Maintain qualified staff and a calculational capability for criticality safety and criticality alarm detector evaluations
- Perform criticality safety evaluations using handbook data or computational tools that are validated with applicable experimental data to provide controls that can be implemented resulting in safe yet cost-effective fissionable material operations
- Assist in the development and approval of facility safety basis documents
- Perform criticality safety reviews and assessments of existing facilities and planned activities.

Additional criticality safety responsibilities of management, facility management, and the Criticality Safety staff are identified in LRD-18001.

6.5.2 Criticality Safety Plans and Procedures

The Criticality Safety program has an array of safety plans and procedures through which the program is implemented. Criticality Safety program requirements, safety evaluations, assessments, control identification, and implementation are conducted in accordance with controlled documents (see Chapter 12, "Procedures and Training," for discussion of document control processes). All fissionable material activities are conducted in accordance with approved operating procedures. The procedures include controls and limits specified in the criticality safety analysis and are approved and controlled by facility management. Procedures are supplemented with posted criticality safety limits, if required. Facilities equipped with Criticality Alarm Systems (CASs) have evacuation plans and procedures. Requirements and guidelines for responding to fires in CCAs are found in LRD-18001 and include consideration of the presence of moderators when developing overall response plans.

6.5.3 Criticality Safety Training

Facility management ensures that all workers handling significant quantities of fissionable material (greater than 15 g and requiring criticality control), and their supervisors, receive fissionable material handler training. Training emphasizes that workers must understand and follow applicable procedural requirements. All workers handling significant quantities of fissionable material are trained as fissionable material handlers in accordance with the criticality safety training program requirements listed in LRD-18001. The Criticality Safety training program meets the requirements of DOE O 5480.20A, "Personnel Selection, Qualification and Training Requirements for DOE Nuclear Facilities."[7] Criticality Safety personnel are qualified per DOE-STD-1135-99, "Guidance for Nuclear Criticality Safety Engineer Training and Qualification."[8]

6.5.4 Determination of Operational Nuclear Criticality Limits

Operational nuclear criticality limits are established based on the criticality safety principles, criteria, accepted handbook data, and criticality safety calculations as prescribed in LRD-18001 and governed by Laboratory procedures.

6.5.5 Criticality Safety Inspections and Audits

Criticality safety inspections and assessments are conducted per Criticality Safety program and Laboratory procedures in accordance with DOE orders and industry standards. Assessments are performed to determine the effectiveness of the Criticality Safety program and that process conditions have not been altered so as to affect criticality safety evaluations.

6.5.6 Criticality Infraction Reporting and Follow-up

A criticality infraction is defined as a noncompliance with a criticality safety control, or the lack thereof. Reporting and documenting criticality infractions that involve facility specific TSRs or safety SSCs is done in accordance with approved procedures and manuals that implement the requirements of DOE Manual 231.1-2, "Occurrence Reporting and Processing of Operations Information."[9] All criticality control infractions, including those outside of facility-specific DSAs, are reviewed to determine if there has been a programmatic breakdown of the Criticality Safety program.

6.6 Criticality Instrumentation

Criticality detection and alarm systems are used to mitigate radiation exposures from an inadvertent criticality. Mitigation is provided by the evacuation of personnel in accordance with facility-specific emergency plans. Criticality detection monitors, alarm systems, computer controls, and other support equipment (such as an uninterruptible power supply) make up the criticality alarm systems. Criticality alarm systems are designed, operated, and maintained per the requirements of the referenced Standard ANSI/ANS-8.3-1997, "Criticality Accident Alarm System."[10] These requirements are listed in LRD-18001. The need for a CAS is determined in facility-specific DSA. Well-shielded facilities (e.g., spent fuel pools and shielded hot cells) do not require an alarm system.

6.7 References

1. LRD-18001, "INL Criticality Safety Program Requirements Manual," current revision.

2. 10 CFR 830, "Nuclear Safety Management," *Code of Federal Regulations*, Office of the Federal Register.

3. DOE O 420.1B, Chapter III, "Nuclear Criticality Safety," U.S. Department of Energy, current revision.

4. DOE-STD-3007-2007, "Guidelines for Preparing Criticality Safety Evaluations at Department of Energy Non-Reactor Nuclear Facilities," U.S. Department of Energy, current revision.

5. American National Standards Institute/American Nuclear Society (ANSI/ANS) 8 Series Standards, current revision.

6. PDD–18001, "INL Criticality Safety Program," current revision.

7. DOE O 5480.20A, "Personnel Selection, Qualification and Training Requirements for DOE Nuclear Facilities," U.S. Department of Energy, current revision.

8. DOE-STD-1135-99, "Guidance for Nuclear Criticality Safety Engineer Training and Qualification," U.S. Department of Energy, current revision.

9. DOE Manual 231.1-2, "Occurrence Reporting and Processing of Operations Information," U.S. Department of Energy, current revision.

10. ANSI/ANS-8.3-1997, "Criticality Accident Alarm System," American National Standards Institute/American Nuclear Society, current revision.

Idaho National Laboratory

LIST OF CRITICALITY SAFETY PROGRAM DOCUMENTS	Identifier: NS-18209 Revision: 4 Effective Date: 12/09/11 Page: 1 of 2

Criticality Safety	List		eCR Number: 600439

Manual: NO Nuclear Safety Engineering

1. LIST

Document ID	Document Title	Document Owner	Date	Revision
PDD-18001	INL Criticality Safety Program Description Document	J. T. Taylor	07/12/10	3
LRD-18001	INL Criticality Safety Program Requirements Manual	J. T. Taylor	03/30/10	2
LWP-18003	Establishing, Operating, and Deleting INL Criticality Control Areas	J. T. Taylor	09/30/10	3
NS-18201	Performing and Reviewing Criticality Safety Evaluations	J. T. Taylor	07/06/10	4
NS-18202	Criticality Safety Assessments	J. T. Taylor	10/17/11	2
NS-18203	Criticality Safety Engineer Qualification Plan	J. T. Taylor	12/03/09	1
NS-18204	Criticality Safety Officer Qualification Plan	J. T. Taylor	11/03/10	3
NS-18205	Criticality Safety Specialist Qualification Plan	J. T. Taylor	06/10/08	1
NS-18209	List of Criticality Safety Program Documents	J. T. Taylor	12/09/11	4
NS-18210	Criticality Safety Program Requirements Identification and Implementation Document	J. T. Taylor	03/30/10	2
NS-18211	Criticality Safety Analysis Software	J. T. Taylor	10/26/10	0
INL/EXT-06-01183	Criticality Safety Basics for INL FMHs and CSOs	J. T. Taylor	06/30/06	0
INL/INT-06-01380	Criticality Dose Calculational Methodology	J. T. Taylor	09/08/09	1
INL/EXT-07-12535	Criticality Safety Basics for INL Emergency Responders	J. T. Taylor	05/31/07	0

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LIST OF CRITICALITY SAFETY PROGRAM DOCUMENTS	Identifier: NS-18209 Revision: 4 Effective Date: 12/09/11	Page: 2 of **2**

Document ID	Document Title	Document Owner	Date	Revision
INL/INT-10-19660	MCNP5 1.40 Verification and Validation for the Criticality Safety Analysis Software Application	J. T. Taylor	10/25/10	0
INL/INT-10-19661	MCNP5 1.51 Verification and Validation for the Criticality Safety Analysis Software Application	J. T. Taylor	10/26/11	1
INL/INT-11-22236	SCALE 6.0 Verification and Validation for the Criticality Safety Analysis Software Application	J. T. Taylor	11/11/11	1

MFC Nuclear Operations TRAINING DEPARTMENT

TRAINING DESIGN PLAN

FOR

SSPSF SAR 408/TSR 408 IMPLEMENTATION 2011

At

MFC

Revision: 00

Instructional Designer: Marianne Noy

REVIEW

(See page 8) Target Audience Representative Print/Type Name	*(See page 8)* Target Audience Representative Signature		
Robert P. Gomez Subject Matter Expert Print/Type Name	Subject Matter Expert Signature	74132 S No.	4/4/11 Date
Stephen R. Meldrum Training Manager/Supervisor Print/Type Name	Training Manager/Supervisor Signature	71882 S No.	4/7/11 Date

APPROVAL

Richard A. Gunderson Line Manager/Supervisor Print/Type Name	Line Manager/Supervisor Signature	106873 S No.	04/11/2011 Date

Submitted by: _____ Date: _____

MODIFICATION RECORD

Change Number	Affected Pages	Description of Change	Management Approval	Date

TRAINING DESIGN PLAN

Introduction:

This design plan details the required training for implementation of Safety Analysis Report (SAR)-408 and Technical Safety Requirements (TSR)-408 for the Space & Security Power Systems Facility (SSPSF) at the Materials and Fuels Complex (MFC). As a part of implementation, training for INL Standardized SAR-400/TSR-400 and INL/INT-09-16013, SSPSF Criticality Safety Evaluation revision, as applicable, is also detailed in this plan.

Training Program Title:

SSPSF SAR-408/TSR-408 Implementation

Drivers:

DOE Order 426.2, "Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities" (formerly DOE Order 5480.20A)
PDD-147, "MFC Nuclear Facility Training Program"

Prerequisites:

Nuclear Facility Personnel:

Nuclear Facility Operations Personnel as defined by DOE Order 426.2, i.e., Nuclear Facility Managers, Operations Supervisors, Technical Staff, Operators, Facility Shift Supervisor, Maintenance, Technicians (RPS Quality Inspectors, MFC Mechanics, I&C Technicians), and instructors will meet the existing requirements for training and qualification prescribed by PDD-147, "MFC Nuclear Facility Training Program," and their individual training plans. Health Physics Technicians (HPT) will meet the requirements of PDD-1073, "Radiological Control Training and Qualifications Programs." USQ managers and evaluators will meet the requirements of the USQ training program. Other nuclear facility personnel (Safeguards and Security, and MBA custodians, and maintenance) will meet the training and qualification requirements as identified in their training plans and programs.

Objectives:

The specific objectives will be covered as identified in the attached matrix, "DSA-009-RPSF to SAR/TSR-408 Crosswalk and Training Analysis/Design."

Mastery of Objectives:
The required training will be tracked to completion.

SSPSF Operator/Foreman/SS:

Mastery of objectives will be measured by written examinations on TSRs and criticality controls. At least minimum staffing personnel must complete the required training prior to SAR/TSR-408 implementation. Individuals must demonstrate 100% completion prior to performing work that is impacted by the changes. Training will track the completion of training by using a qualified watch list.

Management, Technical Staff, RPS Quality Inspectors, RPS Quality Engineers, Maintenance, Support Staff, USQ, Safety Analysts, HPTs, MBA Custodians:

Mastery of objectives will be demonstrated by satisfactory participation in the assigned training as identified. At a minimum, personnel assigned to SSPSF facility must complete the required training prior to implementation or prior to performing work in or related to SSPSF.

Safeguards:
Safeguards training coordinators will address training needs for the safeguards personnel as applicable.

NOTE 1: SSPSF Technical Lead are assigned functions filled by SSPSF operators and supervisors. RPS SME are assigned functions filled by RPS Engineers (SSPSF Technical Staff). Neither of these functions are identified within the plan because the required training is identified by position (operator, supervisor, RPS engineer, etc).
NOTE 2: RPS Quality Assurance consists of quality inspectors (RPS QI) and quality engineers (RPS QE). Unless specified, RPS QA refers to both.

Training Length:	Class Size:	Date of Implementation:
Length of training will be addressed in specific training materials developed for this project	Varied, based on target audience and nature of training	03/30/11

Delivery Method:

☒ Classroom	☐ Computer -Based Training	☐ Practical	☐ Lab
☐ Web-Based Training	☐ On-the-Job Training	☐ Drill	☐ Vendor
☐ Walk-through	☐ Simulation	☐ Conference	☐ Live-fire Range
☐ Emergency Event	☐ Self Paced	☐ Oral Board	☐ Pre Test

Program Content:

The training program and content will ensure personnel are knowledgeable and are competent commensurate with their responsibilities. Furthermore, the program will include, as applicable, facility-specific training, safety training, training to new project-specific procedures, training to the safety basis, and training for abnormal conditions. The training will be reviewed to ensure it adequately addresses all aspects of the planned operations. The training plan will meet the requirements of Manual 12, PDD-147, and LWP-12061.

After analysis, it was determined that the training will take five training sessions. The analysis, implementing documents, target audiences, specific objectives, and applicable training are identified in the attached matrices. See "SSPSF SAR/TSR-408 Related Training Implementation Matrix," and "DSA-009-RPSF to SAR/TSR-408 Crosswalk and Training Analysis / Design."

MCS1102D
The generic lesson plan MFC00014, "MFC DSA/TSR Revision/Update," will be used to deliver training covering the INL Standardized DSA/TSR, SAR-400/TSR-400. For this training, Objective 1 and Objective 3 will be used. No written examination will be given.

MCS1102A

The generic lesson plan MFC00014, "MFC DSA/TSR Revision/Update," will be used to deliver training covering SAR-408, TSR-408, and associated changes. For this training, the following objectives will be used. There will be a written examination.*

1. Review of the INL Standardized Nuclear Safety Basis Manual (SAR-400) (Brief Overview Only)
   - 1.1 DISCUSS the use and application of INL Standardized Nuclear Safety Basis Manual; (SAR-400)
   - 1.2 REVIEW/ DISCUSS each chapter of SAR-400
2. Facility Specific DSA Changes:
   - 2.1 DISCUSS the changes to the DSA (20 Chapters)
   - 2.2 DISCUSS the bases for changes to the DSA
   - 2.3 DISCUSS the relationship between the facility's DSA/SAR documents (SAR-400 and the facility specific DSA)
3. Will Not Use
4. Facility Specific TSR Changes:
   - 4.1 DISCUSS the bases for changes to the TSR
   - 4.2 DISCUSS the relationship between the facility's TSR documents (TSR-400 and the facility –specific TSR)
   - 4.3 DISCUSS the changes to the Use and Application section in the Technical Safety Requirements
   - 4.7 DESCRIBE the changes to the Administrative Controls (ACs) in the Technical Safety Requirements
   - 4.8 DESCRIBE the changes to the Design Features in the Technical Safety Requirements
5. Facility Specific Procedure/Forms changes due to the DSA/TSR revision:
   - 5.1 DISCUSS the changes to the facility's procedures (i.e., NRAD-OI-5100, "Reactor Operations").
   - 5.2 DISCUSS the changes to the facility's forms (i.e., _____ Surveillance Checks).

NOTE: The following lists cover material contained in the SAR/TSR. They will be mentioned at an overview level during this training: LST-677, "Radioactive Material Form Control for SSPSF;" LST-302, "Safety Basis List for the Materials and Fuels Complex (MFC) Space and Security Power Systems (SSPSF);" LST-324, "SSPSF Nuclear Safety Basis Implementation Matrix;" and IAG-261, "INL Authorization Agreement for the Materials and Fuels Complex (MFC) Space and Security Power Systems Facility (SSPSF)"

MCS1102B

The generic lesson plan MFC00013, "MFC Operating Procedure Review," will be used to review the changes to SSPSF-OI-21160, "SSPSF Nuclear Material Handling," and to discuss LST-395, "Criticality Safety Controls for SSPSF," (and applicable portions of INL/INT-09-16013, "SSPSF Criticality Safety Evaluation"). For this training, the following objectives will be used. There will be a written examination.*

1. State the "W Questions" that should be understood while working through a procedure.
2. Identify the Purpose, Scope and Applicability of the procedure.
3. Discuss the safety hazards and specific precautions, prerequisites or limitations associated with the task/procedure.
5. Describe the basic steps of the procedure for the task. (Include cautions, notes, or other limitations and any reactivity effects).
6. Identify any Operational Safety Requirements, Technical Safety Requirements, UFSAR or other related safety bases items in the procedure.
8. Discuss the consequences of failing to adequately perform the task/evolution properly.

MCS1102C

The generic lesson plan MFC00061, "MFC Administrative Procedure/Document Review," will be used to discuss applicable sections of INL/INT-09-16013 (primarily chapter 7) with the Fissionable Material Handler Supervisors (FMHS). For this training, the following objectives will be used. There will be a written examination.*

1. Describe document scope.
2. Describe document applicability.
3. Describe document basis.
5. Discuss facility/organization activities when this document/procedure is required to be used.
6. State/identify the rules and regulations contained in the document/procedure that are applicable to the facility.
8. Discuss the consequences of failing to adequately adhere to the procedure/document requirements.
9. Discuss actions to be taken when this procedure cannot be completed as written.
10. Discuss the rules associated with using this type of procedure.

*The written examination will only be required for operators, supervisors, and FMH/FMHS. The exam questions for each training session identified above will be combined into one examination.

Required Read

An overview of the changes will be provided for USQ Managers and Evaluators as well as technical staff as identified in the attached matrices.

In addition to the five sessions outlined above, the Initial training for SSPSF certified Fissionable Material Handlers (FMH) and FMHS needs to be reviewed. The FMH program also needs to be reviewed by INL Criticality Safety. INL/INT-09-16013, "SSPSF Criticality Safety Evaluation," has been rewritten, and the FMH/FMHS initial training program for a needs to be reviewed from a 'knowledge of the CSE' perspective. Initial analysis indicated that there are no additional tasks, nor any obsolete tasks, as a result of the CSE or SAR/TSR-408. However, the performance of some tasks will change.

Assumptions:

- Safeguards and security training are the responsibility of the Safeguards and Security Training department.
- Availability of approved revised procedures with lead time to develop and deliver the training.
- Departments providing support staff, i.e., HPT, Maintenance, etc., have the responsibility to ensure that assigned personnel are trained/qualified to their job positions prior to the performance of their support functions associated with this project.
- Personnel who were significantly involved with the development of SAR/TSR-408 and revision/creation of implementing procedures, will be given an exception to training as applicable.
- Personnel who were involved in the development and/or approval of the exam questions will also be considered for exemptions from written exams as applicable.

Critical Success Factors:

- Approved documents/procedures are available to the instructor prior to the development and delivery of identified training.
- Appropriate level review personnel are available to review training
- Assigned personnel satisfy prerequisite requirements.

Responsibilities and Roles:

- See PDD-147 "MFC Nuclear Operations Training" for complete details.
- SP-20.1.1, "Laboratory and Hot Cells Services Roles and Responsibilities," identifies the roles and responsibilities of personnel assigned to these departments.
- R1037-0008-QP, "Radioisotope Power Systems Program (RPS) Quality Assurance Program Plan," identifies the responsibilities of personnel assigned to RPS in conjunction with SSPSF
- Line management has the ultimate responsibility to ensure that their personnel are adequately trained to perform their job in a safe and efficient manner.
- The training department exists to assist line management in carrying out their training responsibilities.
- Development of training materials will be done by the SAR/TSR-408 Implementation Coordinator working with the training organization to ensure training is developed in accordance with approved training procedures. Input and review will be obtained from subject matter experts, as applicable, and approval by line management. Approved MFC template lesson plans will be used as appropriate.
- Qualified training personnel, subject matter experts, or management personnel will present training and be involved in the evaluation process.
- Line management will verify that personnel are adequately trained to perform the work.

The Nuclear Facility Manager for SSPSF or his alternate are considered Subject Matter Experts for this process, based on their extensive involvement with SAR/TSR-408 and process procedure development.

Retraining:

- Retraining of procedure changes is not specifically required. Retraining on the related tasks will be as determined by the biennial and continuing training process for SSPSF and RPS.

Materials:

Presentations, examinations, qualification cards, etc, developed per the requirements of this plan.

Comments:

None

Other:
Post Training Considerations: • The EDMS End User Notification System will be used to inform appropriate personnel of changes to procedures. • Significant changes to the procedures will be analyzed to determine need for additional training.
Charge numbers:

TRAINING DESIGN PLAN

Attendees of Design Meeting:

Print Name:	Robert P. Gomez	Signature:		S No.:	74132	Date:	4/1/11
Job Title:	SAR/TSR-408 Implementation Coordinator	Phone No.:	533-8088	Mail Stop:	6116		
Print Name:	Marianne Noy	Signature:	Marianne Noy	S No.:	52771	Date:	4/1/11
Job Title:	Instructor	Phone No.:	533-7560	Mail Stop:	6112		

Review:

Print Name:	Darrell K. Wheeler	Signature:		S No.:	51335	Date:	3-31-11
Job Title:	SSPSF Foreman	Phone No.:	3-7891	Mail Stop:	6118		
Print Name:	Drake Kirkham	Signature:	SAC Rowell for	S No.:	106494	Date:	3/31/11
Job Title:	RPS QA Manager	Phone No.:	3-7550	Mail Stop:	6122		
Print Name:	Chad Pope	Signature:		S No.:	61795	Date:	
Job Title:	Nuclear Safety Analysis Manager /USQ Manager	Phone No.:	3-7745	Mail Stop:	6108		
Print Name:	Peter F. Nawrocki	Signature:	PNawrocki	S No.:	86420	Date:	4/5/11
Job Title:	Engineering Manager	Phone No.:	3-7648	Mail Stop:	6110		
Print Name:	Loren R. Flatten	Signature:	M. Noy for LRFlatten per e-mail	S No.:	64100	Date:	4/21/11
Job Title:	INL Criticality Safety	Phone No.:	6-7097	Mail Stop:	3458		
Print Name:		Signature:		S No.:		Date:	
Job Title:		Phone No.:		Mail Stop:			
Print Name:		Signature:		S No.:		Date:	
Job Title:		Phone No.:		Mail Stop:			
Print Name:		Signature:		S No.:		Date:	
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Nuclear Infrastructure Assessment and Disablement Course (NIAD)

Module #3: Criticality Safety

J. Todd Taylor

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Idaho National Laboratory

Applied Science of Criticality Safety

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1 Working conditions at the time of the accident. Ouchi was supporting the funnel used to pour the uranium solution. Masato Shinohara, who was pouring the solution, was also exposed to a high dose of neutron beam radiation.

Reports Issued in 2011

Author	Report Number	Title	Date
J. J. Plowman P. J. Sentieri	INL/INT-07-13228 Rev. 1	Criticality Safety Evaluation for the Handling, Storage and Inter-Facility Transfer of SNL Transport Canisters Housing Test Assemblies	01/19/11
J. J. Plowman	INL/INT-11-21023	Criticality Safety Evaluation of SNL Transport Canisters in ZPPR or FMF Vault	02/03/11
C. E. Stuart	INL/INT-09-15665 Rev. 3	Criticality Safety Evaluation of the Uranium Holdup in the Equipment Filters at FMF	02/17/11
C. E. Stuart	EDF-6824 Rev. 3	Criticality Safety Evaluation for Handling Fissionable Material Containers at the Fuel Manufacturing Facility (FMF)	02/17/11
P. J. Sentieri	INL/INT-11-21186	Use of the Hydraulic Actuated Cutter in the Fuel Conditioning Facility (FCF)	03/02/11
N. J. Schira	INL/INT-11-20982	Criticality Safety Evaluation for the DTRA Low-Enriched Uranium Inspection Object	03/17/11
J. J. Plowman V. L. Putman	INL/INT-11-21441	Criticality Safety Evaluation for the Storage of the IPNS Source Cask	03/21/11
J. T. Taylor	INL/INT-11-21528 Rev. 1	Criticality Safety Implementation Strategy for the Metal Waste Form Furnace in HFEF	04/06/11 07/27/11
C. E. Stuart	ECAR-1486 Rev. 1 Rev. 2	Criticality Safety Evaluation for the Storage and Handling of EBR-II Fuel Bottles in the Fuel Conditioning Facility at MFC	04/20/11 08/11/11 11/30/11
L. M. Montierth V. L. Putman	INL/INT-11-22236 Rev. 1	SCALE 6.0 Verification and Validation for the Criticality Safety Analysis Software Application	05/26/11 11/07/11
C. E. Stuart	INL/INT-09-15364 Rev. 2	Criticality Safety Evaluation for the Fuel Accident Condition Simulator (FACS) Furnace in the Hot Fuel Examination Facility (HFEF)	06/28/11
P. J. Sentieri	TEV-1234	Technical Evaluation for the Receipt and Processing of Alpha Gamma Hot Cell Material at FCF	07/13/11

Reports Issued in 2011

Author	Report Number	Title	Date
C. E. Stuart	ECAR-1508	Criticality Safety Evaluation for the Storage of Fissionable Material in Mk-II and Cold Line Birdcages	08/19/11
C. E. Stuart	ECAR-1526	Criticality Safety Evaluation for the Storage of FFTF Fuel Elements in FAB Birdcages and Model 60 Containers	08/19/11
W. W. Scates	ECAR-1550	Criticality Alarm System Evaluation for the Zero Power Physics Reactor Facility	08/19/11
V. L. Putman	ECAR-1652	RSWF Criticality Scenarios with a Concrete Shield Plug	08/25/11
N. Zhang	ECAR-1610	Criticality Safety Evaluation for the TREAT Reactor Building	08/31/11
W. W. Scates	EDF-6478 Rev. 3	Criticality Dose Evaluation for the Fuel Manufacturing Facility	10/31/11
L. M. Montierth V. L. Putman	INL/INT-10-19661 Rev. 1	MCNP5 1.51 Verification and Validation for the Criticality Safety Analysis Software Application	10/26/11
L. M. Montierth	INL/INT-09-15366 Rev. 1	Criticality Safety Evaluation for the Inter-Facility Transfer of PSCs in the HFEF-5 Cask	11/01/11
P. J. Sentieri	TEV-1359	Technical Evaluation for Condensate to Return to the Mk-V ER at FCF	11/02/11
N. J. Schira N. Zhang	ECAR-1711	Criticality Safety Evaluation of Fissionable Material Equivalency Factors	11/10/11
W. W. Scates	ECAR-1718	Criticality Alarm System Evaluation for CPP-651	TBD
W. W. Scates	ECAR-1720	Criticality Safety Evaluation for Building CPP-651	TBD
C. E. Stuart	ECAR-1721	Criticality Safety Evaluation for the Storage of Fissionable Material in Type 7A Drums	TBD