Description of document:	Report to Congress on Nuclear Weapons Handling Policies and Procedures, August 2009
Requested date:	08-October-2011
Released date:	27-September-2017
Posted date:	09-October-2017
Source of document:	FOIA/PA Officer NNSA/Office of the General Counsel P. O. Box 5400 Albuquerque, NM 87185-5400 Fax: (505) 284-7512 Email: FOIOfficer@nnsa.doe.gov

National Nuclear Security Administration

Department of Energy
National Nuclear Security Administration
Office of the General Counsel
P. O. Box 5400
Albuquerque, NM 87185

SEP 27 2017

CERTIFIED MAIL –RETURN RECEIPT REQUESTED

This letter is the final response to your October 8, 2011 Freedom of Information Act (FOIA) request for a copy of the Report to Congress on Nuclear Weapons Handling Policies and Procedures.

Your request was initially sent to Department of Energy's Headquarters Office (DOE/HQ). DOE/HQ transferred the request to this office and it was received on August 3, 2015.

We contacted the Office of Defense Nuclear Nonproliferation (NA-10) about your request. NA-10 searched and located the document responsive to your request. The document was sent to the Office of Classification, Office of Environment, Health, Safety and Security, (AU-60) in the Department of Energy (DOE) for review. Los Alamos Field Office (NA-LA) and Los Alamos National Laboratory (NA-LA) also reviewed the document. This document has been reviewed and is being provided to you with deletions pursuant to 5 USC§ 522(b)(3), (b)(7)(e) and (b)(7)(f) (Exemptions 3, 7e and 7f of the FOIA).

Pursuant to Title 10, Code of Federal Regulations, section 1004.6 (10 C.F.R. 1004.6), the Office of Classification, Office of Environment, Health, Safety and Security, in the Department of Energy (DOE) has completed its review of the document responsive to your request.
This document, located in the files of the National Nuclear Security Administration, contains information properly classified Formerly Restricted Data (FRD); therefore, it is provided to you with deletions.

Title 5, United States Code, section 552(b)(3) (5 U.S.C. 552(b)(3)) (Exemption 3), exempts from disclosure information "specifically exempted from disclosure by statute (other than section 552(b) of this title), provided that such statute (A) requires that the matters be withheld from the public in such a manner as to leave no discretion on the issue, or (B) establishes particular criteria for withholding or refers to particular types of matters to be withheld .... " The Atomic Energy Act (AEA) of 1954, as amended, 42 U.S.C. 2011 et seq., is an Exemption 3 statute. Sections 141-146 of this Act (42 U.S.C. 2161-2166) prohibit the disclosure of information concerning atomic energy defense programs that is classified as either Restricted Data or FRD pursuant to the AEA, as amended. The portions deleted from the subject document(s) pursuant to Exemption 3 contain

information about weapon locations that has been classified as FRD. Disclosure of the exempt data could jeopardize the common defense and the security of the nation.

To the extent permitted by law, the DOE, pursuant to 10 C.F.R. 1004.1, will make available records it is authorized to withhold under the Freedom of Information Act (FOIA) whenever it determines that such disclosure is in the public interest. With respect to the information withheld from disclosure pursuant to Exemption 3, the DOE has no further discretion under the FOIA or DOE regulations to release information currently and properly classified pursuant to the AEA, as amended.

Exemption 7(e) protects law enforcement information that would disclose techniques and procedures for law enforcement investigations or prosecutions, or would disclose guidelines for law enforcement investigations or prosecutions if such disclosure could reasonably be expected to risk circumvention of the law. The ordinary meaning of law enforcement includes not just the investigation and prosecution of offenses already committed but also proactive steps designed to maintain security. As such, courts have routinely upheld the use of Exemption 7(e) to protect information related to security needs assessments and counterintelligence information training and investigation methodology that would disclose guidelines for law enforcement investigations or prosecutions if such disclosure could reasonably be expected to risk circumvention of the law. The information withheld pursuant Exemption 7(e) of the FOIA reveals sensitive details about NNSA's stockpile stewardship mission and could be used to assist in the commission of illegal acts that would endanger human lives.

Pursuant to Exemption 7(f), the portions of this document withheld are about protection and security measures used to protect Federal buildings and personnel. The ordinary meaning of law enforcement includes not just the investigation and prosecution of offenses already committed but also proactive steps designed to maintain security. If the information withheld under Ex. 7(f) were to be released, it could be used to facilitate attacks on, compromise, or incapacitate critical protected systems.

The disclosure of information pertaining to the security measures of Federal buildings could enable anyone, including terrorists, to more easily plan operations that would target these facilities. Without question, uncontrolled release or access to this information by an unauthorized person could endanger the life or physical safety of security police officers and employees as well as the general public.

Pursuant to 10 CFR § 1004.6(d), Dr. Andrew P. Weston-Dawkes, Director, Office of Classification, Office of Environment, Health, Safety and Security, is the official responsible for the denial of the DOE classified information under Exemption 3.

Pursuant to 10 CFR §1004.7(b)(2), I am the individual responsible for the denial of the above-mentioned information pursuant to Exemptions 7(e) and 7(f) of the FOIA.

This decision, as well as the adequacy of the search, may be appealed within 30 calendar days from your receipt of this letter pursuant to 10 C.F.R. § 1004.8. Appeals should be addressed to Director, Office of Hearings and Appeals, HG-1, L'Enfant Plaza, U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, D.C. 20585-1615. The written appeal, including the envelope, must clearly indicate that a FOIA appeal is being made. You may also submit your appeal to OHA.filings@hq.doe.gov, including the phrase "Freedom of Information Appeal" in the subject line. The appeal must contain all of the elements required by 10 C.F.R. § 1004.8, including a copy of the determination letter. Thereafter, judicial review will be available to you in the Federal District Court either: 1) in the district where you reside; 2) where you have your principal place of business; 3) where DOE's records are situated; or 4) in the District of Columbia.

There are no charges to you for processing your FOIA request.

If you have questions, please contact Mrs. Erica White by e-mail at erica.white@nnsa.doe.gov or write to the address at the top of the first page. Please reference Control Number FOIA 15-00258-SL.

Sincerely,

Jane Summerson
Authorizing and Denying Official

Enclosure

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OCT 2 0 2009

The Honorable Peter Visclosky
Chairman
Subcommittee on Energy and Water Development
Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515-6020

Department of Energy Declassification Review	
1st Review Date: 9/1/15 AU-60 Reviewer D. Ciskowski Authority: DC DD Derived From: Declassify On: 2nd Review Date: 09/16/2015 AU-60 Reviewer Authority: DD	Determination: [Circle Number(s)] 1. Classification Retained 2. Classification Changed To: 3. Contains No DOE Classified Info 4. Coordinate With: 5. Declassified 6. Classified Info Bracketed 7. Other (Specify) With Enclosure

Dear Mr. Chairman:

Enclosed is the report requested by Conference Report, House Report 110-434, *Nuclear Weapons Handling Procedures*, on the policies and procedures governing the storage and logistics movement of nuclear weapons and components.

The enclosed report describes the latest policies and procedures and takes into account recommendations from several recent nuclear reviews. Both Departments are taking actions to ensure these policies and procedures are clearly understood, consistently implemented, and that leadership emphasizes the importance of the nuclear mission at all levels of our respective organizations.

A similar letter has been sent to the committees identified in the Conference Report.

Sincerely,

Steven Chu
Secretary of Energy

Robert M. Gates
Secretary of Defense

Enclosure

cc:
The Honorable Rodney P. Frelinghuysen
Ranking Member

FORMERLY RESTRICTED DATA
Unauthorized disclosure subject to Administrative and Criminal Sanctions. Handle as Restricted Data in Foreign Dissemination Section 144.b, Atomic Energy Act 1954.

Department of Energy Declassification Review	
1st Review Date: 3/30/2011 Authority: DC DD Name: Denis Garcia Reviewer HS-63, OC DOE 2nd Review Date: Authority: DD Name:	Determination: [Circle Number(s)] 1. Classification Retained 2. Classification Changed To: CFRD 3. Contains No DOE Classified Info 4. Coordinate With: 5. Classification Cancelled 6. Classified Info Bracketed 7. Other (Specify) w/attached report w/Appendices A-C

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Report to Congress on Nuclear Weapons Handling Policies and Procedures (U)

~~FORMERLY RESTRICTED DATA~~
~~Unauthorized disclosure subject to Administrative and Criminal Sanctions. Handle as Restricted Data in Foreign Dissemination Section 144.b, Atomic Energy Act 1954.~~

August 2009

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REPORT TO CONGRESS ON NUCLEAR WEAPONS HANDLING POLICES AND PROCEDURES

TABLE OF CONTENTS

INTRODUCTION

This report on Nuclear Weapons Handling Policies and Procedures has been developed jointly by the Department of Defense (DoD) and the Department of Energy (DOE) National Nuclear Security Administration (NNSA) in response to a request in the Conference Report (House Report 110-434, p.124) that accompanied the Fiscal Year 2008 DoD Appropriations Act (P.L. 110-116). The Conference Report requested the Secretary of Defense and the Secretary of Energy jointly submit a report to the congressional defense committees and to the Subcommittees on Energy and Water Development of the Senate and House Committees on Appropriations, on the policies and procedures governing the storage and logistic movement of U.S. nuclear weapons and nuclear components through all phases of the nuclear weapons life cycle.

The report is structured into separate DoD and DOE annexes. Each annex addresses the five areas requested in the Conference Report. The Conference Report also requested a classified report be submitted; however, each of the five areas can be adequately addressed at the level of unclassified, For Official Use Only. The five areas are:

1. The standards and procedures for ensuring accountability of nuclear weapons and components.
2. The standards and procedures for the transfer of custody of nuclear weapons.
3. The documentation used for the purpose of property accountability, custody receipting, and shipping transactions.
4. The standards and procedures for nuclear surety inspections.
5. The training of all personnel involved in the handling, management, and accountability of nuclear weapons and components.

Discussion of the nuclear weapons life cycle in this report is consistent with DoD Directive 3150.1, *Joint DoD-DOE Nuclear Weapon Life-Cycle Activities.* Nuclear weapons life-cycle activities refer to the development, production, sustainment, and retirement of nuclear weapons, as well as the routine activities associated with maintaining nuclear weapons in the stockpile. Discussion of nuclear components in this report is consistent with definitions from Technical Publication 4-1, *Glossary of Nuclear Weapons Materiel and Related Terms.* Nuclear components are defined as weapon components composed of fissionable or fusionable materials that contribute substantially to nuclear energy released during detonation. These are plutonium pits and the secondaries. Nuclear weapons procedures and policies are described in both the DoD and DOE annexes of the report. Nuclear components pertain to only the DOE annex.

Across the DoD and the DOE, policies and procedures regarding nuclear weapons storage, handling, and logistics are regularly reviewed and revised. Most of the policies and procedures referred to in this document have been updated in the past five years. Military Department inputs for this report contain the latest policies and procedures and include changes made as a result of reviews in the wake of the August 2007 incident involving the unauthorized transfer of nuclear weapons and the March 2008 discovery of sensitive missile components being sent to Taiwan.

ANNEX A: DEPARTMENT OF DEFENSE (DoD)

A.1. Standards and Procedures for Ensuring Accountability of Nuclear Weapons

A.1.1. DoD Policy and Guidance

A.1.1.1. Guidance on nuclear weapon stockpile quantities is provided by various documents (i.e., Strategic Arms Reduction Treaty, the Moscow Treaty, Presidential Directives, Nuclear Posture Reviews). The DoD and Department of Energy (DOE) prepare, coordinate, and deliver the Nuclear Weapons Stockpile Memorandum (NWSM), which contains the Nuclear Weapons Stockpile Plan (NWSP), to the President. The President then signs the NWSP, which directs quantities and types of nuclear weapons in the active and inactive stockpile. Supplementing the NWSP, the President issues the Nuclear Weapons Deployment Authorization that authorizes the types and locations of weapons deployed in support of the North Atlantic Treaty Organization (NATO). The President, through the Secretary of Defense (SECDEF) and the Chairman of the Joint Chiefs of Staff (CJCS), entrusts the stockpile to the Military Departments for employment, as directed by the Combatant Commanders (e.g., U.S. Strategic Command (USSTRATCOM) and U.S. European Command (USEUCOM)), based on their missions and use in execution of war plans. Figure 1 provides a general hierarchy of the types of documents described in this report.

A.1.1.2. The SECDEF must be able to determine the status and location of any weapon in the DoD nuclear stockpile to ensure positive control and accountability. In DoD Directive S-5210.81, *United States Nuclear Weapons Command and Control, Safety, and Security*, the SECDEF delegates to the CJCS a broad range of authority to ensure accurate, timely reporting of nuclear weapon information to the President, accountability for the nuclear stockpile in conjunction with Military Departments and Combatant Commanders, and the integrity of the nuclear command and control systems. The CJCS must be responsive to operational needs and fulfill statutory responsibility as the principal military advisor to the President, the National Security Council Staff, and the SECDEF. The CJCS requires, through the National Military Command Center (NMCC), timely and accurate information on the status and location of all nuclear weapons in the stockpile.

A.1.1.3. Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3150.04, *Nuclear Weapons Stockpile Logistics Management and Nuclear Weapons Reports under the Joint Reporting Structure,* establishes the nuclear weapons stockpile accountability and logistics management policies applicable to all DoD organizations having responsibility for, or custody of, U.S. nuclear weapons or reportable components. It designates the Joint Staff (JS) Operations Directorate, J-3, as the office of primary responsibility and specifies the appointment of a JS Nuclear Weapons Stockpile Manager. Furthermore, the instruction directs the Defense Threat Reduction Agency (DTRA) to assist the JS Stockpile Manager by serving as the executive agent for stockpile management and interface with the National Nuclear Security Administration (NNSA). Finally, the instruction designates the Service Logistics Agents (SLA) responsible for the tracking and logistics support of assigned weapons.

A.1.1.4. In addition to defining responsible agents, CJCSI 3150.04 provides policy for reporting the nuclear weapon logistics data necessary to maintain the stockpile accountability database. It identifies the type and frequency of required Nuclear Weapons Reports (NUREP) and specifies the differences between normal peacetime reporting procedures and those required in advanced states of readiness.

A.1.1.5. DTRA manages the Joint Nuclear Weapons Publication System (JNWPS). The JNWPS is a system of technical manuals on nuclear weapons and associated materiel designed and developed by DOE; related components designed and developed by DoD agencies; and such supplemental information or data determined appropriate by either the DOE or DoD in connection with the general field of nuclear weapons. JNWPS exists as a means of providing DOE, DTRA, and the respective DoD military departments, authoritative instructions and data to supplement existing publications systems of the participating agencies. Manuals to be included in the JNWPS are limited to those which are authenticated by two or more participating agencies and include general and materiel manuals. The baseline designator for JNWPS publications is Technical Publication (TP). The Air Force uses the designator Technical Order (T.O.) and the Navy uses the designator Special Weapons Ordnance Publication (SWOP). For example: TP 100-4, T.O. 11N-100-4, and SWOP 100-4 are the same manual. For the purposes of standardization, all further reference to specific JNWPS publications will use the "TP" designator vice the Military Department specific designator. The following are the key TPs that apply to nuclear weapons accountability and custody:

A.1.1.5.1. TP 100-3150, *Joint Reporting Structure; Nuclear Weapons Reports,* provides operating procedures and specifications for the reporting requirements of all DoD storage and operational custodial units under the Joint Reporting Structure, as directed by CJCSI 3150.04.

A.1.1.5.2. TP 100-4, *Custody, Accountability, and Control of Nuclear Weapons and Nuclear Materiel*, provides policy, standard minimum requirements, and mandatory procedures for: transfer of war reserve (WR) nuclear weapons and specified components from the DOE to the DoD and from DoD to DOE; the accountability and custody of nuclear weapons, nuclear components, WR shipping containers, and limited-life components (LLC) within the DoD; and preparation and distribution of documents for the transfer of accountability of DOE-produced WR nuclear weapons material between DOE and DoD.

A.1.1.5.3. TP 45-51 Series, *Transportation of Nuclear Weapons Materiel,* provides transportation criteria and courier responsibilities for logistics movement of nuclear weapons materiel within DoD and DOE.

A.1.1.6. CJCSI 3150.04 directs DoD organizations to use TP 100-3150, *Joint Reporting Structure, Nuclear Weapons Reports,* for detailed operating procedures and sample formats on nuclear weapons reporting and logistics support planning requirements.

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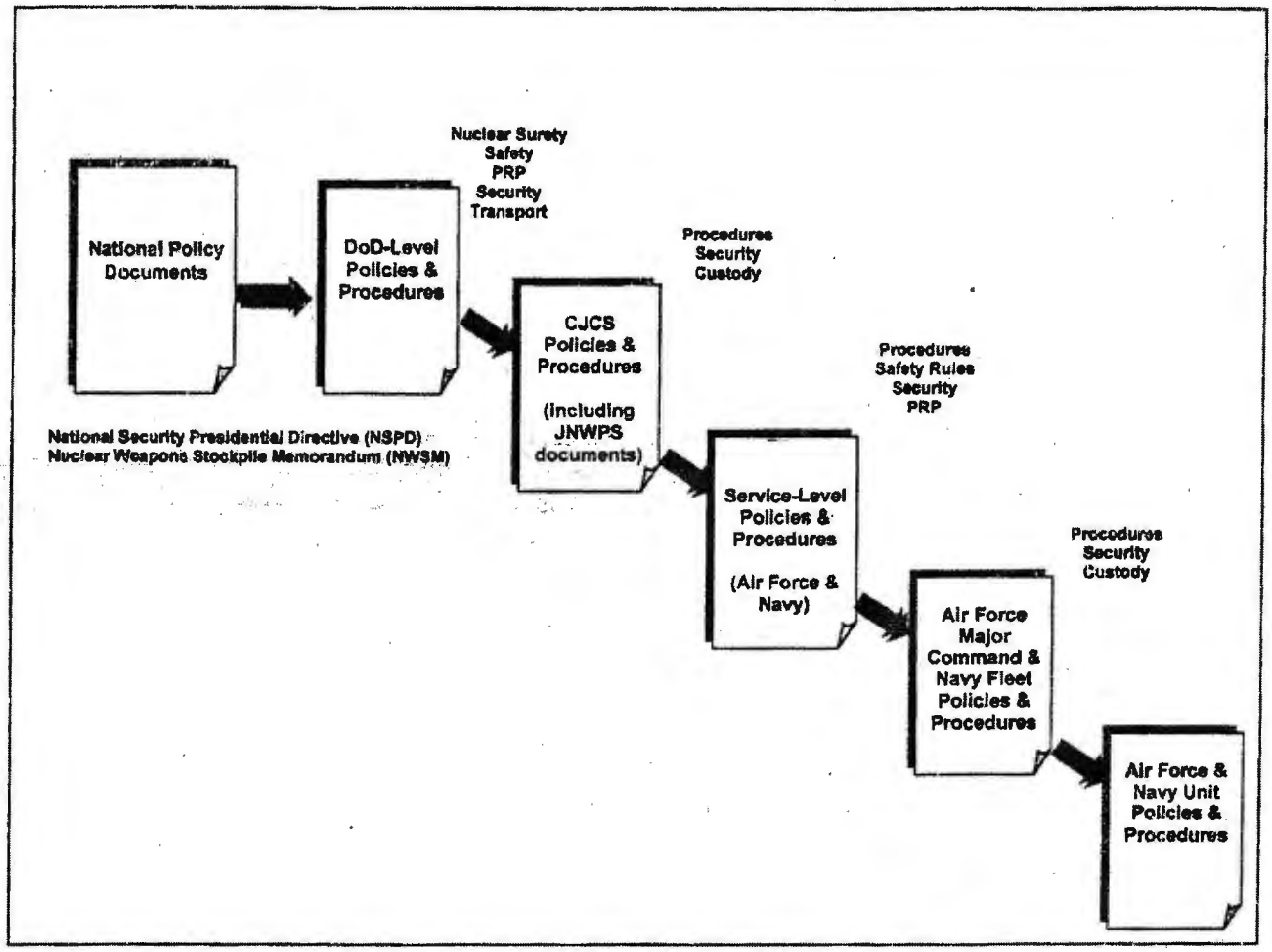

Figure 1. DoD Nuclear Weapons Accountability Hierarchy

A.1.1.7. Stockpile Assignments

A.1.1.7.1. The Nuclear Weapons Council (NWC) is the senior interdepartmental advisory body to the SECDEF and the Secretary of Energy (SECENG), established under Title 10 U.S.C. 179, responsible for advising the Secretaries on nuclear weapons infrastructure issues and coordinating nuclear weapons activities between the two departments. USSTRATCOM provides war fighter force structure requirements to the NWC through the NWSP development process. The process culminates in an annual memorandum to the President from the SECDEF and SECENG that recommends the size and composition of the stockpile to meet national strategy objectives. The NWC, along with its subordinate organizations, the NWC Standing and Safety Committee (NWCSSC), Compartmented Advisory Committee, and the NWCSSC Action Officers group meet on a regular basis to complete the NWSP.

A.1.1.7.2. DTRA, on behalf of the JS Stockpile Manager, notifies Service Logistics Agents (SLAs) of approved NWSP stockpile levels in the Annual Stockpile Assignment Message. SLAs inform DTRA and the JS Stockpile Manager on actions to comply with end-of-fiscal-year stockpile levels by submitting semiannual Stockpile Management Plans. The first report is a general long-range plan of projected actions for the entire year as known at that time. The final report is a detailed and exact plan of what weapon movement or status code change actions are required to meet year-end levels. Any NWC changes to the NWSP authorized by the President will be disseminated by the NWC Executive Secretary, Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs (ATSD (NCB)), to JS and DTRA for coordinated promulgation to the SLA.

A.1.1.8. Stockpile Management and Accountability System

A.1.1.8.1. DTRA operates the national nuclear weapon stockpile database "system of record," the Defense Integration and Management of Nuclear Data Services (DIAMONDS). DIAMONDS provides end-to-end nuclear weapons accountability status from maintenance operations at nuclear custodial units, up through the reporting chain, and ultimately to the JS. The system tracks weapons and limited life components not currently installed in weapons, by serial number, quantity, condition, and location and are updated by custodial units through NUREP as changes occur. DIAMONDS also provides access to the JNWPS digital library.

A.1.1.8.2.

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A.1.1.8.2.1. Custodial Site/Unit – Military installation which serves as a nuclear storage facility. Site-specific data is stored on a system, physically located at each maintenance site facility. Each site may only access data relevant to that site. Locations where maintenance operations are conducted utilize laptop computers for activities conducted in the maintenance bays in the facilities.

A.1.1.8.2.2. Service Center – A coordination center for a selected group of Units. The Service Center locations utilize DIAMONDS workstations.

A.1.1.8.2.3. Central Server – Serves as a collection point for all information that requires coordination above the site level, located at Fort Belvoir, Virginia (primary), and Kirtland Air Force Base, New Mexico (backup). Access to central server data is limited to an individual need-to-know basis.

A.1.1.8.2.3.1. Figure 2 displays a typical custody transfer with associated DIAMONDS transactions between two DoD custodial units during a

weapons shipment. Note submittal of reports from both the shipping and receiving custodial units to the central server, accounting for the shipment and receipt actions respectively.

A.1.1.8.3. DIAMONDS employs a website-style software application user interface accessed with Microsoft's Internet Explorer client browser. The system employs user roles management technology to control system resource access by granting user privileges based on the "need to know" and the user's duty position. The application consists of data input forms, database tools, and data retrieval utilities.

(b)(7)e, (b)(7)f

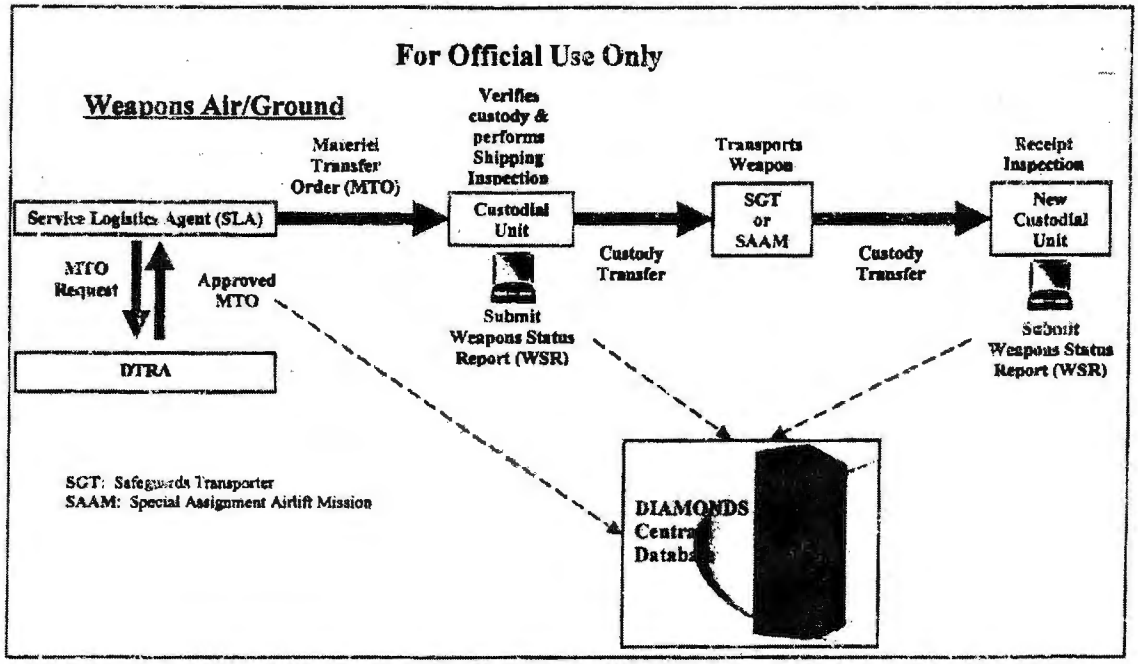

Figure 2. DIAMONDS Accountability Transactions

A.1.1.9. DIAMONDS Reports

A.1.1.9.1. Location Inventory Listing (LIL). Monthly report for custodial units to verify and reconcile their data records with the DIAMONDS central database "system of record."

A.1.1.9.2. Weapons Status Report (WSR). The WSR is the core mechanism of the NUREP process. A WSR is submitted by custodial units when a change in reportable data has occurred (e.g., receipt, shipment, condition change) on nuclear weapons and WR components of nuclear weapons during a calendar day. This report consolidates all reportable changes that occurred during a calendar day or since the last report if more than one

report was submitted that day. Units are encouraged to report changes as early as possible; however, the WSR will be transmitted no later than 1200 hours local time of the next calendar day. Generally speaking, one WSR will be generated per day for reportable actions, but if necessary, more than one WSR may be submitted in a calendar day. An example of a situation that would generate multiple WSRs for the same calendar day would be if a report was submitted and then followed by the occurrence of an unscheduled reportable action during that same day. If an error is discovered in a WSR, corrections are transmitted no later than 1200 hours local time the calendar day following notification of the error

A.1.1.9.3. Semiannual Inventory Report (SIR). A SIR is a custodial unit's visual inventory to reconcile records and verify status of all weapons and certain unassociated components by serial number and quantity. The SIR is conducted by the Accountable Officer and independently checked by a Verifying Officer designated from a different organization than the Accountable Officer. To provide increased probability that stockpile and reporting unit accountability records agree, inventories are conducted without prepared lists (i.e., blind) of stockpile totals or serial numbers. Serial numbers of reportable items are recorded on blank paper during the visual verification of reportable items presence. Subsequently, the recorded visual verification result is compared to the reporting unit inventory records. The completed SIR is verified by DTRA with the central database. DTRA must report any errors detected to the unit and associated SLA within three duty days of SIR receipt. DTRA reports SIR reconciliations to the JS.

A.1.1.9.4. Unsatisfactory Report. A UR is the vehicle used to report problems with weapons, components, equipment, and publications. DTRA is the single point of contact between DoD activities and the DOE for matters pertaining to the maintenance and storage of nuclear weapons, nuclear weapons components, related test and handling gear, associated software, and JNWPS publications. DTRA collects, disseminates and resolves issues concerning unsatisfactory conditions as set forth in TP 5-1, *Unsatisfactory Reports*.

A.1.1.10. Executive Stockpile Accountability Reports

A.1.1.10.1. Monthly Nuclear Weapons Location Report. Report to the JS that includes data by weapons locations, quantities, and types for the entire active/inactive stockpile. This report also includes retirement and dismantlement activity.

A.1.1.10.2. Monthly Operationally Deployed Strategic Nuclear Weapons (ODSNW) Report. Report by weapons locations, quantities, and types provided to JS identifying the portion of the nuclear stockpile that is operationally deployed.

A.1.1.10.3. Quarterly and Annual Executive Summary Report. Comprehensive report on nuclear weapons quantities, locations, and status provided to JS for formal reporting to CJCS, the Office of the Secretary of Defense (OSD), and the President.

A.1.1.11. Stockpile Emergency Verification (SEV) Procedure. The SEV procedure is a tool for the CJCS to rapidly verify that all or specifically selected portions of the DoD nuclear weapons stockpile are in the possession of authorized DoD agents. TP 100-3150

outlines the policies and procedures for the execution of SEVs and SEV exercises. SEV may be limited to geographic region, specific locations, weapons types, or individual weapons. By direction of the JS, DTRA develops, executes, and monitors SEVs for the JS and conducts SEV exercises on a bi-annual basis. The JS initiates a SEV with a conference call from the NMCC to participating command centers followed by an initiation message. The SEV is comprised of two phases. Phase I consists of a physical count of a specified number of weapons, called a "scope," which is compared to the DIAMONDS-generated Weapons Custody Lists (WCL) of weapon types and serial numbers applicable to each custodial unit. Phase II is a records verification by serial number comparing local accountable documents to the WCL.

A.1.2. Air Force

A.1.2.1. Air Force Nuclear Weapons Accountability/Custody Policies and Procedures. Air Force nuclear capable units ensure proper accountability of nuclear weapons and components by implementing the standards and procedures outlined in CJCSI 3150.04, TP 100-3150, TP 100-4, TP 45-51 series, Air Force Policy Directives (AFPD), Air Force Instructions (AFI), Major Command (MAJCOM) Supplements, and Unit-Level operating instructions (OI). Previous sections of this report discussed the JNWPS and CJCSI documents. This section will focus on the policies and procedures specific to the Air Force. The following are the applicable Air Force regulations:

A.1.2.1.1. AFPD 21-2, *Munitions,* establishes Air Force policy for accountability and maintenance of munitions. It implements policies in DoD Directive 4151.18, *Maintenance of Military Materiel* and DoD Directive 4140.1, *Supply Chain Management Policy.*

A.1.2.1.2. AFI 11-299, *Nuclear Airlift Operations*, establishes the requirements and guidance for wartime and peacetime logistic airlift of nuclear and nuclear-related cargo.

A.1.2.1.3. AFI 21-200, *Munitions and Missile Maintenance Management*, provides the strategic structure for Air Force munitions units and provides the policy framework for uniform and effective management of nuclear, conventional and missile organizations. This instruction outlines organizational structure based upon mission focus and outlines common responsibilities across the munitions and missile maintenance community. Where specific requirements exist relative to a specific functional specialty, the requirement is delineated in the applicable AFI 21-2XX series publication.

A.1.2.1.4. AFI 21-204, *Nuclear Weapons Maintenance Procedures,* prescribes guidance for the maintenance, personnel certification, the logistics movement of, and accountability procedures for nuclear weapons. This instruction was substantially revised in early 2008. Changes include updated nuclear weapons related responsibilities, mandated a single individual perform Munitions Accountable Systems Officer (MASO) and Weapons Custodian duties, and clarified Munitions Control visual aid requirements. It also added special inspection and quality verification inspection requirements, clarified separation of training and war-reserve operations, and clarified storage, placard, and identification requirements on nuclear and non-nuclear munitions.

[redacted]

A.1.2.1.5. AFMAN 23-110, *USAF Supply Manual*, establishes a uniform system of stock control throughout the Air Force by prescribing standardized procedures for the requisition, purchase, receipt, storage, stock control, issue, shipment disposition, identification of and accounting for supplies by Air Force organizations.

A.1.2.1.6. AFI 23-111, *Management of Government Property in Possession of the Air Force*, prescribes basic policy and responsibilities for managing public property, except real property (land, facilities, and real property installed equipment), under Air Force control. It authorizes and directs commanders to manage government property under their command. It instructs subordinate personnel to responsibly manage and care for Air Force property under their control.

A.1.2.1.7. T.O. 11N-3150-81, USAF DIAMONDS Policy and Procedures, provides detailed methods for AF users of DIAMONDS to access and use the modules/functions of the DIAMONDS application.

A.1.2.2. Air Force Major Command (MAJCOM) Nuclear Weapons Policies and Procedures. MAJCOMs serve as the Air Force office of primary responsibility for command unique nuclear weapons support policy. They publish instructions and supplements establishing command guidance and procedures to support assigned weapons systems. The guidance and procedures contained in MAJCOM instructions and supplements can be more restrictive but cannot lessen the requirements established by higher authority. They publish Maintenance Capability Letters identifying weapons maintenance capabilities to include unit day-to-day mission requirements, unique MAJCOM certifiable tasks to support contingencies, and/or reconstitution taskings. They perform staff assistance visits and Nuclear Surety Inspections (NSIs) to ensure units are adequately organized, staffed, and complying with applicable instructions. They also execute actions required to participate in and support SEV plans.

A.1.2.3. Unit Nuclear Weapons Policies and Procedures. The Munitions Accountable Systems Officer (MASO) publishes operating instructions at an appropriate level within the custodial unit, covering local conditions and requirements, to ensure all affected personnel are aware of required responsibilities and procedures. As a minimum, local instructions must cover how a nuclear capable unit will support SEV notification, execution, and reporting procedures; support requirements for off-base logistics movements of nuclear cargo (e.g., Special Assignment Airlift Mission (SAAM) and DOE shipments); support of base safe haven and emergency divert plans;.

A.1.2.4. Air Force Logistics Management of Nuclear Weapons. MAJCOMs are the primary logistics agents for weapons assigned to them. They ensure stockpile quantities align with the NWSM, and are available to meet mission requirements. They accomplish this through exercising command oversight of their units and coordinating with the Air Force Nuclear Weapons Center (AFNWC) on maintenance of active and inactive reserve weapons. MAJCOMs schedule weapon movements through the NOSS to ensure all weapons assigned to them are at the proper location in adequate quantities. They direct weapon charge code changes through either the NOSS or other means (e.g., Stockpile Lab Test or Stockpile Flight Test

Warning Orders) to meet NWSM/Requirements Planning Document (RPD) requirements. The AFNWC consolidates, coordinates, and de-conflicts the Air Force NOSS and DOE movement requirements with DTRA and DOE. This allows clear communication to all affected agencies and keeps conflicts with the shipping schedule to a minimum. MAJCOMs also request Materiel Transfer Orders (MTO) through the AFNWC to DTRA, as needed.

A.1.2.5. Air Force Nuclear Weapons Management and Accountability. Air Force nuclear capable units are assigned a unique Stock Record Account Number (SRAN) to manage accountability of nuclear weapons and associated components. The SRAN is comprised of a prefix (type of account) and a four-digit number identifying the base or wing to which the account is assigned. Each SRAN is managed by a single MASO appointed in writing by the Wing Commander. The MASO accounts for nuclear weapons and components and executes nuclear reporting activities using the DIAMONDS database. By entering information into the DIAMONDS database, the MASO updates and produces the required reports or transactions. Detailed procedures are outlined in TP 100-2, *Supply Management of Limited Life Components;* TP 100-4; TP 100-3150; TO 11N-3150-8-1, and AFI 21-204. The MASO is ultimately responsible for the accuracy of reports and accountable records generated within his/her area of responsibility. Accountable reports and records consist of appointment letters, orders, delegations of authority, certificates of transfer of accountability, inventory records, on and off-base document registers, shipment and receipt documents, issue and turn-in documents, stock change vouchers, inventory adjustment vouchers, memorandums for record, build-up sheets, weapons custody transfer documents, status change reports, weapons status reports, quality assurance service test status reports, and container asset reports.

A.1.2.6. Nuclear Weapons Inventories. In addition to nuclear reporting activities, periodic inventories are conducted to ensure quantities of nuclear weapons, components, and configurations are accurate.

A.1.2.6.1. Any time a new MASO is appointed, a 100 percent inventory is performed at the applicable custodial unit to ensure all TP 100-3150, *Joint Reporting Structure, Nuclear Weapons Reports,* reportable items are accounted for and present prior to the new MASO assuming custodial responsibility for the items. The gaining and losing MASO conduct a joint inventory as of the effective date of the transfer of accountability and complete a Certificate of Transfer of Accountability in accordance with TP 100-4. The semi-annual inventory may be used to suffice for this requirement provided that both the gaining and losing MASO participate in the semi-annual inventory and no transactions affecting stock record balances occur between the effective date of the inventory and the effective date of the transfer of accountability.

A.1.2.6.2. The semi-annual inventory is an independent inventory performed in accordance with CJCSI 3150.04 and TP 100-3150 that reports the status, location, and configuration of the nuclear weapon stockpile by serial number and quantity for each location. Verification by an independent inventory-verifying officer is required for TP 100-3150 reportable items. In conjunction with a semi-annual inventory, a management audit is performed by the independent inventory-verifying officer to ensure proper accountability is maintained, an accurate audit trail exists, and proper accounting procedures are being followed. The audit consists of reviewing representative samples of accountable records to determine if approved

accounting procedures are being followed and to assess the accuracy of accountable records and completeness of the audit trail. If inaccuracies or irregularities are discovered, the sample is increased to determine the extent of the inaccuracy or irregularity. A 100 percent audit may be performed if the auditor deems it necessary, or when directed by custodial unit authorities or higher headquarters. In cases where serious inaccuracies, irregularities, or inadequate audit trails are found, a 100 percent inventory may be required to reestablish accountability.

A.1.2.6.3. The SEV is a rapid special inventory for the President, SECDEF, and the JS to promptly verify all or selected portions of the DoD stockpile of nuclear weapons are in the possession of authorized DoD agents. MAJCOM Logistics Agents and DTRA representatives reconcile SEV reports from responsible organizations and provide SEV status reports to the JS according to TP 100-3150, until the SEV is terminated.

A.1.2.6.4. Weapons maintenance teams also conduct a specific inventory and validate the contents of storage structures, bays, cells, or Weapons Storage and Security System vaults with Munitions Control whenever weapons are moved.

A.1.3. Navy

A.1.3.1. Navy Nuclear Weapons Accountability/Custody Policies and Procedures. Navy nuclear-capable units ensure proper accountability of nuclear weapons and components by implementing the standards and procedures outlined in CJCSI 3150.04, TP 100-3150, TP 100-4, and Unit-Level operating instructions that implement the higher level policies and procedures.

A.1.3.2. Navy Accountable Officers. Navy Accountable Officers are designated in writing by the Commanding Officer per TP 100-4. Accountable record files are maintained for each item in their possession until the items are transferred to another command and the account has been audited. These records are kept seven additional months after the audit. Transfer of accountability of nuclear weapons and nuclear components resulting from a change in Accountable Officers is effected by a "Certificate of Transfer of Accountability."

A.1.3.2.1. The Accountable Officer onboard a submarine will be the Strategic Weapons Officer (SWO). The SWO is either a regular line officer or a Limited Duty Officer (LDO). Once the individual reports aboard his submarine for his weapons officer tour, he completes a formal turnover with the serving SWO. The incoming SWO receives a written designation from the Commanding Officer as the Accountable Officer and initiates a complete accountability custody turnover process. The SWO conducts an inventory of all records and provides a Certificate of Transfer of Accountability to the Commanding Officer detailing the inventory status. Physical verification of weapons aboard a submarine is not possible due to physical and operational constraints.

A.1.3.2.2. The Accountable Officer at a Strategic Weapons Facility (SWF) will be assigned in writing by the Commanding Officer. The Accountable Officer is required to be a commissioned or warrant officer or permanent civil service person in grade GS-11 or higher. This is routinely met with a weapons limited duty officer or warrant officer

who will normally have about 12 years experience. Accountability turn over will be very similar to what is outlined in the above section, with the exception that the physical verification of the stockpile is possible.

A.1.3.3. Nuclear Weapons Accountability While in SWF Custody. Accountability of nuclear weapons in SWF Custody is governed by TP 100-4. Accountability is transferred into SWF accountable records within five days of custody transfer based on the completion of the verification inspection and signature of copy 1 on DOE/NRC form 741, *Nuclear Materiel Transaction Report* or DD Form 1348-1A, *Issue Release/Receipt Document*. Accountability is transferred from SWF accountable records when assets are transferred to another command and upon receipt of the signed DD form 1348-1A from the receiving command within five days of custody transfer. At the completion of the verification inspection, the nuclear weapon will be entered into accountable record files and reported to the SLA in accordance with TP 100-3150, *Joint Reporting Structure, Nuclear Weapons Reports,* until transferred to an operational unit or returned to DOE. Accountability transfer and file maintenance of nuclear weapons components is identical to the process used for nuclear weapons accountability. Shipping methods may differ slightly.

A.1.3.4. Nuclear Weapons Accountability During Transfer to/from SWF and Submarine. Accountability is transferred to/from the SWF and submarine, in accordance with TP 100-4. Transfer is accomplished upon completion of the verification inspection and signature of the DD Form 1348-1A. A "Verification of Shipment" certification is used by the SWF to ship all-up-round missile(s) to the submarine. This requires the SWF to physically verify and certify the contents of the missile to the submarine. The submarine may transfer the missile back to the SWF at a later date based on the same certification. In both cases, the accountability for the installed reentry body is transferred upon the acceptance of the certification and signature on the DD Form 1348-1A. Accountability transfer is reported to the SLA in accordance with TP 100-3150 by the SWF for the Submarine Accountable Officer.

A.1.3.5. Nuclear Weapons Accountability While in a Ship's Custody. Accountability will not be transferred until a signed DD Form1348-1A is received from the SWF Accountable Officer within five days of custody transfer. Accountability reports are made by the SWF Accountable Officer in accordance with TP 100-3150 for Submarine Accountable Officers. Information in these reports is verified against submarine and SWF Accountable Records for accuracy by each Accountable Officer.

A.1.3.6. Nuclear Weapons Inventories. In addition to nuclear weapons accountability activities just described, the Navy conducts periodic inventories to ensure quantities of nuclear weapons, components, and configurations are accurately reflected at each unit.

A.1.3.6.1. When a new Navy Accountable Officer is appointed, a 100 percent inventory is performed, as similarly described in the Air Force section. The incoming and leaving Navy Accountable Officer conduct a joint inventory as of the effective date of the transfer of accountability and complete a Certificate of Transfer of Accountability in accordance with TP 100-4. The semi-annual inventory may be used to suffice for this requirement provided

that both the gaining and losing Navy Accountable Officers participate in the semi-annual inventory and no transactions affecting stock record balances occur between the effective date of the inventory and the effective date of the transfer of accountability.

A.1.3.6.2. The semi-annual inventory is an independent inventory performed in accordance with CJCSI 3150.04 and TP 100-3150 and is described in section A1.1.9.3.

A.1.3.6.3. The Navy also participates in SEVs, described in section A1.1.11.

A.1.3.6.4. Weapons maintenance teams also conduct a specific inventory and validate the contents of storage structures, bays, cells, whenever weapons are moved.

A.2. Standards and Procedures for Transferring Custody of Nuclear Weapons

A.2.1. Common Requirements for Air Force and Navy Custody Transfers

A.2.1.1. Types of Transfers. Intra-area movements facilitate authorized weapons maintenance and handling operations within a restricted area. Logistical movement procedures support shipments of nuclear weapons via SAAM or DOE ground transportation. Operational movements include the movement of a reentry system to and from a launch facility or submarine, and a bomb, cruise missile, pylon, or launcher to and from a combat aircraft or submarine as applicable.

A.2.1.2. Identifying Authorized Personnel for Custody Transfers. Accountable officials from shipping, courier activity, and recipient organizations exchange detailed lists of personnel authorized to sign custody transfer documents. The lists are updated as changes occur, or at least annually. Personnel identify themselves prior to custody transfer of nuclear materiel by presenting their DoD or DOE identification card.

A.2.1.3. Verification Inspection. Authorized recipients must verify seals, labels, and serial numbers, where applicable, before accepting an item from a shipper/courier. Following receipt by the ultimate consignee, a verification inspection is performed to verify the presence of nuclear weapons or nuclear components. Verification is (1) a visual observation of the nuclear weapon or nuclear component to determine that the item is as described by the shipping document, (2) ensuring that the weapon is without visible damage, and (3) ensuring that the serial number(s) as listed on the shipping document, the container, the item (permanently stamped, stenciled, engraved, or decaled) and other associated documents match.

A.2.1.4. Transfer of Accountability between DOE and DoD.

A.2.1.4.1. Custody transfer of nuclear weapons from DOE to DoD is affected upon the completion of new nuclear weapon build, refurbishment or life extension program based on Presidentially directed nuclear weapons stockpile levels. DOE is responsible

for packaging nuclear weapons in approved containers and assembling custody/accountability receipt/transfer documentation (DOE/NRC form 741) for each item shipped to the DoD.

A.2.1.4.2. The DOE Secure Transportation Asset (STA) Operations Branch and DTRA are jointly responsible for the planning and scheduling of shipments. DTRA approves custody transfers of nuclear weapons and components between DoD and DOE. Shipments are made via DOE approved ground transportation. Nuclear weapons materiel transferred by DOE to DoD is itemized on DOE/NRC Form 741 showing DOE part/type, serial number, appropriate major assembly designation, and quantity. Transfer of nuclear weapons materiel by DoD to DOE is effected on DD Form 1348-1A. Accountable officials sign applicable forms and retain required documentation promptly after completion of transferred materiel verification inspections.

A.2.1.4.3. Authorization to transfer custody of weapons and specified components is granted by DTRA through an MTO. MTOs are written upon request of a SLA for a change of custody or change in category characterization of a weapon (active, inactive, retired). An MTO specifies the number and type of allocated items involved, effective date of transfer, mode of shipment, and the gaining or losing account.

A.2.1.4.4. The DOE will ensure that an annual 'Statement of Security Assurance' is on file prior to shipment of nuclear weapons and the Military First Destination (MFD) has been certified to STA. Packaging is certified by the shipper and loading is supervised by the shipper and the federal agent (courier) per TP 45-51, *Transportation of Nuclear Weapon Materiel*. Once loaded, the courier assumes custody of the shipment by signing the DOE/NRC form 741. The federal agent maintains custody and responsibility for the shipment until the DoD Accountable Officer signs for receipt in the DoD limited area. The DoD is responsible for ensuring the facility is capable and certified to handle, maintain and ensure security for the nuclear weapons upon receipt.

A.2.1.4.5. The DoD Accountable Officer, and his assistants, will be designated in writing by the Commanding Officer, and certified to the DOE in accordance with TP 100-4. When a scheduled shipment of nuclear weapons arrives at the MFD, the Accountable Officer will supervise unloading with the DOE courier inside an established exclusion area within the limited area. Custody receipt is affected by the Accountable Officer's signature on copy 3 of DOE/NRC form 741 and on a DD form 1911. The Accountable Officer will report any administrative discrepancies or disparities between the DOE/NRC form 741 and shipping container or if there is evidence of obvious damage to the shipping container.

A.2.1.4.6. For DoD to DOE transfer, custody is transferred to the DOE Courier in an exclusion area within the limited area. All items transferred to DOE courier custody will be identified to the DOE in advance via advance copies of the DD form 1348-1A. Additional identification is made by the SLA in the MTO request. Any item not previously identified will not be allowed on the Safe Secure Trailer (SST)/Safeguards Transporter (SGT) by the DOE Courier. The DOE Courier will observe loading operations with the Accountable Officer and accept custody by signing the DD form 1911.

A.2.1.4.6.1. TP 100-4, *Custody, Accountability, and Control of Nuclear Weapons and Nuclear Materiel.* TP 100-4 provides policy, standard minimum requirements, and mandatory procedures for the transfer of WR nuclear weapons and specified components from DOE to DoD and from DoD to DOE. The publication also includes the policy, standard minimum requirements, and mandatory procedures for accountability and custody of nuclear weapons, nuclear components, and WR shipping containers within the DoD. Applicable Military Department publications establish procedures that exceed minimum standards prescribed in this manual.

A.2.1.4.6.2. TP 45-51, *Transportation of Nuclear Materiel.* The TP 45-51 series of publications provides the policy, instructions, and procedures for all shipments to effect custody transfers of nuclear weapon materiel. The manual provides the transportation criteria and courier responsibilities for all land and air logistics movements of nuclear weapons materiel within the DoD and the DOE.

A.2.2. Air Force Custody Transfer Procedures

A.2.2.1. By procedure, nuclear weapons are not to be moved outside a restricted area unless authorized by the Wing Commander. Additionally, the Wing Commander designates authorized positions, by title, to receive custody of a nuclear weapon. Individuals filling designated positions conduct serial number verifications and ensure personnel receiving custody are an authorized recipient prior to custody transfer. The two person concept is employed at all times as part of the Air Force handling policies and procedures.

A.2.2.2. Prior to moving nuclear weapons (i.e., intra-area, logistical, or operational movement), an approved work order is created by Munitions Control to initiate and control the weapons movement. Additionally, an AF Form 504, Weapons Custody Transfer Document, is created by the MASO to document custody transfers during operational weapons movements.

A.2.2.3. The MASO serves as the unit point of contact for all weapons shipments and coordinates base support requirements. During a SAAM, custody is transferred between the MASO and the courier onboard the aircraft. During a DOE mission, custody is transferred between the MASO and the courier inside the Weapons Storage Area. Depending on the type of mission (inbound or outbound), the MASO obtains or provides the DD Form 1348-1A, *Single Line Item Release/Receipt Document* and documents custody transfer operations on a DD Form 1911, *Materiel Courier Receipt.* .

A.2.2.4. The MASO ensures the verification inspection is conducted prior to signing and returning the DD Form 1348-1A. The MASO processes the required transactions in DIAMONDS to update stock records and reports the transaction via a WSR.

A.2.2.5. Prior to shipment, the MASO creates a DD Form 1348-1A and DD Form 1911to facilitate custody transfer operations during the logistics movement. Once the courier departs the base, weapons maintenance technicians submit an SCR to the MASO reflecting shipment of the weapons. The MASO assigns an off-base document number to the DD Form 1348-1A to reflect the shipment of weapons. The MASO processes the required transactions in DIAMONDS to update stock records and reports the transaction via a WSR.

A.2.3. Navy Custody Transfer Procedures

A.2.3.1. The SWF Accountable Officer prepares a Movement Order (MOVORD) for the movement of weapons. Custody transfer documentation DD Form 1911 and the DD Form 1348-1A are prepared by the transferring agency. The two person concept is employed at all times as part of the Navy handling policies and procedures.

A.2.3.2. Nuclear weapons custody will be transferred from the SWF to operational units (SSBNs or SSNs) either individually (single reentry body or TOMAHAWK missile) or as the mated reentry system of a TRIDENT II D-5 missile.

A.2.3.2.1.

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A.3. <u>Documentation Used for the Purpose of Proper Accountability, Custody Receipting, and Shipping Transactions</u>

A.3.1. Joint Air Force and Navy Forms/Documents

A.3.1.1. Certificate of Transfer of Accountability. A transfer of accountability of nuclear weapons and nuclear components resulting from a change in Accountable Officer is enacted by a Certificate of Transfer of Accountability. One copy of the certificate is retained by the officer relieved of accountability and one copy, together with a copy of the orders or letter of appointment directing the transfer, is retained by the officer assuming accountability. A copy of the certificate is also provided to the DoD activity commander, evidencing the completion of transfer of accountability.

A.3.1.2. DD Form 1348-1A, *Single Line Item Release/Receipt Document.* DD Form 1348-1A is prepared by the DoD shipping activity and is used for transfers of accountability of nuclear weapons or nuclear components between DoD custodial unit Accountable Officers. Information on the form includes information on the material shipped such as nomenclature, National Stock Number (NSN), if assigned, DOE Part Number (P/N), and item serial number. The document is used as a transaction receipt and/or the data source for preparation of other documents such as the WSR in DIAMONDS.

A.3.1.3. DD Form 1911, *Materiel Courier Receipt.* DD Form 1911 is a standardized certification receipt for transfer of custody of nuclear weapons materiel couriered within the DoD. A unique control number is assigned to each shipment unit, and remains the same from origin to final destination. All tracing and correspondence about a shipment references this number as the Shipper's Control/Document Number on the form. The courier assumes responsibility for the shipment by signing the form, provides the shipper with the original, and retains the remaining copies. The courier is responsible for all items so received until such time as custody is relinquished to another authorized recipient or the ultimate consignee.

A.3.1.4. DD Form 1150, *Request for Issue or Turn-In.* DD Form 1150 is used to transfer custody of nuclear weapons or nuclear components between Accountable Officers and custodians and between custodians under the jurisdiction of a single Accountable Officer.

A.3.1.5. DOE/Nuclear Regulatory Commission (NRC) Form 741, *Nuclear Materiel Transaction Report.* DOE/NRC Form 741 is used by NNSA when shipping nuclear weapons or nuclear components containing Source and Special (SS) nuclear materiel. The nomenclature, serial number, and part number of the smallest separate and specifically identifiable component containing SS materiel shall be shown on the DOE/NRC Form 741. If the component cannot be physically separated from an assembly because of design, construction, or regulatory restrictions, the nomenclature and serial number of the higher assembly shall also be shown. This transfers loan account materiel to the DoD as part of a bomb unit, warhead, major assembly, etc., and identifies the unit by the appropriate nomenclature and serial number.

A.3.1.6. Weapons Status Reports (WSR). WSRs are submitted by the Accountable Officer via DIAMONDS and form the basis for summary reporting for the JS, DTRA, Air Force, Navy, the National Military Command System, SECDEF, and the President. See section 1.1.9.2 for additional information.

A.3.1.7. Inspection Record Card (IRC), Sandia Form 5700-IRA. IRCs are documented by weapons maintenance technicians via DIAMONDS to record weapon assemblies, inspections, modifications, configuration changes, or operations required by joint technical publications, as applicable to DOE material. The Navy also uses a similar form for the W76/MK4 and W88/MK5 reentry bodies called a Nuclear Ordnance Record Card.

A.3.1.8. Location Inventory Listing (LIL). The LIL contains unit stockpile information extracted from the DIAMONDS database at DTRA. The purpose of the LIL is to provide monthly reconciliation of unit records and stockpile information contained in DIAMONDS. It also provides nuclear capable units a management tool for scheduling maintenance and managing maintenance activities.

A.3.1.9. Semi-Annual Inventory Report (SIR). The SIR is created by the Accountable Officer and submitted via DIAMONDS to report the status, location, and configuration of the nuclear weapon stockpile by serial number and quantity for each location. See section 1.1.9.3 for additional information.

A.3.1.10. Blind-Inventory Worksheets. Blank worksheets are used by the Accountable Officer during Semi-Annual Inventory to provide increased probability that stockpile and reporting unit accountability records agree. Inventories are conducted without prepared lists of stockpile totals or serial numbers.

A.3.1.11. Audit Certificate. A certificate created by the inventory-audit officer is used to document the results of a semi-annual audit of a particular SRAN. The certificate identifies audit officer, audited transactions, specific discrepancies, and recommendations.

A.3.1.12. Stockpile Emergency Verification (SEV) Reports. Unit messages submitted by the Accountable Officer to Service Logistics Agents (SLAs) to document unit completion of applicable phases of a SEV. See section 1.1.11 for additional information.

A.3.1.13. Weapons Custody List (WCL). DTRA prepares and transmits WCLs to affected nuclear weapon custodial units and SLAs during a SEV. WCLs contain information from the stockpile database (weapon type, serial number) applicable to each unit.

A.3.1.14. Materiel Transfer Order (MTO). MTOs are written by DTRA authorizing a shipment or change of custody/category of nuclear materiel and weapons. See section 2.1.5.2 for additional information.

A.3.1.15. Build Up Sheets/Data Sheets. These documents are created by weapons maintenance technicians and submitted to the Accountable Officer to reflect the association of warhead serial numbers to a reentry system, air launched missiles, and missiles or bombs with the pylon or launcher. Once certified, this document becomes the source document for tracking the location of weapons during alert and aircraft generation.

A.3.2. Air Force Unique Forms/Documents

A.3.2.1. Nuclear Ordnance Shipping Schedule (NOSS). The NOSS is developed by SLAs and provides a schedule of weapons logistical movements in support of operational or maintenance requirements. The NOSS identifies 30-day firm movement requirements and 60/90-day movement forecasts.

A.3.2.2. AF Form 504, *Weapons Custody Transfer Document.* The AF Form 504 is used by the Accountable Officer to track the custody transfer for nuclear weapons during operational movements. These forms are audited by the Accountable Officer during the semi-annual inventory.

A.4. Standards and Procedures for Nuclear Surety Inspections

A.4.1. Joint Staff and DTRA

A.4.1.1. DoD Directive 5210.81, *United States Nuclear Weapons Command and Control, Safety, and Security*, requires the CJCS to establish Nuclear Weapons Technical Inspection (NWTI) policy and monitor implementation of the inspection system. The JS

establishes inspection policy through TP25-1, Department of Defense Nuclear Weapons Technical Inspection System. TP25-1 delineates policy, assigns responsibilities, and prescribes standard procedures to conduct NWTIs of all DoD nuclear-capable units.

A.4.1.2. NWTIs are Military Department or DTRA inspections of a nuclear-capable unit conducted to examine nuclear weapons technical assembly, maintenance, storage functions, logistic movement, handling, and safety and security directly associated with these functions. During the course of an inspection, teams may evaluate any observed items that affect the safety, security, or reliability of nuclear weapon systems. TP25-1 requires the Military Departments to ensure that its certified nuclear-capable units are inspected on a regular, programmed frequency, not to exceed 18 months and requires DTRA to inspect a CJCS-specified percentage of certified nuclear-capable units of each Military Department annually.

A.4.1.3. In accordance with DoD Directive 3150.2, *DoD Nuclear Weapon System Safety Program*, DTRA conducts Defense Nuclear Surety Inspections (DNSI) for the CJCS. This requirement exists to provide the Chairman with an impartial assessment of nuclear-capable units separate from that of the Military Departments. DTRA conducts these inspections on all Military Department-certified, nuclear-capable units that maintain, assemble, transport, employ, or store nuclear weapons.

A.4.1.4. NWTIs consist of the following inspections:

- *Defense Nuclear Surety Inspection* (DNSI) conducted by DTRA.
- *Navy Technical Proficiency Inspection* (NTPI) and *Nuclear Weapons Acceptance Inspection* (NWAI) conducted by the Navy.
- *Nuclear Surety Inspection* (NSI) and *Initial Nuclear Surety Inspection* (INSI) conducted by the Air Force.
- *Joint Nuclear Surety Inspection* (JNSI) conducted by DTRA and Military Department inspection teams.

A.4.1.5. The overall rating given to a unit following a nuclear technical inspection is either Satisfactory, Satisfactory (Support Unsatisfactory), or Unsatisfactory. The final rating awarded to the inspected unit is based on the nature, severity, and number of deficiencies noted during the inspection. Unsatisfactory ratings are given for failure to provide a safe environment for nuclear weapons, failure to provide a secure environment for nuclear weapons, deficiencies that would cause the weapon to be unreliable, and when the number of deficiencies or manner of performance indicates a lack of competence or disregard of prescribed procedures.

A.4.1.5.1. Corrective actions taken by a unit are reviewed by each intermediate headquarters level of command for adequacy. In those cases where the deficiency is beyond the capability of the inspected unit to correct, the appropriate level of command will initiate corrective action. Completion of the appropriate actions closes the report. Inadequate action shall result in follow-up correspondence to ensure that adequate corrective action is taken.

A.4.1.5.2. DTRA compares Military Department replies to DTRA inspection reports for adequacy of the corrective actions and categorizes each deficiency as "Active" or "Closed. If a reply is not considered sufficiently responsive and is within the Military Department's ability to correct, it is referred to the Military Department headquarters for further action. If it is beyond the Military Department's capability to correct, it is referred to the appropriate agency, with information copies to the appropriate Military Department.

A.4.1.5.3. When a Military Department is rated Satisfactory (Support Unsatisfactory), Unsatisfactory, or Unsatisfactory (Support Unsatisfactory), the Military Department inspection team may re-inspect and the DTRA NWTI team will verify the correction of the deficiencies. The re-inspection can be conducted as an on-the-spot re-inspection of an immediately correctable deficiency, a limited re-inspection consisting only of a unit's deficient areas, or a complete re-inspection of the entire unit as deemed necessary by the Military Department.

A.4.1.6. The DTRA Inspection Team conducts nuclear surety inspections of all nuclear-certified units in the Continental United States and overseas. The team includes personnel from the Air Force, Navy, and Marine Corps. Marine Corps personnel are included to review security issues. In addition to the team chief, the team includes three Personal Reliability Program (PRP), three security, and four technical inspectors. The team is comprised of personnel with many years of operational and headquarters-level experience.

A.4.1.6.1. Team Chief. The team chief is a Navy Captain or Air Force Colonel tasked with the responsibility for conducting the inspection and determining the overall rating based on team input. The team chief provides leadership and guidance to team members and presents the inspection findings and overall ratings to the unit commander. The team chief is responsible for the final report, which is provided to the unit, Military Department headquarters, and the JCS. This officer has an understanding of PRP issues, technical operations, and security requirements. Normally, the team chief has completed several nuclear weapons-related assignments prior to being assigned to the team.

A.4.1.6.2. PRP Inspectors. The PRP section consists of an Air Force Major, an Air Force Captain, and a GS-13 government civilian. Between them, they typically have substantial nuclear duty experience, having been assigned to nuclear capable units and having served as PRP certifying officials.

A.4.1.6.3. Security Inspectors. The security inspection cadre consists of an Air Force Major and Senior Master Sergeant, and a Marine Corps Captain. These personnel typically have extensive experience in all facets of nuclear security.

A.4.1.6.4. Technical Inspectors. The technical inspection cadre is led by an Air Force Major, assisted by a Navy Lieutenant Commander and two Navy Limited Duty Officer Lieutenants. These personnel typically have extensive nuclear maintenance and technical experience.

A.4.2. Air Force

A.4.2.1. Air Force NSI Policy and Procedures. Air Force procedures for conducting Nuclear Surety Inspections (NSI) are governed by TP 25-1. The Air Force uses TP 25-1 as the principal governing instruction for the conduct of NSIs, and provides any amplifying guidance in the Air Force policy document, AFI 90-201, *Inspector General Activities*. For example, TP 25-1 specifies that the Military Department will determine whether or not the unit is capable of performing its assigned nuclear mission, and that the Air Force makes this determination through Nuclear Surety Inspections and Initial Surety Inspections; Air Force policy amplifies this guidance by specifying that the MAJCOM/Combatant Commander is responsible for determining unit certification. Two methods exist to evaluate the suitability and effectiveness of Air Force inspection methodology – DTRA Surveillance Inspection and Air Force Inspection Agency Oversight Assessment.

A.4.2.2. Air Force Inspection Agency (AFIA) Oversight Assessment. Per AFI 90-201, AFIA provides an additional layer of oversight and assessment to MAJCOM Commanders and the IG on the suitability and effectiveness of MAJCOM nuclear surety inspections. AFIA provides nuclear surety-related oversight of NSIs by overseeing 25 percent of the total annual MAJCOM-conducted NSIs.

A.4.3. Navy

A.4.3.1. Department of the Navy Directives. Department of Navy Directives derive NWTI requirements and procedures from TP 25-1, *Department of Defense Nuclear Weapon Technical Inspection System*. Navy amplifying guidance is contained in OPNAVINST 8110.18, *Department of the Navy Nuclear Weapon System Safety Program,* and OPNAVINST 5040.6, *Department of the Navy Nuclear Weapons Technical Inspections and Nuclear Weapon Readiness Certification.*

A.4.3.1.1. Office of the Chief of Naval Operations Instruction (OPNAVINST) 8110.18 – *Department of the Navy Nuclear Weapon System Safety Program*. Department of the Navy documentation standards and procedures for nuclear weapon surety inspections are delineated in OPNAVINST 8110.18. This instruction tasks Department of the Navy (DON) components with developing processes to certify systems, equipment, procedures, software and personnel for use with and conduct of operations involving nuclear weapons. Further, it tasks Navy organizations, i.e., TYCOMs, Program Managers and Local Commands with nuclear weapon responsibilities, to include "DON Nuclear Weapon Technical Inspections (NWTIs) to determine the extent that an adequate Nuclear Weapon System Safety Program is maintained."

A.4.3.1.2. OPNAVINST 5040.6 – *DON Nuclear Weapons Technical Inspections (NWTIs) and Nuclear Weapon Readiness Certification*. This Chief of Naval Operations (CNO)-generated instruction provides the specific, executable NWTI program for all Navy organizations with nuclear weapon responsibilities. OPNAVINST 5040.6 provides specific guidance on individual command responsibility, certification and decertification criteria,

and the scope of DON NWTIs.

A.4.3.2. TYCOM Directives. COMNAVSUBFORINST 8120.2, *Submarine Force Nuclear Weapons Manual,* supplements OPNAVINST 5040.6 and TP 25-1 for the operational fleet. This document provides the complete description of the processes and procedures required for forces afloat to prepare and host NWTIs. This instruction encompasses all higher directives for forces afloat.

A.4.3.3. Strategic Systems Programs (SSP) Directives. The DoD and DON Directives flow down to the Navy Nuclear Weapon Program Manager; SSP. SSP implements their Nuclear Weapon Inspection Program in three instructions; each with more details and specific tasking.

A.4.3.3.1. Strategic Systems Program Office Instruction (SSPINST) 5100.6A, *Strategic Systems Programs (SSP) Safety Program,* directs the implementation of DoD and OPNAV Directives. Further, it tasks specific internal organizations with the conduct and planning of NWTIs.

A.4.3.3.2. SSPINST 8120.2, *Strategic Systems Programs Surety Manual,* establishes Director SSP policies and procedures for subordinate command's nuclear weapons surety programs. One section is dedicated to the planning, conduct, and reporting of the NWTI system. It provides SSP headquarters and subordinate commands with a complete, executable program plan for the conduct of NWTIs.

A.4.3.3.3. SSPINST 8120.1, *Nuclear Weapon Technical Inspection Guidance and Preparation,* is a draft instruction under development to provide policy guidance to SSP personnel for the conduct of NWTIs of the SWFs. Additionally this instruction addresses and outlines inspector qualification procedures and processes required to be mastered to perform these inspections.

A.4.3.4. Local Command Directives. Local directives implement all higher authority directives and guidance. These executable programs are delineated in Operational Plans for command unique processes. Additionally, situational requirements for the preparation and conduct of NTWIs are issued in the form of individual Command Instructions and Notices.

A.5. Training of all Personnel Involved in the Handling, Management, and Accountability of Nuclear Weapons and Components

A.5.1. Joint Staff and DTRA

A.5.1.1. The Defense Nuclear Weapons School (DNWS). DNWS, the oldest institution in the Defense Threat Reduction University, is located on Kirtland Air Force Base, Albuquerque, NM. This DTRA school is a unique entity that provides training in nuclear weapons; nuclear and radiological accident command, control, and response; and chemical, biological, radiological, nuclear, and high-yield explosives modeling for the DoD and other federal and state agencies. The DNWS provides three courses directly applicable to nuclear

weapons stockpile management, accountability, and Nuclear Weapons Technical Inspections. None of the courses have a mandatory attendance requirement, but all are highly recommended for their respective intended audiences

A.5.1.1.1. Nuclear Weapons Orientation Course (NWOC). NWOC is a five-day course that provides an overview of the history and development of nuclear weapons, management of the U.S. nuclear stockpile, and the issues and challenges facing the program. The modules focus on four functional areas: nuclear weapon fundamentals, nuclear weapon effects, nuclear weapons stockpile, and nuclear weapons issues. The course is designed for military E-5 and above and government GS-7 and above who require knowledge of the national nuclear weapons program.

A.5.1.1.2. Joint DoD-DOE/NNSA Nuclear Surety Executive Course (JNSEC). JNSEC is an executive-level program offering an overview of safety, security, and control aspects of the U.S. nuclear weapons program. JNSEC is a one-day program conducted in the Washington, DC area, with a second one and one-half–day iteration offered at the DNWS to accommodate a Weapons Display Area tour. The course is intended for senior military and federal employees who have nuclear weapons responsibilities.

A.5.1.1.3. Nuclear Surety Inspections Course (NSIC). NSIC is a four-day course in which students learn the DoD nuclear inspection process. Training is conducted through facilitated group discussion and scenarios. A thorough understanding of DoD TP 25-1 is required. Nuclear Weapons Technical Inspectors and personnel from nuclear capable units are given priority seating, all others attend on a space available basis.

A.5.1.2. Stockpile Accountability Data System Training. DTRA conducts training for users of the DIAMONDS system semi annually at both stateside and overseas locations. The average stateside session trains approximately 25 personnel (Navy and Air Force) while the overseas sessions average about 12 Air Force personnel. During the training, users learn to perform all the functions of the system needed to process nuclear weapons stockpile transactions. DIAMONDS training is divided into seven blocks of instruction comprising a total of 17 hours.

A.5.2. Air Force

A.5.2.1. The primary officer specialty that supervises and leads personnel that handle, manage and account for nuclear weapons is the Munitions, Missile and Space Maintenance Officer (21MX) career field. The 21M career field has three basic tracks of expertise: the first is intercontinental ballistic missile (ICBM) maintenance (21MXI), the second is conventional munitions maintenance (21MXA), and the third is nuclear munitions maintenance (21MXN). All 21M training from Initial Skills to Master Certification is described in the 21MX Career Field Education and Training Plan (CFETP).

A.5.2.1.1. AFI 36-2201 V2, *Air Force Training Program Training Management*, mandates completion of Initial Skills Training (IST) within six months of entering active duty unless restricted by lack of security clearance or other extenuating circumstances. All

21MX officers attend the Munitions Officer Fundamentals Course (MOFC) that delivers basic career field knowledge to all new accessions. All 21MX officers will also attend the Nuclear Fundamentals Course (NFC) at Sheppard Air Force Base (AFB). One of three follow-on courses must be successfully completed depending on the officer's first duty assignment. The 21M1 Air Force Specialty code (AFSC) is awarded upon successful completion of the Missile (ICBM) Maintenance Officer Course (MMOC) at Vandenberg AFB, the Nuclear Munitions Officer Course (NMOC) at Sheppard AFB, or the Conventional Munitions Officer Course (CMOC) at Sheppard AFB. Additionally, the MMOC, CMOC and NMOC serve as bridge courses for officers that change specialty within the 21MX career field (i.e. a nuclear qualified munitions officer at a bomber wing being assigned to an ICBM wing) and AFSC awarding training for officers that cross train into the 21M career field (i.e., a 13S Space and Missile Operations officer cross training into 21M ICBM maintenance).

A.5.2.1.2. Once the 21M1 officer successfully completes IST, MAJCOM mandatory follow-on on-the-job training and meets the 24-month experience requirement specified in AFMAN 36-2105, *Officer Classification*, the officer can be considered for upgrade to a 21M3, Qualified. The squadron commander will verify the munitions and missile maintenance officer has completed training requirements for award of 21M3 AFSC, which designates full qualification. The squadron commander will then certify the officer for upgrade. Any 21MXN officer designated to assume MASO duties will attend the Nuclear Accountability Course (NAC) at Sheppard AFB prior to assuming those duties.

A.5.2.1.3. General 21M3 demonstrated knowledge and proficiency include maintenance management procedures, organizational and mission requirements; basic weapons, procedures, and quality assurance; supply, transportation, civil engineering, and other unit operations related to munitions, missile or space maintenance units. 21M3 officers assigned to ICBM duties will demonstrate knowledge and proficiency with respect to re-entry systems; nuclear armament systems; suspension and release equipment; weapon use-control; nuclear surety; joint nuclear procedures; related test, handling, and support equipment; missile operations to include emergency war orders, operational plans, maintenance capabilities; nuclear surety and weapons system safety rules. 21M3 officers assigned to nuclear weapons storage and maintenance facilities supporting ICBMs, aircraft or stockpile storage will demonstrate knowledge and proficiency with respect to 11N-series nuclear weapons technical orders and nuclear weapons technician qualification/certification programs; Air Force nuclear surety programs and weapon system safety rules; DoD, DOE and Air Force nuclear weapons management, life cycle and employment; nuclear weapons theory, effects, components, maintenance, inspection and use control; nuclear weapons documentation, security, custody, transfer, transportation, support equipment; nuclear weapons MASO duties and responsibilities.

A.5.2.2. The number and type of enlisted specialties performing nuclear weapons handling, management, and accountability activities depends upon the assigned mission and weapons system (i.e., bombers, ICBMs, etc.). Typically, the 2M0XX, Space and Missile Maintenance, 2W1XX, Aircraft Armament, and 2W2XX, Nuclear Weapons specialties oversee nuclear weapon related activities. The career field specific training and qualification requirements are described in applicable CFETP. Certification and proficiency requirements are defined in the applicable AFI 21-Series policy. Per AFI 36-2201, *Air Force Training Program*,

the purpose of training is to ensure each individual is prepared to meet Air Force mission requirements. Training programs are developed using a continuous learning concept. All enlisted personnel follow a rigorous apprenticeship that establishes the building blocks for successful training and education. The Air Force uses the building block approach to enlisted training: Apprentice (3-level), Journeyman (5-level), Craftsman (7-level), and Superintendent (9-level).

A.5.2.2.1. The 2M0XX space and missile maintenance career field is responsible for intercontinental ballistic and cruise missile maintenance, but the process to qualify and certify technicians to the journeyman level is handled somewhat differently because of unique mission requirements.

A.5.2.2.1.1. 2M0XX personnel performing ICBM maintenance rely on some on-the-job training (OJT) for upgrade training but for the majority of ICBM maintenance technicians, specialized training is used to prepare them to work at remote facilities up to three hours away with little or no supervision. Many ICBM maintenance teams are comprised of only two technicians and many tasks performed require at least two qualified technicians to meet Two-Person Concept control rules, reducing opportunities for OJT. Because of the reduced opportunities for OJT and limited supervision in these remote environments, ICBM maintenance relies on intense specialized training using dedicated instructors. This instruction lasts approximately three months focusing on all areas needed to successfully perform maintenance at these remote facilities.

A.5.2.2.1.2. 2M0XX personnel performing cruise missile maintenance rely on traditional OJT to prepare their technicians for their 5-level Journeyman status. Cruise missile maintainers are expected to begin performing some maintenance at the journeyman level as soon as they arrive from technical training and are paired with an experienced technician who conducts OJT. Since cruise missile maintainers work in a lab-like environment, supervisors have ready access to their technicians and any questions or concerns can be resolved relatively quickly in comparison to technicians who work in the ICBM missile field

A.5.2.2.2. 2W1XX personnel performing nuclear weapons loading tasks are certified in accordance with AFI 21-101, *Aircraft and Equipment Maintenance Management.* This instruction establishes policy which stipulates currency of training, and methods used to evaluate loading and unloading operations. Training and certification is conducted by Weapons Standardization personnel who work directly for the Wing Weapons Manager (senior 2W1 within the wing, in most cases a Chief Master Sergeant (E-9)). These personnel are considered the best in the Wing, and are usually the most experienced on the particular weapons system to which they are assigned. In addition to procedures outlined in AFI 21-101, loading personnel are scrutinized on compliance with loading checklists, which are designed by experts. Checklists are a step by step process to prepare the aircraft for the operation to be performed, prepare the weapon, and ultimately perform the loading or unloading operation in a choreographed process. Personnel who do not follow these procedures exactly as written, are decertified, and given additional training prior to being recertified. Certification is tracked in the weapons load crew management tool which is a computerized program that shows all training and certification data.

It also automatically identifies personnel due training, which makes being overdue for training virtually impossible.

A.5.2.2.3. 2W2XX personnel performing nuclear weapons maintenance and handling tasks are certified in accordance with AFI 21-204, *Nuclear Weapons Maintenance Procedures*. This certification program is a requirement over and above the qualification and certification procedures contained in AFI 36-2201. Trainers use CFETPs, lesson plans, and applicable technical orders to qualify individuals to perform certifiable tasks. Individuals are task qualified prior to task certification and the certification is limited to those items on which the individual is qualified. The objective of the certification program is threefold: to ensure initial certification is conducted using training weapons; to ensure non-certified individuals are not permitted to perform nuclear weapons tasks (handle, store, maintain, inspect, and mate/demate operations) on WR weapons; and to ensure individuals performing nuclear weapons tasks use proper technical data, maintenance procedures, and techniques. Quarterly proficiency checks must be accomplished for each certified task an individual is certified to perform. A technically qualified Quality Assurance, Bay Chief, Section/Element Supervisor, or Flight Chief observe technicians performing proficiency checks.

A.5.3. Navy

A.5.3.1. General Training Requirements

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Operational requirements, processes and procedures are identical regardless of location, with only minor changes due to a facility's physical configuration. However, actual conduct of operations may be carried out by either the government (Civil Service or Military) or the contractor depending upon the facility and contractual requirements. All personnel, government or contractor, are required to meet the same stringent requisites before being assigned to Nuclear Weapon Duties. Completing these requirements often takes several months and ensures that only the most trustworthy, knowledgeable, and proficient personnel perform nuclear weapons duties. These requirements include:

- Obtaining and retaining the appropriate security clearance.
- Being screened into and maintaining PRP certification (per SECNAVINST 5510.35A).
- Satisfactorily completing the requisite formal and or on-the-job training for the specific tasks and duties to be performed.
- Completing stringent qualification requirements.
- Demonstrating proficiency for each task to be performed.

- Obtaining initial certification and periodic recertification for each task to be performed.

A.5.3.2. Formal and Informal Nuclear Weapon, Nuclear Weapon Component Handling Training Programs. The Navy maintains a rigid formal training program. Technicians, both government and contractor, are held to the same standards, receive the same training and must complete the same qualification and certification processes. This ensures a well trained, technically homogenous labor pool for each individual nuclear weapon task.

A.5.3.3. Nuclear Weapons/Component Handling Qualification Programs. Key elements, processes and procedures for the nuclear weapons/component handling team require qualification. For example, any individual involved in the lifting or transportation of a nuclear weapon will be certified for the equipment and qualified for the operations by completion of prerequisite formal training, licensing (if required), knowledge factors, practical factors, testing, interviews and final qualification. Each process has been evaluated for the necessity of a formal qualification.

A.5.3.4. Formal and Informal Nuclear Weapon/Component Management and Accountability Training Program. Management positions in the nuclear weapon facilities are certified by rank and designator, completion of required training curriculum and OJT. Some supervisory positions require the completion of formal qualification process such as Processing Supervisors or Nuclear Weapons Handling Supervisors. Accountability training is obtained primarily through OJT. The Commanding Officer designates his Accountability Officer and Custodians in writing.

A.5.3.5. Missile Technician (MT) Requirements. MTs assigned to the SWF are assigned by Navy billet. Navy billet structure dictates nuclear weapon maintenance personnel are, as a minimum, E-5s who have completed at least one tour aboard an SSBN. The requirements for seniority and experience increase as the level of responsibility in the nuclear weapon maintenance field increases.

A.5.3.6. Civilian Contractor Requirements. Civilian contractor employees assigned maintenance tasks at the SWF are selected through a strict hiring process. The individual hired for maintenance tasks normally has prior military and weapons maintenance experience. The hiring contractor requires a minimum level of experience, education and the ability to obtain a security clearance before selection to a weapon maintenance position. Completion of the basic SWF formal course of instruction (joint military/contractor training) for the assigned task is also required. Once hired, the process of formal and informal training, OJT, qualification and certification is identical to that which applies to military weapon maintenance personnel. Training, qualification and certification is closely monitored by the Navy and civilian contractor alike.

A.5.3.7. SWF and Submarine Accountable Officer Designation

A.5.3.7.1. Submarine. The Accountable Officer onboard a submarine is the SWO. The SWO is either a regular line officer or a Limited Duty Officer (LDO). He will

have attended at least the SWO course and may have attended the Strategic Missile Officer (SMO) course as well. Both courses have modules detailing nuclear weapons accountability. Once assigned as a SWO, the individual will do a "piggy back" tour on a submarine for a patrol cycle. This counts for OJT and must be completed successfully to continue on to his assignment. Once the individual reports aboard his submarine for his weapons officer tour, he will complete a formal turn over with the serving SWO.

A.5.3.7.2. SWF. The Accountable Officer at a SWF will be assigned in writing by the Commanding Officer. The Accountable Officer is required to be a commissioned or warrant officer or permanent civil service person in grade GS-11 or higher. This is routinely met with a weapons LDO or warrant officer who will normally have about 12 years experience.

ANNEX B: DEPARTMENT OF ENERGY (DOE) AND NATIONAL NUCLEAR SECURITY ADMINISTRATION (NNSA)

B.1. Standards and Procedures for Ensuring Accountability of Nuclear Weapons

B.1.1. DOE and NNSA

B.1.1.1. The NNSA provides continuous, verifiable control and accountability for all nuclear weapons and nuclear weapon components within its custody. The plutonium triggers (also known as "pits" or primaries) are produced at the Los Alamos National Laboratory (LANL) and the secondaries are produced at the Y-12 National Security Complex. Once produced, these components are shipped to the Pantex Plant for assembly into nuclear weapons. Additionally, pits and secondaries are shipped to Lawrence Livermore National Laboratory (LLNL) to fulfill testing requirements. All nuclear weapons and components, regardless of configuration or location, are always under the full control of at least two persons (or, for storage or testing, access is controlled by at least two persons) who possess the highest security clearances, participate in the Human Reliability Program (HRP), and are protected either by high-security facilities/transportation assets and armed guard. This report details the accountability and control procedures at the five main nuclear weapon and nuclear component-handling sites/agencies: LANL, Y-12, Pantex, LLNL, and the Secure Transportation Asset (STA).

B.1.1.2. Two other sites, Sandia National Laboratories/New Mexico and the Nevada Test Site, handle and control nuclear weapons and nuclear weapons components in accordance with DOE Order 470.4-6, *Nuclear Material Control and Accountability*. The final two NNSA sites – the Savannah River Site and the Kansas City Plant – do not handle or control nuclear weapons, pits, or secondaries.

B.1.1.2.1. Sandia National Laboratories/New Mexico (SNL/NM) may be required to conduct testing at SNL or Tonopah Test Range (TTR), on a campaign basis, using items containing Category I or II SNM quantities. The last scheduled test at TTR or SNL/NM will occur this year. There are no planned tests, yet we preserve the option should a technical driver warrant a campaigned test at SNL/NM. During the campaign test phase, SNL will be required to implement full security protection, control and handling requirements per DOE Order 470.4, *Series of Orders and Manuals*.

B.1.1.2.2. Nevada Test Site (NTS) does not handle, account for, or control nuclear weapons or secondaries, but does have non-war-reserve pits at the Device Assembly Facility (DAF) for use in national security programs. Additionally, NTS is authorized to work on damaged nuclear weapons should the need arise. Work on and storage of nuclear weapons would take place at the DAF and would meet all requirements of the current nuclear material control and accountability program in accordance with DOE Order 470.4-6. NTS security and operations personnel are fully trained to handle, account for, and control Category I levels of special nuclear material as part of ongoing subcritical experiments at the U1a underground complex.

B.1.1.3. DOE requirements for maintaining accountability stem from two main directives. The first directive is DOE P 470.1, *Integrated Safeguards and Security Management Policy (ISSM)*, the Department's philosophical approach to the management of the Safeguards and Security (S&S) Program. A principal objective of the ISSM Program is to integrate S&S into management and work practices at all levels, based on program line management's risk management-based decisions, so that missions may be accomplished without security events, such as interruption, disruption or compromise. The second directive is DOE M 470.4-6, *Nuclear Material Control and Accountability*, which integrates nuclear materials control and accountability (MC&A) into DOE operations as determined by line management, and according to sound risk management practices. DOE M 470.4-6 prescribes DOE MC&A requirements for DOE-owned and leased facilities and DOE-owned nuclear materials at other facilities that are exempt from licensing by the Nuclear Regulatory Commission (NRC).

B.1.1.3.1. The objective of the MC&A program is to establish and maintain a sustainable and effective graded safeguards program for the control and accounting of nuclear materials to detect and deter theft and diversion. The objective is accomplished through multiple program elements to include program management and planning, measurements and measurement control, accounting, containment and surveillance, physical inventory, and performance assurance. Program management and planning requirements include:

B.1.1.3.1.1. Establishing and maintaining an MC&A Plan documenting the graded control and accounting mechanisms for accountable nuclear material; the plan serves as the primary safeguards authorization basis. The MC&A Plan is approved by the Site Office and maintained under configuration control.

B.1.1.3.1.2. Determining the category and attractiveness level of accountable nuclear material.

B.1.1.3.1.3. Evaluating threat credibility for roll-up of sub-category I levels of Special Nuclear Material (SNM) existing outside a Material Access Area that could accumulate to Category I quantities.

B.1.1.3.2. MC&A accounting requirements include:

- Establishing and maintaining an accounting system.
- Ensuring data integrity by instituting sufficient controls on the accounting system.
- Establishing Material Balance Areas as the basis of the accounting structure with key measurement points established to localize inventory differences.
- Entering all material into the accounting system to include form, element, isotope, location, and unique identifier.

- Capturing sufficient detail for item location to ensure the capability to physically access the item within the timeframe defined by the Site and approved by the Site Office.

- Updating the accounting system to reflect nuclear material transactions within timeframes determined by the Site and approved by the Site Office.

- Maintaining the necessary information in the accounting system for reporting to the national database and information system for nuclear materials in accordance with Departmental directives.

- Providing reports within timeframes determined by the Site and approved by the Site Office.

B.1.1.3.3. Measurements and Measurement Control requirements include:

- Measuring the quantity and type of all nuclear material or developing technically defensible estimates.

- Establishing a measurement and measurement control program to assess the effectiveness of determining the quantity and type of nuclear materials.

B.1.1.3.4. Material Containment and Surveillance includes:

- Establishing and maintaining a material containment and surveillance program for detecting, assessing, and responding to unauthorized activities and anomalous conditions and events.

B.1.1.3.5. Physical Inventory includes:

- Conducting physical inventories, in a manner and frequency determined by the Site and approved by the Site Office, to validate that material is in the correct quantities and in the correct authorized locations.

- Evaluating shipper/receiver differences and inventory differences against statistically calculated control limits, within a timeframe specified by the Site and approved by the Site Office, to determine material control.

B.1.1.3.6. Performance Assurance includes:

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- Establishing and maintaining a program for demonstrating and assessing the performance of the MC&A program.

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B.1.1.5. Within NNSA, there are scheduled inventories to ensure full accountability of all components and weapons. While database crosschecks take place every day, physical inventories provide confidence that NNSA knows the location of every weapon and component for which it is responsible. Additionally, DOE participates in Chairman of the Joint Chiefs of Staff (CJCS) directed Stockpile Emergency Verifications (SEVs).

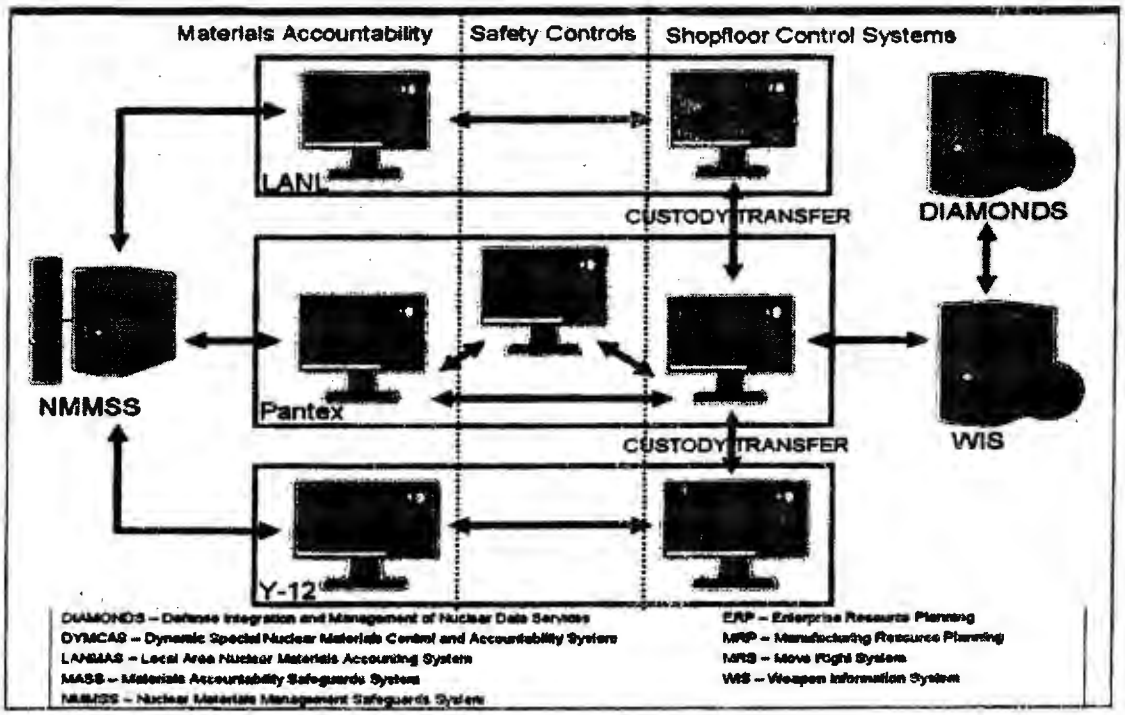

Figure 3. DOE Database Interfaces

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B.1.2. Y-12 National Security Complex

B.1.2.1. Accountability and Control of Secondaries at Y-12. The manufacturing, transfer, and storage of secondaries takes place at the Y-12 National Security Complex in Oak Ridge, Tennessee. Y-12 was built during the Manhattan Project and encompasses a strip of land that is 2.5 miles long by 0.5 miles wide. There are approximately 500 buildings, trailers, and other structures on site. The Protected Area (PA) is encompassed by a double-fenced Perimeter Intrusion Detection and Assessment System (PIDAS) with personnel and vehicular access controls as well as an intrusion detection system. Access authorization to the PA is handled through the visitor control office and is based on recommendations from Y-12 management. Y-12 managers or their authorized representatives may request access to the PA for individuals who meet the requirements below. For unescorted access authorization to the PA, the following are required: security Q-clearance; justified need for access approved by an organization manager to Visitor Control; and successful completion of Site Training Access Requirements. Y-12 has 4 Material Access Areas and 45 Material Balance Areas.

B.1.2.2. Material Access Area (MAA). Access to MAAs is controlled by electronic badge readers or authorization lists, personnel scanning and detection instrumentation, and individual identification by the portal security officer. Authorization for unescorted access to an MAA requires individuals to satisfy the requirements for accessing the PA, meet the requirements of the HRP, and maintain required training (area-specific, radiological worker, nuclear criticality safety, and security). These requirements may vary somewhat depending on facility-specific requirements.

B.1.2.2.1. Access authorization to the MAA, as well as authorization removal, is handled through the Visitor Control Office. A list of those authorized to request access for others to an MAA is restricted to division or department managers. Each request is reviewed by Security, Divisional Management, and the individual's supervision.

B.1.2.2.2. Visitors are permitted into the MAA when operationally necessary. Visitor access requirements for training purposes are generally less stringent than for normal facility personnel. However, facility escorts are required to ensure visiting personnel are properly controlled and monitored. Strict personnel accountability is enforced.

B.1.2.2.3. During normal shift operations, Category I and II materials/components not being actively worked are stored in vaults, vault-type rooms (VTRs), or cages unless a deviation is approved. Additional material surveillance enhancements are in place for certain areas as determined by vulnerability assessments. Access to the storage areas requires the two-person rule and security approval. All areas are alarmed unless accessed and attended by at least two persons. During off-shift, all alarms are activated in the MAAs as well as the storage areas.

B.1.2.2.4. Authorized SNM removals from MAAs are accomplished by use of designated, dedicated SNM exits from MAAs. These exits are enclosures that are physically integral parts of the respective buildings. The enclosures have a locked, alarmed door between them and the MAA and a locked door to the PA. When SNM is to be removed from

one MAA and transported to another MAA, an SNM vehicle with special security features is used. The procedure used to load or unload DOE secure Safeguards Transporters (SGTs) is that the SGT is "form fitted" to the MAA outer walls opening within prescribed limits. The SGT therefore becomes an extension of the MAA walls during loading and unloading.

B.1.2.3. Material Balance Area (MBA). The nuclear material used, processed, or stored in the MBAs is controlled in accordance with the graded safeguards concept. All MBAs containing Category I quantities of special nuclear material are contained within MAAs. Controls for each MBA are formally documented in local operation procedures, which are reviewed for compliance with applicable Nuclear Material Control and Accountability (NMC&A) procedures. MBA data sheets and maps formally document geographic boundaries and functions of the MBAs and identify material types, forms, and quantities permitted.

B.1.2.3.1. Each MBA has an MBA Custodian and an Alternate MBA Custodian. The custodian's primary responsibility is to provide NMC&A oversight and guidance to MBA personnel to assist them in ensuring that NMC&A requirements are fully implemented. While Y-12 MBA custodians may be responsible for more than one MBA, they are not authorized for "hands-on" activities (i.e., cannot handle, move, or process material); they do not supervise or direct the work of MBA personnel (i.e., cannot direct the movement or disposition of material); they do not have access to input or change information in the NMC&A database and workflow programs (they have read-only access to WorkStream™/ Dynamic Special Nuclear Materials Control and Accountability System (DYMCAS)); they cannot approve transfers of material within Y-12; and they do not sign transfer documentation. MBA custodians do not conduct inventories but do assist with the reconciliation of inventories.

B.1.2.4. Portal Monitoring. There are no vehicular exits from MAAs in Y-12. Exits from MAAs in Y-12 are of three types: (1) personnel exits, (2) non-SNM material exits, and (3) SNM material exits. The PA and MAAs have SNM monitors and metal detectors at each routine access point. Metal detectors monitor personnel to prevent the introduction of weapons into a facility and prevent the removal of shielded SNM. The SNM and metal detectors are functionally tested daily. Preventive maintenance is performed quarterly on both SNM and metal detectors. Performance testing of SNM and metal portal monitors are scheduled and conducted for NMC&A by Safeguards and Security as prescribed in DOE M 470.4-2, *Physical Protection*. The test results are provided to NMC&A and distributed to MBA managers for their review and records.

B.1.2.4.1. Personnel exits are controlled by a Security Patrol Officer (SPO) in a guard booth equipped with a telephone and a radio with a duress alarm. All personnel exiting an area must pass through a combination SNM and metal detector under the direction of the SPO. Packages and other personal belongings are separately examined by the SPO, both visually and with a radiation detector (as needed).

B.1.2.4.2. Prior to removal of materials from the MAA, the materials are examined either by measurement or verification of documentation that no SNM is present. Only authorized personnel may be present when material is being transferred from the MAA. Materials staged for entry are inspected by the Protection Force for detection of prohibited items.

B.1.2.5. Accountability. Y-12 utilizes a standardized set of processes and procedures to account for and control of secondaries in their custody. This report will use secondaries as the example when discussing Y-12 accountability procedures. Each secondary is permanently marked with a unique identifying number that can be easily seen. In addition, each secondary has a traveler card that accompanies it. The traveler indicates the unique identifying number. For inventory purposes, a pressure-sensitive, color-coded, pre-numbered bar code inventory sticker is applied to each secondary's unique traveler card.

B.1.2.5.1. Once work is complete on the secondary, it is either placed into a bomb body or a container and then stored or shipped. If placed within a bomb body, the body is sealed and a tamper indicator devise (TID) is affixed. The secondary's information is included in the build book for the bomb body. The secondary is now tracked as part of the bomb body. The accountability process tracks the bomb body identifying number, the TID number, and the TID integrity.

B.1.2.5.2. If the secondary is stored in a shipping container, the secondary's identifying number is stenciled on the outside of the container and a TID is applied to the container. Accountability is maintained by verifying the identifying number on the container, the TID number, and the TID integrity.

B.1.2.6. Accountability Database. Y-12 maintains the DYMCAS accounting system for tracking nuclear material inventories, documenting nuclear material transactions, issuing periodic reports, and verifying and evaluating loss detection elements. The accounting system is a near-real-time computer system that meets the reporting requirements in DOE M 470.4-6. Generally accepted accounting principles, as promulgated by the Financial Accounting Standards Board, are used as the basis for design and operation of the nuclear materials accounting system at Y-12. It is structured to localize inventory differences and provide a system of checks and balances to detect errors and discrepancies. The accounting system also includes a clear audit trail for transactions affecting the nuclear material inventory. The Y-12 accounting system is an integrated system distributed site-wide to facilitate the control and accountability of nuclear materials. The computer architecture is designed with built-in redundancies to facilitate continuity of operations.

B.1.2.6.1. Y-12 uses DYMCAS in a layered defense for detecting loss of nuclear material through theft, diversion, or error, to assure rapid reconciliation of nuclear material inventories, and to facilitate timely notification and reporting of nuclear material shipments and receipts to and from the site. DYMCAS performs NMC&A functions in accordance with DOE M 470.4-6 and other related orders and regulations. It was developed and is maintained by the Y-12 Technical Computing Department. The Y-12 NMC&A Department is the system's administrative owner. DYMCAS functionality is tailored to the unique material processing requirements of Y-12 in accordance with NMC&A specifications. DYMCAS tracks data about nuclear material location, quantity, identity, and form. Changes in attribute values that occur as material is moved or used in manufacturing operations are captured near-real-time in DYMCAS transactions. DYMCAS provides information on the current value of an attribute (e.g., the current location of an item) as well as historical values (e.g., previous locations for an item at any given time). DYMCAS tracks information for every item in Y-12 that contains

nuclear material. It tracks the weight of the nuclear material in the item, as well as the weight of specific nuclear elements contained in the item (e.g., uranium) and the weight of specific nuclear isotopes in the element (e.g.,U^{235}). DYMCAS can track multiple isotopes within each element, and multiple elements within each item. The DYMCAS database currently contains data on approximately 1,400 distinct data attributes and 6,000 total attribute occurrences in 340 database tables. The total database contains approximately 185,000 items. The system receives around 59,000 accountability transactions per month from Y-12's Shop Floor Control (SFC) system. In total, DYMCAS processes an average 180,000 accountability transactions monthly which include transactions associated with physical inventory reconciliation.

B.1.2.6.2. The NMC&A Department Manager is assigned the responsibility, accountability, and authority for the operation and management of the nuclear materials accounting system at Y-12. NMC&A personnel are responsible for the overall upkeep and operation of DYMCAS. They are also responsible for reporting information to the Nuclear Material Management and Safeguards System (NMMSS), the handling of all off-site shipments and receipts, the month-end closing process, and maintaining the site's accounting structure within the respective applications.

B.1.2.6.3. The Nuclear Materials Systems section of the Technical Computing Department provides additional support for the system. They are responsible for maintaining the classified DYMCAS computer system network, providing software support for DYMCAS and functioning as the database administrator for DYMCAS. NMC&A personnel grant access to DYMCAS on a strict need-to-know basis.

B.1.2.6.4. Accountability data is classified up to Secret - Restricted Data (S//RD). Extensive effort went into designing DYMCAS to be the most secure and reliable system in Y-12, with need-to-know access control enforced down to the individual record level, layers of redundancy in the hardware, data, networks and power supply, and effective continuity of operations features and plans. Interfaces were built between DYMCAS and the Y-12 SFC System, the Laboratory Information Management System (JLIMS), the Graphical Facility Information Center (GraFIC), the NMMSS, and other DOE site systems.

B.1.2.7. Integration of DYMCAS with Other Systems. Y-12's SFC system uses WorkStream™, a commercial off-the-shelf package from Applied Materials, Inc. Y-12 designated WorkStream™ to be the single user interface for collecting material transaction data and directed that DYMCAS utilize WorkStream™ as a data collection engine. SFC is a manufacturing execution system used to develop manufacturing plans which define specific operations and routes for material products, to schedule and track parts through manufacturing steps, and to capture data as parts are processed through fabrication, assembly, disassembly, inspection, etc. There is some overlap in the items and data maintained in the DYMCAS and SFC systems.

B.1.2.7.1. Material transactions containing accountability and/or manufacturing data are entered by operations personnel into WorkStream™, verified, and automatically routed to DYMCAS. WorkStream™ and DYMCAS maintain separate databases -

the WorkStream™ database designed for current and planned manufacturing activities and the DYMCAS database for current and historical accountability activities.

B.1.2.7.2. DYMCAS and SFC/WorkStream™ reside on the same computer hardware, the Operating Center "C" (OCC). For security reasons, the OCC is dedicated to DYMCAS and WorkStream™ - no other non-related applications run on it. The OCC is classified and housed in two secure facilities that have limited and controlled access.

B.1.2.8. Storage of secondaries at Y-12. Each storage location within the warehouse is locked, alarmed, and under two-person control. Secondaries in storage are always containerized, secured with TIDs, and clearly marked with assembly ID numbers. They are stored in either the storage warehouse or in other specially designated vault-type room storage areas.

B.1.2.9. Inventories. Nuclear material inventories are managed by MBA. Physical inventories of processing and storage areas are conducted at regular intervals in accordance with DOE/NNSA requirements. Items on inventory must be on a measured basis or technically justified estimate or factor approved by NMC&A.

B.1.2.10. Storage MBAs. Inventorying of storage MBAs primarily consists of ensuring that all items in the MBA are accounted for and have measured values or technically justified estimates associated with them. Movement of material to and from the MBA is stopped until NMC&A has given production permission to resume daily activities.

B.1.2.10.1. The performance of physical inventory in Category I MBAs is accomplished using the two-person rule. Physical inventory is accomplished primarily using a bar code listing. A bar code reader is used by MBA inventory personnel to read the bar codes that have been placed on each secondary's identifying traveler card. The information from the bar code reader is subsequently uploaded by computer, sorted, error checked, and processed to the DYMCAS inventory data file. If the bar code is not readable, the storage MBA owner completes an inventory sheet and returns it to NMC&A.

B.1.2.10.2. Visual confirmation of the item's presence in a container is required except where the container is protected by a TID or the container is determined to be intrinsically tamper-indicating. Each Category I and II MBA must establish a documented approach for ensuring that no material is present in fissile material storage containers that are thought to be empty. These measures may include application of TIDs on empty fissile material storage containers, storage in a configuration that precludes the presence of material (e.g., safe bottles stored horizontally with out lids), visual inspection, etc. or a combination of the above. For those items that bear a TID, the TID integrity is verified during the inventory process in accordance with Procedure Y20-NM-110.

B.1.2.10.3. Inventory data uploaded into DYMCAS marks the end of an MBA inventory period and the beginning of the inventory reconciliation process during which a discrete item reconciliation and weight reconciliation is performed using DYMCAS inventory data and transaction history information.

B.1.2.10.4. A discrete item reconciliation accounts for each item, comparing items inventoried with "book" items in DYMCAS. The weight reconciliation accounts for each item by reporting unit. Weights are reconciled at the item, element, and isotope level for each material type in each MBA.

B.1.2.10.5. DYMCAS provides emergency inventory capability, supports propagation of variance ID limit calculations, handles error processing, and provides inventory and shipment information to NMMSS and shipment information to other DOE/NRC site systems. Over 120 menu forms provide NMC&A and other users with access to information and software for monitoring, managing, and controlling material processing.

B.1.2.10.6. NMC&A requirements for performing physical inventories are found in procedures Y20-NM-005, *Nuclear Material Inventory and Equipment Holdup Requirements*.

B.1.3. Los Alamos National Laboratory (LANL)

B.1.3.1. Accountability and Control of Pits. The manufacturing, transfer, and storage of plutonium pits, also called triggers or primaries, at LANL are limited to Technical Area 55 (TA-55). TA-55 consists of the PA, administrative buildings, and a single MAA – the Plutonium Facility, Building PF-4. The TA-55 PA is encompassed by PIDAS with single Entry Control Facility for personnel and vehicles. The manufacturing, transfer, and storage of pits are restricted to the Plutonium Facility. The Entry Control Facility and the emergency exits have systems in place to detect and assess the unauthorized removal of SNM from the Plutonium Facility. Transfers of pits from LANL to DOE's Secure Transportation group are made under the protection of the Protective Force.

B.1.3.2. SNM Portal Monitoring. The SNM Portal Monitoring Program provides detection of SNM at the MAA and PA access points. Portal monitoring provides assurance that any attempt at unauthorized removal of target quantities of SNM will be detected. To comply with the exit search requirements of DOE Manual 470.4-2, *Physical Protection* and DOE Manual 470.4-6, LANL searches individuals, packages, and vehicles leaving the MAAs, Special Facility MAAs, and PAs for unauthorized removal of SNM. SNM and metal detectors and x-ray detection are essential components in the defense-in-depth structure for safeguarding against theft.

B.1.3.3. Plutonium Pit Accountability. In the pit assembly sequence, the pit is marked with pit type, pit serial number and part number. This pit marking identification (ID) is entered in the Materials Accountability Safeguards System (MASS) and as this item (the pit) moves through the remaining assembly sequences, the location and required attributes are updated in MASS. Therefore, MASS is used to track the location and process status of the in-process as well as completed items. The pit marking ID consists of the following: Pit Type (YYY) three digits; Serial Number (XXXX) four digits as provided by Production Control and documented in a pit assembly traveler; and the part number as defined by the Pit Assembly Drawing. The pit marking ID is used from this point forward to account for the location and

custody of the pit. While the pit is within the Production Facility, it is moved in a rack where the pit marking ID is always visible.

B.1.3.3.1. Because of limited space, predetermined pits are containerized for long-term (<364 days) storage in ALR-8 containers. LANL personnel (PMT-3) pack the selected pits in protective structures called birdcages, load them into the ALR-8s, apply a LANL-approved tamper indicating device (TID), and attach an identification form. A copy of the identification form is attached to the traveler; a copy is maintained in PMT-3 files.

B.1.3.3.2. The pits are also containerized for an offsite shipment in an authorized, Type B container. The pit type and serial number is entered on the shipping manifest, double wrapped in an opaque envelope and taped to the Type B container for an offsite shipment. The ALR-8 and the shipping containers are sealed with a LANL Multi-lock TID that is applied in accordance with MC&A requirements.

B.1.3.3.3. Procedural requirements for the control, movement, and storage of plutonium at TA-55, including pits, are detailed by a site-specific procedure consistent with the requirements of DOE Order 470.4, *Safeguards and Security Program,* DOE Manual 470.4-6, and the LANL MC&A Plan, which is based on the Graded Safeguards concept of providing levels of control for given types and quantities of nuclear material. All accountable nuclear material and specific attributes are recorded on a near-real-time basis to track quantity, material type, and location of the material. MC&A requirements are based on the attractiveness level and quantity of material in the MBAs. Each MBA is authorized to contain a category level of SNM based on the quantity of SNM needed for operations and the implementation of requisite security systems and procedures as defined by DOE Orders and Vulnerability Assessment results. The multiple MBAs in the Plutonium Facility have similar nuclear MC&A functions and responsibilities.

B.1.3.3.4. The Material Control and Accountability complies with the following key NNSA requirements and corresponding guidance:

- DOE Policy 470.1, *Integrated Safeguards and Security Management Policy.*
- DOE Order 470.4, *Safeguards and Security Program.*
- DOE Manual 470.4-1 chg 1, *Safeguards and Security Program Planning and Management.*
- DOE Manual 470.4-2, *Physical Protection.*
- DOE Manual 470.4-6 (change 1), *Nuclear Materials Control & Accountability.*
- LANL's Material Control and Accountability Plan.

- LANL's TA55-AP-585, *Nuclear Material Control and Accountability Implementation Plan.*

B.1.3.3.5. Accountability Database. The Materials Accountability Safeguards System (MASS) is the official SNM inventory database at LANL. This accounting system records all material transactions in near real-time pertinent to nuclear material processing, storage, and transfers. The time requirement for updating MASS transactions depends on the category quantity of the nuclear material. Category I material transactions (e.g., pits) must be updated in MASS within 2 hours of actual material movement. Access to MBA information is limited to those who have a need-to-know, and is commensurate with work tasks.

B.1.3.3.6. MASS maintains detailed item inventory records for each MBA and can generate reports by material type, composition, location, and process status. Inventory balances are reconciled with MASS. MASS fulfills report-generating requirements and supplies transaction and inventory data to the Nuclear Material Management and Safeguards System (NMMSS), the national database that captures nuclear material transactions and inventory data.

B.1.3.3.7. All external nuclear material transactions, internal transaction activity, inventory adjustments, and inventory data are recorded in MASS per DOE M 470.4-6. External transactions are documented on DOE/NRC Form 741s – Nuclear Materials Transaction Reports – that serve officially to report the transfers of nuclear materials shipments/receipts between sites. Transfer histories, source documentation from various organizations at the Laboratory, and the transaction history at NMMSS provide the necessary audit trails to support LANL accountability balances.

B.1.3.3.8. All personnel with transaction privileges in MASS are required to participate in the HRP. All MASS users are trained to a formal training course to assure that consistent and compliant accounting techniques are implemented as required.

B.1.3.4. Storage of Pits in the Plutonium Facility TA-55 SNM Vault. The TA-55 SNM vault provides storage in support of Plutonium Facility processing of nuclear materials and for use as a materials archive. The vault has a two-person mandatory surveillance. Security Operations Consulting completes weekly inspections to ensure all security monitoring equipment properly functions inside the vault. This access authorization is controlled by the vault custodian, who monitors the mandatory training requirements and either allows access or removes access to the vault.

B.1.3.4.1. Qualified users of the TA-55 SNM vault must make an appointment 24 hours in advance to store or retrieve material. Vault operators prepare proper storage of the material in compliance with various criticality limits. Vault operators complete required transactions on MASS before physical transportation of the material. Material is transported according to TA55-WI-034, *Packaging, Handling, Transporting and Storing Nuclear Materials* to the vault by two qualified fissile material handlers (FMHs) and authorized vault users. At the vault, vault operations team members complete a transfer check verifying the material type (MT), the lot identification (LOT ID), a properly applied TID and proper

packaging containerization. Once all verification has been completed, the two FMHs shelve the material in a storage location in the vault according to TA55-WI-001, *Shelving and/or Retrieving Items in the Vault*. A complete inventory of the location where the material is to be stored must be completed. This inventory is completed by one FMH verifying the MT, LOT ID, SNM and TID for each container in the location. The second FMH verifies this information against the MASS location printout. The item to be shelved is verified and placed in the location only after all other containers have been properly inventoried. The two FMHs signed the official MASS location printout which is processed by the Accountability Team. Items to be retrieved are handled in the same manner.

B.1.3.5. Inventories. The LANL MC&A Group performs a periodic inventory on the holding of all MBAs to validate that these MBAs are operating within their approved category. All Category I storage vaults are inventoried twice a year; Category I processing areas are inventoried every other month. Unscheduled inventories may be performed when there is an off-normal event (e.g., emergency evacuation of the Plutonium Facility).

B.1.4. Pantex

B.1.4.1. The Pantex Plant in Amarillo, Texas, is where nuclear weapons are assembled, disassembled, and maintained. Components from across the nuclear weapons complex are shipped to, stored at, and built into weapons at Pantex. Additionally, Pantex disassembles weapons received from the DoD for surveillance, maintenance, and retirement/dismantlement. The Pantex Plant encompasses 16,000 acres and contains two primary MAAs (Zone 12 and Zone 4), located within a PA. The MAAs contain all the Category I, II, III, and IV quantities of SNM located at the site. The two MAAs are MBAs for nuclear material accounting purposes. These MBAs are each surrounded by a double-fenced PIDAS with personnel and vehicular access controls as well as an intrusion detection system. Access to the PAs, MAAs, vaults, bays, cells, and magazines is controlled by an automated system known as Argus. Argus is an automated access control application that utilizes a badge reader, individual PIN number authentication, and hand geometry verification. Access authorization in Argus to these areas is handled through the Access Control office and is based on recommendations from Pantex management. Pantex managers or their authorized representatives may request access to the PA for individuals who meet the requirements below. For unescorted access authorization to the PA, the following are required: security Q-clearance; HRP certification; justified need for access approved by an organization manager to Access Control; and successful completion of Pantex specific training requirements.

B.1.4.2. MAA. Access to an MAA is restricted to "Q" cleared HRP certified employees or employees/visitors who are escorted by a HRP certified employee. Access to MAAs is limited by interrelated systems that include identification badges, access authorization, training and certification, and personnel authorization. MAA access portals are controlled by Security Police Officers (SPOs). Authorization for unescorted access to an MAA requires individuals to satisfy the requirements for accessing the PA, as well as meeting the requirement of the HRP and maintaining required training (area-specific, radiological worker, nuclear criticality safety, and security).

B.1.4.2.1. Access authorization to the MAA, as well as authorization removal, is handled through the Access Control Office via Argus. Personnel authorized to request access for others to an MAA is generally restricted to division or department managers. Each request is reviewed by Security (Access Control), HRP Management, Divisional Management, Training Department and the individual's supervision.

B.1.4.2.2. During normal shift operations, weapons and weapon components not being actively worked are stored in vaults, bays, cells, and magazines, under dual lock and Argus systems, unless a deviation is approved. Additional material surveillance enhancements are in place for certain areas as determined by vulnerability assessments. Access to the storage areas requires the two-person rule and security approval. All areas are alarmed unless accessed and attended by at least two persons. During non-operating hours, (i.e., facilities are not accessed for work) these facilities are also monitored by volumetric detection systems and/or balanced magnetic door alarm systems which are monitored in the Security Central Alarm Station and the Secondary Alarm Station.

B.1.4.2.3. Authorized weapon/weapon component removals from MAAs are accomplished by use of designated, dedicated SNM exits from MAAs. These exits are located at the boundaries of the MAAs. The exits are hardened security stations with the following security features: SPOs, access control portals (Argus), radiation portal monitors, metal detectors, and x-ray machines. When weapons/weapon components are to be removed from one MAA and transported to another MAA, a vehicle with special security features is used.

B.1.4.3. MBA. The weapons/weapon components processed or stored in the MBAs are controlled in accordance with the graded safeguards concept. All MBAs containing weapons, pits, or secondaries are contained within MAAs. Controls for each MBA are formally documented in local operation procedures, which are reviewed for compliance with applicable MC&A procedures. The Pantex MC&A Plan and maps formally document geographic boundaries and functions of the MBAs and identify material types, forms, and quantities permitted.

B.1.4.3.1. Each MBA has an MBA Custodian and at least one Alternate MBA Custodian. The custodian's primary responsibility is to provide NMC&A oversight and guidance to MBA personnel to assist them in ensuring that NMC&A requirements are fully implemented. MBA Custodians and Alternates are employees of operational/production groups. MBA custodians are not responsible for more than one MBA. Pantex MBA custodians are responsible for the following:

- Perform Transfer Checks for MBA receipts/shipments of nuclear material.
  - Verify container or item count.
  - Validate container and TID integrity (if applicable).
  - Compare serial numbers with shipping documents/bar code cards.

- Document the Transfer Check on the PX-3400A, SNM/Nuclear Material (NM) Move Order or Automated Shipping Order.
- Approve SNM/NM transfers, receipts, and shipments.
  - Material Move Orders (signature required).
  - Automated Shipping Orders.
- Ensure that tracking data base transactions for SNM/NM transfers are performed.
  - SNM Tracking Transactions (Classified Mainframe).
  - Track Right Tracking Transactions (Track Right System).
- Coordinate physical inventories of SNM/NM.
- Ensure that the Physical Inventory Plan distributed by the Safeguards Department is carefully reviewed and adhered to.
- Coordinate, by written documentation, any deviations to the normal inventory, with Nuclear Material Representative/Alternate.
- Reconcile, at the request of the Nuclear Material Representative/Alternate, any discrepancies to the physical inventory.
- Coordinate special inventories.
- Ensure that personnel assigned to perform physical inventory functions are properly trained and qualified.
- Resolve nuclear material alarms.
- Notify the Nuclear Material Representative/Alternate of any changes in location responsibility to another division. This involves additions/deletions of locations to/from the affected MBA.

B.1.4.3.2. MBA Custodians/Alternates for MBA 04 shall:

- Coordinate Daily Administrative Check and physical count requirements.
- Ensure Daily Administrative Check is documented on Facility Preoperational Check sheet.

- Coordinate semi-annual Serial Number Verification for MBA 04.
- Coordinate confirmation measurement requirements for MBA receipts/shipments of nuclear material.

B.1.4.3.3. MBA Custodians/Alternates for MBA 12 shall:

- Coordinate Daily Administrative Check.
- Ensure Daily Administrative Check is documented on Facility Preoperational Check sheet.
- Coordinate Weekly Physical Count for MBA 12.
- Coordinate Monthly Serial Number Verification for MBA 12

B.1.4.4. Portal Monitoring. Exits from MAAs at Pantex are of two types: (1) vehicular, and (2) personnel exits. The PA and MAAs have SNM monitors and metal detectors at each routine access point. SNM and metal detectors monitor personnel to prevent the removal of shielded SNM. The SNM and metal detectors are functionally tested daily. Preventive maintenance is performed quarterly on both SNM and metal detectors. Performance testing of SNM and metal portal monitors are scheduled and conducted for NMC&A by Safeguards and Security as prescribed in DOE Manual 470.4-2. The test results are reviewed by the MC&A Scientist.

B.1.4.4.1. Personnel exits are controlled by an SPO in a security station. The stations are equipped with Argus portals that contain metal detectors. The radiation portal monitors are separate from the Argus portals. All personnel exiting an area must pass through SNM portals and Argus portals under the direction of the SPO. Packages and other personal belongings pass through an x-ray machine operated by the SPO. Visual inspections and hand-held radiation detectors are utilized as needed.

B.1.4.4.2. Prior to removal from the MAA, the materials are examined either by measurement and/or verification of documentation that no SNM is present. Only authorized personnel are responsible for transferring material from the MAA. Materials staged for entry are inspected by the ProForce for detection of prohibited items.

B.1.4.5. Weapon, Pit, and Secondary Accountability. Pits and secondaries come into the Pantex Plant already assigned part numbers and serial numbers. Weapons returned from DoD also have serial/part numbers that were originally applied at Pantex. Pantex annotates newly built or rebuilt weapons with part/serial numbers. They shall be marked on that portion of the weapon or container that encloses the main charge and on a part not removed easily. Weapons can be marked by any of the following methods: Mechanically engraved, Die Impact Impression, Freehand, Impression, Sandblast Impression, and Surface Conversion. All weapons and components have an accompanying traveler card that has a bar code and lists all the identifying data for the weapon/component. Accountability and control of all nuclear weapons

and nuclear components is maintained via tracking databases, visual verification, locked and alarmed storage or work locations, armed guards, and two-person control teams.

B.1.4.6. Accountability Databases. The Pantex Plant uses a number of databases to track, account, and control all nuclear weapons and nuclear weapon components.

B.1.4.6.1. Manufacturing Resource Planning (MRP) system: manufacturing and production database/system which schedules and tracks actions, issues orders, directs movements, accepts/changes custody, etc.

B.1.4.6.2. Move Right System (MRS): tracks materials (nuclear material and high explosives) so the plant does not violate criticality safety or explosives safety parameters. MRS verifies locations of materials before moves are made to prevent safety risks.

B.1.4.6.3. Local Area Nuclear Materials Accounting System (LANMAS): Nuclear materials accounting system that tracks on-site and off-site transfers of assets as well as actual item weights. LANMAS polls MRP and MRS every two minutes. Therefore, all nuclear material transactions that occur during that two-minute window are captured in LANMAS.

B.1.4.6.4. Nuclear Materials Management and Safeguards System (NMMSS): The national database for nuclear materials. Provides nuclear materials information relating to safeguards, materials management and production, inventory quantities and valuations, and other information requested or required by DOE.

B.1.4.6.5. Weapon Information System (WIS): WIS is the NNSA stockpile accountability system that tracks nuclear weapons in DoD custody and at the NNSA Pantex Plant. In addition, the WIS tracks all accountable components; nuclear material quantities; Joint Test Assemblies and trainers with accountable material; limited life components; inventory costs for items in DoD and NNSA custody; provides information for the master nuclear schedule; quality assurance; and a complete transaction history. The NNSA WIS exchanges information with DoD's DIAMONDS on a daily basis to report and record all status changes to the stockpile as well as any change of components.

B.1.4.6.5.1. The WIS is a transactional-based system that requires each and every change to be supported by a transaction. In addition to the reporting of transfer documents, Daily Change Reports (DCRs) are reported from the Pantex Plant reflecting shipments, receipts and all status changes of weapons activity.

B.1.4.6.5.2. The Atomic Energy Act as amended in Title 42 of the United States Code requires checks and balances between the Military and Civilian branches of government for the utilization of nuclear weapons. A memorandum of understanding between DoD and NNSA requires a reconciliation to be performed between the two agencies at the end of every month to ensure that all nuclear weapons are accounted for in the stockpile. The DoD/NNSA month-end reconciliation provides the assurance that all documentation required for the transfer of weapons as well as the diligence involved in reporting all changes in the system have been accomplished.

B.1.4.6.6. During disassembly and assembly of a weapon, transactions are created in Pantex's Manufacturing Resource Planning (MRP) system for each item removed and each item added to an assembly. Routing, operation, and disposition instructions are provided. As parts are assembled into higher-level assemblies, MRP tracks all parts that went into that assembly. As a component is disassembled, each part is tracked individually when separated from the higher-level assembly. All operations are conducted under two-person control. Components with accountable nuclear material are also tracked in Pantex's MRS and LANMAS to ensure safety parameters are met and all accountable material is properly accounted for.

B.1.4.6.7. Once a weapon is disassembled, a "disassembly complete" transaction is entered into MRP. At this time, the weapon ceases to exist (but all the components that made up that weapon are tracked). MRS and LANMAS still track the individual components/ parts that composed the weapon. A DCR is created to reflect the reduction of the inventory by that weapon. The DCR is used to update the Weapon Information System (within 24 hours), which then is used to update DoD's DIAMONDS database to reflect deletion of that weapon. All databases can only be accessed by trained individuals who are HRP certified.

B.1.4.6.8. As a weapon is built, an "assembly complete" transaction is entered in MRP to indicate the unit now exists. Both MRS and LANMAS are updated to reflect the higher-level assembly. A DCR is transmitted to update the WIS within 24 hours; WIS is used to update DoD's DIAMONDS.

B.1.4.7. Storage of Weapons, Pits, and Secondaries at Pantex. Weapons and pits are stored in bays, cells, and magazines. Each of these facilities is comprised of a double locked door and Argus compartmentalization. When a weapon is moved into one of these facilities, a transaction detailing the exact location is made in MRS, which updates LANMAS, as mentioned above.

B.1.4.7.1. Secondaries are stored in vaults, bays, cells, and magazines. Vaults are Argus non-compartmentalized facilities. Accounting is performed in the same manner as weapons and pits.

B.1.4.8. Weapons Inventories.

- Semi-Annual Inventory in MBAs 4 and 12 (April/October) - Sample method.
- Monthly Serial number verification in MBA 12 - 100%.
- Semi Annual Serial number verification in MBA 04 (January/July) - 100%.
- Weekly Physical Count in MBA 12 - 100%.
- Daily Administrative Check in MBA12 - 100% serial number verification when facility is accessed.

- Physical Count in MBA 4 - 100% count of items when facility is accessed.

B.1.4.9. Pit and Secondary Inventories.

- Semi-Annual Inventory in MBAs 4 and 12 (April/October) – Sample method.

B.1.4.10. Requirements and Procedures. DOE M 470.4-6 Change 1, *Nuclear Material Control and Accountability.* Outlines the requirements as it relates to the control of Nuclear Weapons/Weapon Components. The list includes but is not limited to the following:

- MBA custodians.
- Transfer Checks.
- Nuclear Material Transfers.
- Tamper Indicating Devices.
- Confirmation Requirements.
- Nuclear Material Portal Monitoring.
- Nuclear Material Containment.
- Nuclear Material Surveillance.
- Access Controls.
- Nuclear Material Inventory.

B.1.4.10.1. Pantex MC&A Plan - Document that describes to DOE how Pantex will meet the above requirements.

B.1.4.10.2. DOE M 470.4-2, *Physical Protection* - Establishes requirements for the physical protection of Nuclear Weapons and Nuclear Components.

B.1.4.10.3. DOE M 470.4-5, *Personnel Security* - Establishes overall objectives and requirements for personnel requiring access to weapons and components.

B.1.4.10.4. DOE M 470.4-3, *Protective Force* - Outlines Protective Force requirements.

B.1.4.10.5. *Pantex Site Safeguards & Security Plan* - master planning document that depicts the existing condition of site protection programs.

B.1.4.10.6. MRP II Manual - *Policies, Rules and Transaction Instructions for Nuclear Material and Nuclear Components.*

B.1.4.10.7. P7-3400 - *Material Movement Authorization* - Procedure outlining the move process.

B.1.5. Lawrence Livermore National Laboratory (LLNL)

B.1.5.1. Lawrence Livermore National Laboratory (LLNL) performs pit testing as part of the pit surveillance program and for quality assurance tests on newly-produced pits. All pit work takes place within the most secure facility at LLNL, the Superblock. The Superblock is a single MAA surrounded by a PIDAS. The MAA contains two MBAs; a storage MBA and a processing MBA. All internal transfers of pits within the MAA and between the MBAs are carried out in accordance with DOE Order 470.4-6. LLNL receives pits one or two times a year. The pits, as Category I Special Nuclear Material (SNM), are accounted for and data for these parts is entered and tracked in the LLNL Material Control and Accountability database, Controlled Material Accountability and Tracking System (COMATS), throughout the life of the material at LLNL. All movements of SNM are entered into COMATS when the move occurs. COMATS is a transactional system, and a terminal is located in the room where the SNM movements occur. SNM is stored in an approved SNM vault in Superblock. On occasion, LLNL receives secondaries for environmental testing purposes. The fissile material contained in the secondaries is also accounted for and controlled in COMATS while the material is at LLNL. Record information pertaining to material transfers from LLNL to other sites is also reflected in COMATS and transmitted to the national nuclear material database, NMMSS.

B.1.5.2. Accountability and Control of SNM at LLNL. LLNL receives, stores, conducts operations, and ships pits and secondaries as required for programmatic missions. These items are controlled and accounted for in accordance with DOE O 470.4, *Safeguards and Security Program,* its associated manuals including DOE M 470.4-6 Ch1, *Nuclear Material Control and Accountability Program,* and LLNL *Material Control and Accountability Program.* Most operations with pits and secondaries are conducted in the Plutonium Facility which is located within LLNL's Superblock.

B.1.5.2.1. The Superblock is a set of buildings that comprise a Protected Area surrounded by a PIDAS. The Plutonium Facility contains a single MAA, comprised of two MBAs. Occasionally, programmatic operations may occur with pits and secondaries in one of two temporary MAAs that are activated under a special security plan for that purpose when required. One of these temporary MAAS is with in the Superblock PIDAS, the other outside it.

B.1.5.2.2. Access the Plutonium Facility or temporary MAAs is controlled by ARGUS and the protective force. All personnel with unescorted access to MAAs are cleared, HRP certified individuals who have completed special security and safety training.

B.1.5.2.3. All entry and exits to MAAs have controls in place to detect the unauthorized removal of SNM. The SNM portal monitors and metal detectors, or hand-held

monitors, provide detection capability of SNM at the MAA exit points. SNM portal monitors or vehicle searches and hand-held monitors provide additional capability at the PA exit.

B.1.5.3. Storage of SNM at LLNL. All pits and secondaries at LLNL are stored in vaults within the Plutonium Facility. SNM vaults are managed by MC&A personnel, who are the only individuals with vault combinations. In addition to the combination locks, access to the vaults is controlled electronically by ARGUS. A minimum of two persons, each with line-of-sight surveillance of each other and the nuclear material, are required for vault access.

B.1.5.3.1. All material transactions into or out of the storage vaults are recorded in the LLNL COMATS.

B.1.5.4. Accountability Database. All transactions on pits and secondaries, from their receipt at LLNL until they are shipped offsite, are recorded in COMATS. Each data entry requires one individual to enter the data and a second to verify the data. COMATS is an essentially real-time tracking and accountability system. A computer terminal is located in each room where pits and secondaries would be located, and data is entered just prior to or immediately after a transactional operation.

B.1.5.4.1. Data on nuclear material present at LLNL, including pits and secondaries, are transmitted monthly to the national nuclear materials database, NMMSS. A complete historical record of all nuclear material transactions is maintained by COMATS indefinitely.

B.1.6. Secure Transportation Asset (STA)

B.1.6.1. STA does not perform a formal nuclear weapon accountability function for the DOE. However, since STA takes custody of nuclear weapons and components during ground transportation, custody transfer is documented thoroughly beginning with the mission planning process. Shipment contents are evaluated to assure the shipment cargo characteristics are thoroughly understood and do not pose undo risk to the public, environment, or STA personnel. As such, shipment types and quantities are documented thoroughly through close coordination between STA and the shipper/receiver during the shipment planning process and through the receipting process which is performed under two-person control.

B.2. Standards and Procedures for Transfer of Custody of Nuclear Weapons

B.2.1. DOE and NNSA

B.2.1.1. Internal and External Transfers. The DOE has two categories of custody transfer, internal and external. Internal transfers are defined as transfers between MBAs at a DOE site. For example, moving SNM between two different MBAs at Pantex is an internal transfer. External transfers occur when shipments occur between DOE sites or between the DOE and DoD. An example of a DOE-to-DOE external transfer is the shipping of nuclear components from Y-12 and LANL to Pantex. An example of an external transfer between DoD and DOE is the shipment of retired weapons from a DoD storage location to Pantex for

disassembly. Accountability for external transfers addresses various levels of formal authorization to assure the nuclear weapon/material is transferred in accordance with the NNSA programmatic and safeguards requirements of DOE M 470.4-6. The external transfer process involves various NNSA organizations.

B.2.1.1.1. Material Transfer Orders (MTO) and Transportation Shipping Requests (TSR). External transfers require authorization and planning to coordinate the shipment between the shipper, receiver, and STA. For DOE-to-DOE component shipments, the DOE Albuquerque office will transmit a TSR to the shipper, receiver, and STA. An MTO is generated for transfers between DOE and DoD. If the shipment is originating with the DoD, DTRA will generate the MTO and transmit to STA, the shipper, and the receiver. The DOE Albuquerque office will generate the MTO if the shipment originates at the DOE site, in this case Pantex. The MTO and TSR each detail shipment contents by weapon system or component and quantity.

B.2.1.2. Measurements. Both internal and external transfers require great amounts of control to ensure the security and accountability of the material. All SNM is required to be in a measured state before a transfer can take place. Material measurements are performed by both the shipper and receiver. The values of these measurements are compared to each other and evaluated to assure that theft or diversion of material has not occurred.

B.2.1.3. Transfer Checks. Transfer checks are a common procedure conducted at each DOE site during shipment and receipt of SNM to assure that the items conform to the information on the shipping and receiving documentation. The checks consist of three basic steps: confirming shipping container or item count; validating TID integrity and TID identification numbers; and validating the results of the first two checks with the shipping documents. Transfer check results are then reported to the NMC&A function at the respective site.

B.2.1.4. Certified Program Directory (CPD). The CPD is a list of approved and authorized personnel (by name and location) who have the authority to accept nuclear materials. STA Federal Agents conducting shipments and personnel receiving shipments must be in the CPD in order to accept custody of nuclear material.

B.2.1.5. Requirements for Custody Transfer. Custody transfer of SNM exercises many different functions within the DOE nuclear complex. Everything from accountability and security at a particular site to the transportation and security functions of STA are utilized. There is an array of applicable publications that define the requirements for each function. The main publications that put forth custody transfer requirements are:

- DOE O 452.3, *Management of the Department of Energy Nuclear Weapons Complex*. Requires accountability of nuclear weapons.
- DOE 452.1C, *Nuclear Explosive and Weapon Surety Program.*

- DOE 461.1A, *Packaging and Transfer or Transportation of Materials of National Security Interest.*
- DOE M 470.4-6, *Nuclear Material Control and Accountability.*
- DOE 470.4-1, *Safeguards and Security Program Planning and Management.*
- 10CFR712, *Human Reliability Program.*
- TP 20-11, *General Guidance and Materiel Hazard Information for Nuclear Weapons Components and Non-Nuclear Weapons Designations* (U).

B.2.1.6. Procedures for Custody Transfer. Specific procedures for conducting custody transfers are listed below:

- STA Shipment Planning Desktop Procedure.
- STA Federal Agent Standard Operating Procedure (FASOP).
- STA Site Specific Security Plan (SSSP).
- STA Offsite Transportation Safety Manual.
- Certified Personnel Directory.
- STA Training Program.
- Convoy Commander Course Lesson Plan.
- TP 45-51 Series, *Transportation of Nuclear Weapon Materiel.*
- JNWPS TP 100-4, *Custody, Accountability, and Control of Nuclear Weapons and Nuclear Material.*

B.2.2. Y-12 National Security Complex

B.2.2.1. Internal Transfers. As mentioned in section B.2.1, internal transfers are transfers of SNM between MBAs at a DOE site. WorkStream™ and DYMCAS are the databases used at Y-12 to manage and document the transfer of accountable quantities of nuclear material between MBAs. All internal component moves are carefully coordinated between the shipping and receiving custodians, NMC&A, security, transportation, and a detailed move plan is developed. WorkStream™ produces two copies of a Transfer Document and sends data to DYMCAS relative to the transfer function. Moves take place under armed guard and both WorkStreamTM and DYMCAS monitor the time a component is in transit. One copy of the WorkStream™ transfer document or temporary waybill (also referred to as a move ticket) is retained by the shipping MBA, and one copy is sent attached to the component being transferred. The receiver conducts a transfer check using the move tickets and then performs confirmation of

defensible measurements. Once all checks and measurements are complete, the receiver accepts custody of the component.

B.2.2.1.1. Documentation of Transfer. Transfers are processed in WorkStream™ and documented by the generation of a WorkStream™ move ticket. Detailed information regarding a transfer is also maintained in both the WorkStream™ and DYMCAS databases. Both WorkStream™ and DYMCAS have specific access and protocol controls that are used to manage transfers. These controls help ensure that only authorized individuals perform transfers and that the flow of nuclear materials occurs only between MBAs authorized by NMC&A. Only authorized individuals in NMC&A have the capability to manage transfer access and protocol controls in both WorkStream™ and DYMCAS. A WorkStream™ clocking (transaction) is performed to prepare a transfer document, put material in-transit, and to acknowledge receipt of material. A WorkStream™ clocking acknowledging the receipt of transferred nuclear material is not performed until transfer checks are completed unless approved by NMC&A.

B.2.2.1.1.1. WorkStream™ and DYMCAS also provide the capability to monitor nuclear material that is in-transit between MBAs to ensure that receipt transactions are made as soon as possible, but not to exceed close of business on the work day of receipt. Assigned NMC&A personnel monitor in-transit material via WorkStream™ and DYMCAS daily to ensure that a receipt clocking is performed. Exceptions to completion of WorkStream™ clockings for transfer checks must be approved by NMC&A.

B.2.2.1.1.2. Transfer documents and any other supporting documentation for internal transfers of nuclear materials are retained in accordance with established DOE/NNSA and Y-12 records retention policy.

B.2.2.2. External Transfer: Receipt of secondaries from Pantex. Every shipper of NM to Y-12 is required to obtain approval to ship from the Product Return Liaison and NMC&A prior to transfer. NMC&A does not need to approve Pantex receipts that are direct schedule items. The material types of weapons are known and a ship letter is sent out monthly informing NMC&A of upcoming receipts. A TSR will be generated to detail and schedule the shipment.

B.2.2.2.1. Modes of Receipt. Secondaries are shipped to Y-12 via SGTs. Upon arrival at Y-12, the SGT is directed to a receiving warehouse. The SGT is backed up to the warehouse, is "form fitted" to the building, and is locked in place, essentially extending the MAA to include the trailer and its contents.

B.2.2.2.1.1. The NNSA STA Federal Agents ensure Y-12 receipting personnel are on the CPD before releasing custody of the SNM. Y-12 warehouse receiving personnel accept custody of the trailer by signing the DOE Courier Receipt (formerly DOE Form AD-60, now DOE Form 1540.2).

B.2.2.2.2. Transfer Checks. Transfer checks must be performed within one workday of material receipt. Categories I and II NM are received on SGT, which go directly to temporary secure storage or are off-loading into an MAA. If the SGT is going to be placed in

temporary storage, it is secured until off-loading occurs. The transfer checks will occur when the SGT is off-loaded to ensure that the shipment was received intact. Receiving personnel are required to notify NMC&A within two hours of any discrepancies found during the transfer checks. The transfer checks are documented on a receipt verification form, electronic mail, or a facsimile with the appropriate information.

B.2.2.2.3. Measurements. All incoming secondaries are subjected to a confirmation of defensible measurements after the completion of the transfer checks. The confirmation measurement must be accomplished within one day of receipt and, for secondaries, consists of a gross weight check and radiation readings. These measurements confirm the presence of special nuclear material and verify the weight of the unit. These readings provide positive assurance that the shipping containers hold the proper type secondary. Y-12 personnel have been trained on the exact procedures and locations in which to perform radiation readings.

B.2.2.2.4. Documentation. After transfer checks and measurements, Y-12 warehouse material controllers prepare a Y-12 Receiving Report and a Y-12 Verification of Receipts. Both forms are sent to Y-12 NMC&A Shipments and Receipts personnel for use in DOE/NRC Form 741 preparation and to confirm and verify electronic shipment data from Pantex.

B.2.2.2.4.1. The data regarding the shipment is sent to Y-12 electronically from Pantex using the Secure Information Management Exchange System (SIMEX). The data is imported into DYMCAS and is used to prepare the DOE/NRC Form 741. Each shipped item is entered into DYMCAS. Once the DOE/NRC Form 741 data is finalized in DYMCAS, the detailed data related to unit/parts is transmitted to WorkStream™, which then controls all activities associated with the unit/part.

B.2.2.2.4.2. DYMCAS automatically feeds summary data to NMMSS. The Form 741 data is finalized as a specific data file on DYMCAS. Y-12 communications personnel retrieve and transmit these data files to NMMSS via SIMEX every day.

B.2.2.3. External Transfer: Shipments to Pantex. Pantex is aware of all the material coming to their site; shipments are under directive schedule and consist of known material types. Therefore, Y-12 NMC&A is not required to obtain written permission to ship to Pantex. Prior to shipment, defensible measurements are made on items unless the existing measured values have been ensured and the integrity of the item has not been jeopardized. The majority of shipments from Y-12 are via SGT. Prior to transferring custody of the components to the STA Federal Agents, Y-12 personnel fill out the DOE Courier Receipt, list the items and appropriate identifying information, and ensure the STA Federal Agents accepting custody are on the CPD. Once STA confirms the to-be-shipped material matches the Courier Receipt, they sign the form accepting custody of the shipment.

B.2.3. LANL

B.2.3.1. Material Custody Transfers. The accountability process for nuclear material transfers covers internal and external transfer activities. The MC&A objectives for material transfers at LANL are to deter and/or detect theft or diversion by ensuring that all authorizations are in place and to provide an audit trail record of transfers. In addition, transfer checks, measurements, shipper/receiver analysis, and timely responses to abnormal conditions ensure timely detection.

B.2.3.1.1. Internal Material Transfer. Internal transfers are transfers of NM between MBAs. Procedures are in place to deter and/or detect unauthorized removal of material during transfers. An NM custodian cannot serve as both shipper and receiver for any given transfer. All transfers are documented and have the appropriate authorizations. Pits are required to be in a defensible measured state before an internal transfer takes place. Receiving NM custodians must assure that the material is in a defensible measured state before providing the authority to ship the material unless the purpose of the transfer is to obtain measurement values for the material. Internal transfers are initiated by NM custodians or their designees, and documented in MASS. NM custodians or their designees are required to obtain authorization from the receiving NM custodian or their designee before shipment. MASS is the mechanism for documenting transfer checks and all associated inventory data.

B.2.3.1.1.1. All transactions at LANL are recorded when changes affect the inventory balance during the accounting period in which they occur. Processes are in place to assure that LANL can satisfy the authentication of material, measurement accuracy, storage requirements, and transportation requirements. Transfers of nuclear material are primarily based on discrete item accounting. All transfers meet the requirements of DOE M 470.4-6.

B.2.3.1.1.2. The LANL MC&A Group has established administrative timeliness goals of two hours for pits for reporting MASS transactions. The receiver must complete a transfer check at the time of receipt. The check shall include verification of shipping container or item count, integrity of the item, or tamper-indicating device (TID) serial number, and TID integrity. NM Custodians must comply with the internal transfer requirements outlined in the LANL MC&A Plan.

B.2.3.1.1.3. Transportation support for internal transfers is provided by LANL's Operations Support, Packaging, and Transportation (OS-PT) section.

B.2.3.1.2. External Material Transfer. External transfers are reported and documented on the DOE/NRC Form 741. The information in this report is supported by documentation consisting of authorizations, transfer checks, defensible confirmation and accountability measurements, packing lists, etc.

B.2.3.1.2.1. Authorization Requirements. External Transfers must meet safety, safeguards, materials management, and transportation requirements. These requirements assure that the stakeholders at the shipping and receiving facilities have

concurred with the proposed transfers; that materials management program requirements have been met; and that materials accountability directives have been satisfied. Before initiating external transfers of nuclear material, the facility must ensure that the following are in place:

- Programmatic authorization from NNSA through Nuclear Materials Management for transfer activity with other entities.
- Shipper's formal authorization from the intended receiver's MC&A organization.

B.2.3.1.2.2. Tamper-Indicating Devices (TIDs). Transfers of SNM require the use of TIDs. TID anomalies are to be reported immediately upon detection of a missing or tampered TID or as part of the transfer check process.

B.2.3.1.2.3. Transfer Checks. The transfer checks for shipments take place during the packaging and TID application process, assuring through a two-man validation that packaged items are in conformance with the packing lists. In addition, a transfer check by OS-PT takes place when the material is picked up for onward transfer to the receiving facility. Receipts of NM at LANL require that transfer checks take place upon initial receipt by OS-PT, and again when OS-PT delivers the material to the NM custodian.

B.2.3.1.2.4. Measurements. Measurements are required when transferring pits. The clock for initiating and completing accountability/verification measurements for receipts begins when the pit is delivered by OS-PT. Accountability/verification measurements for receipts are performed to derive SNM values independent of the shipper's values. The LANL values resulting from these measurements are compared to the shipper's values in order to determine the significance of any measurement differences. These are evaluated to assure that they fall within calculated statistical limits of error, thus assuring that theft or diversion of the material has not occurred. In lieu of the verification measurements for pits, multiple confirmation measurements can provide an equivalent detection capability to that achievable by verification measurements. Serial number verification, the item net weight verification, and attribute confirmation (e.g., gamma-ray energy confirmation for Pu) must be performed. The above actions provide assurances of the integrity of the item and that the existing measured value has been assured without risking the damage of pits during verification measurements. Before shipment, pits are required to be in a defensible measured state and properly documented. Measurements on such items need not be recent if the integrity of the items has been maintained through effective material surveillance and control methods. Measurement documentation is provided to the receiving facility.

B.2.3.1.3. Transfer from LANL to STA for Movement Off-Site. DOE Manual M 470.4-6, Section A, Chapter II-12, 5., requires authorization to ship nuclear materials and requires tracking, documentation, verification, and response to abnormal situations that may occur during shipment. LANL complies with the preceding requirement using a graded safeguards approach. The strictest controls are applied to Category I SNM shipments (e.g., pits).

B.2.3.1.3.1. Proposed Category I SNM shipments must be authorized by Plutonium Manufacturing Technology (PMT) Nuclear Materials Management, LANL MC&A Group, and the receiving facility before the actual shipment can take place. These authorizations assure that resources are in place to ship and receive the SNM, and that safety, security, materials management, and materials control and accountability requirements are fully addressed. Authorizations are documented at both the shipping and receiving facilities. SNM shipments are documented on the DOE/NRC form 741. The data is reported to the receiver and NMMSS within 24 hours after the shipment takes place. Category I SNM shipments originating at a DOE facility must be transported by STA. For LANL, such shipments are planned by PMT Nuclear Materials Management, and coordinated with OS-PT. OS-PT is the single point of contact for scheduling LANL SNM shipments with the DOE STA. These shipments take place under strong security protection and are meticulously tracked by STA. OS-PT provides LANL organizations with the status of shipments as needed.

B.2.3.1.3.2. The scheduling of all SNM moves is coordinated via a weekly meeting involving TA-55 staff, support groups, and their customers to verify material characteristics and shipping dates. The meeting provides a format to discuss material type, LOT IDs, etc. An "Authorization to Ship" document is utilized for incoming and outgoing shipments. This document contains data for the receiving facility to validate content of the shipment and ensure the facility can receive the material. It is approved by appropriate organizations at the receiving and shipping facilities.

B.2.3.1.3.3. The LANL MC&A Group Technical and Measurements Team (TMT) performs confirmation measurements on outgoing and incoming shipments using hand-held gamma detectors. TMT also performs confirmatory measurements in support of physical inventory.

B.2.3.1.3.4. Shipments of SNM are categorized prior to movement in order to determine proper protection measures during the transfer. LANL MC&A Group is notified of all internal and external shipments to ensure proper authorizations are in place prior to material transfers.

B.2.4. Pantex

B.2.4.1. Internal Transfers.

B.2.4.1.1. Material Custody Transfers. The Planning and Scheduling department, per the Pantex production-plan schedule, issues a work order in the MRP system. Manufacturing requests items to be moved from Zone 4 (storage) to Zone 12 (production). Pantex manufacturing personnel also send a classified e-mail to Pantex Transportation requesting a specific item to be moved to a specific bay or cell on a specific day. (NOTE: Weapon is still "owned" by the Zone 4 MBA Custodian at this point.) Pantex Transportation issues the unit to Zone 12 in MRP when the unit move starts (unit moves from inventory to work-in-process in MRP even though unit has not physically been moved yet). The potential move is also entered into the Move Right System, which verifies and authorizes the move.

B.2.4.1.1.1. Transportation personnel perform a transfer check verifying part number, serial number and TID (if applicable) prior to the move. All personnel involved in the move are Q-cleared and in the HRP. Since the move is between Zone 4 and Zone 12, armed guards accompany the move. Upon arrival at Zone 12 loading dock, the Zone 12 MBA custodian performs a transfer check and signs the custody transfer, accepting custody from the Zone 4 MBA custodian.

B.2.4.1.1.2. The Zone 12 MBA Custodian enters the custody transaction in MRS indicating the material has been received. Material handlers then move the unit to the designated bay with MBA custodians serving as a walker/spotter during the move. All moves within the MBA are under two-person control. The move time is regulated by engineered Move Right software controls. Moves exceeding the time allocation are annunciated by the Move Right software in the OC. The OC notifies Safeguards and Security for response and resolution. Personnel in the receiving bay perform a transfer check (physical inspection and paperwork check), accept custody of the unit, and make the appropriate entry into MRS.

B.2.4.1.2. Documentation. As custody of the weapon/component is transferred between Zone 4 and Zone 12, formal documentation is annotated on the Pantex Form PX-3400A. The MBA Custodians verify the item against the paperwork and complete the transfer.

B.2.4.1.2.1. Within the MBA, physical custody/control of the weapon/component is tracked via MRP. Pantex Production personnel acknowledge movements, build up or disassembly, and disposition of components by making entries to MRP.

B.2.4.1.2.2. Users must request specific access within MRP because different levels of access can be granted. The MRP administrator reviews the requestor's qualifications and need to know for the specific level.. The HRP department reviews the requestors' status in the HRP program. Once all approvals are made, the MRP administrator will grant access to only those functions requested. MRP is maintained on Pantex's classified mainframe which requires authentication with a user ID and password. Badge numbers are also required to perform a transaction. The system will not allow a badge number to be entered if that specific badge number is not approved for that transaction.

B.2.4.2. External Shipments. Pantex and STA receive an MTO for shipment between the DOE and DoD, or a TSR for DOE-to-DOE shipments.

B.2.4.2.1. Receipt from DoD. STA's SGT arrives on site and is directed into the appropriate area for off-loading by Pantex Transportation. The STA Federal Agents ensure the Pantex custodians are on the CPD to ensure all parties are authorized to accept custody of nuclear weapons/components. Once identifications are verified, Pantex personnel and the STA Federal Agents check the unit type, quantity, serial number, and verify with the DD Form 1911. If identities, paperwork, and shipment all match, the documents are signed effecting the custody transfer.

B.2.4.2.1.1. Once Pantex "owns" the weapon/component, they notify the Pantex OC of the change of custody. A purchase order is created in the MRP system after verification with DD Form 1911 and other shipping documentation to allow receipt. The purchase order is delivered to several Pantex organizations. Pantex performs receipt transaction in the MRP system. A bar code card is printed and MRS and LANMAS are updated.

B.2.4.2.1.2. Transportation personnel off-load and stage/store the unit. Safeguards personnel then perform a quality receiving/inspection process to verify part number, serial number and condition of the unit. Upon opening of a storage igloo, Transportation performs a magazine count and provides this information to Pantex Safeguards personnel. Safeguards verify magazine count with the MRP and MRS.

B.2.4.2.1.3. Pantex Traffic Office personnel create a purchase order in the MRP system, generating a bar code card that is placed on the weapon/container. The MRP transaction automatically updates the MRS. Pantex Engineering personnel then process a DCR using data from MRP and send the DCR to update DOE's WIS. WIS then automatically reports the transaction to DoD's DIAMONDS, closing the loop and ensuring both DoD and DOE have transferred custody of the weapon in their databases.

B.2.4.2.1.4. Safeguards personnel perform a measurement within 3 days. These personnel use radiation detectors to verify the presence of specific nuclear materials. Each weapon program has accept/reject criteria unique to that program. They annotate the results of the measurement on the Pantex Form Q-1621 and perform a Receiving Inspection transaction in MRP. The unit cannot be issued to an order without this receiving inspection.

B.2.4.2.1.5. Safeguards personnel download data from WIS and then upload the data to update LANMAS, which is used to create a DOE/NRC form 741 showing the acceptance of the weapons.

B.2.4.2.1.6. LANMAS summary data is automatically sent to NMMSS. It provides nuclear materials information relating to safeguards, materials management and production, inventory quantities and valuations, and other information requested or required by DOE.

B.2.4.2.1.7. Pantex Traffic personnel close out the MTO/TSR, closing the loop between Pantex and the shipper, ensuring that transfer of weapon custody has been made.

B.2.4.2.2. Shipments to DoD or Other DOE Sites. Pantex receives MTOs from DOE Albuquerque for projected shipments to DoD locations. For DOE-to-DOE component shipments, DOE Albuquerque transmits a TSR to both Pantex and the intended receiver. STA schedules the shipment from Pantex to the applicable location.

B.2.4.2.2.1. In preparation for the shipment, Pantex will receive a 741 transfer number from Safeguards personnel and subsequently creates a shipper for

the unit or component. Safeguards personnel must perform a measurement of the unit or component within 30 days of the shipment date.

B.2.4.2.2.2. Transportation verifies the signatures on the shipper and loads the SGT and enters codes to the transporter. Pantex attaches a DD Form 1911 to the 741 and performs another verification to ensure correct items are being shipped. Custody is exchanged between Transportation and STA by performing transfer checks and validating contents with DD Form 1911. After transfer checks are complete, an STA agent signs the DOE Courier Receipt, seals the SGT and accepts custody of the shipment.

B.2.4.2.2.3. Transportation releases the SGT to STA through the OC, who subsequently notifies Safeguards and other organizations. Pantex Traffic personnel create a ship entry in the MRP system. The MRP transaction automatically updates the MRS to remove the material from Pantex inventory. Pantex engineering personnel then process a DCR using data from MRP and send the DCR to update DOE's WIS. The DCR data is reported to the WIS within 24 hours. Safeguards personnel process the 741 within 24 hours and reports to NMMSS and DOE Albuquerque. The 741 is then closed, removing the unit from the Pantex accounting system inventory. LANMAS summary data is automatically sent to NMMSS.

B.2.4.2.2.4. Upon confirmed receipt at the receiving location, Pantex Traffic personnel close out the MTO/TSR which completes the loop between Pantex and the receiver and ensures that transfer of weapon custody has been made.

B.2.5. LLNL

B.2.5.1. Internal Transfers. Items are transferred from the vault to operations personnel when required for programmatic work. MC&A personnel who manage the vault have a designated list of approved material handlers to whom nuclear material may be transferred. All such handlers are cleared, HRP certified, and have special security and safety training.

B.2.5.1.1. Actual movement of material from the vault to another room within the Plutonium Facility MAA may be conducted by either the MC&A vault custodians or the approved material handlers. All transfers are recorded in COMATS. Two personnel (one primary, one verifier) are required to release the material from the vault, and two personnel (one primary, one verifier) are required to receive the material at its new location. Two-person surveillance of nuclear material is required whenever Category I or rollup to a Category I quantity of nuclear material is credible. Transfers from the facility to a temporary MAA are performed by cleared, HRP-certified LLNL transportation personnel who have special security and safety training. All transfers of Category I or II SNM outside of the Plutonium Facility are performed under the protection of LLNL's Protective Force. Return of material to the vault following programmatic operations follows the same, but reverse, procedures.

B.2.5.2. External Transfers. Prior to offsite shipment, LLNL must verify that the receiving site is authorized to possess the items and obtain permission from the receiving site to ship them.

B.2.5.2.1. Items are containerized for offsite in a Department of Transportation (DOT) approved shipping package. Packaging is conducted by the MC&A vault custodians in conjunction with DOT-trained transportation personnel who are also trained in MC&A. Items IDs are verified and recorded on the packaging forms. Shipping containers are then sealed by a TID in accordance with the *MC&A Plan*. All shipping documentation undergoes a quality assurance review.

B.2.5.2.2. MC&A personnel transfer the shipping packages to STA vehicles located within the Superblock, and LLNL transportation personnel load and tie down the containers. All individuals are cleared and HRP certified. Security during loading is provided by LLNL Protective Force.

B.2.5.2.3. The shipping manifest is taped to the shipping container, and a duplicate is provided to the Convoy Commander. Final verification of the container and TID numbers is performed, and custody of the items is signed over to STA personnel.

B.2.5.2.4. All external transfers are entered into COMATS by MC&A personnel. Transfers are additionally documented by a DOE/NRC Form 741, which serves to report the transfer to NMMSS and the receiving site.

B.2.6. STA

B.2.6.1. Shipment of Nuclear Weapons and Components by STA. STA transports and provides security for sensitive, classified cargo, including, but not limited to, nuclear weapons and nuclear components. STA Federal Agents are authorized to carry firearms and make arrests without warrant in accordance with the Atomic Energy Act of 1954, as amended, section 161.k, and shall use force (including deadly force) consistent with 10 CFR 1047.

B.2.6.1.1. For ground transportation, STA operates a fleet of modified tractors towing specially designed and constructed trailers called Safeguards Transporters (SGT), and a fleet of associated escort and utility vehicles. They are equipped with communications and electronic systems to initiate quick response when necessary. Van-type escort vehicles equipped with communications and electronics equipment are also utilized for escorting convoy shipments and provide additional security for the mission. STA Federal Agents are trained and qualified to operate all convoy equipment.

B.2.6.1.2. Safety, as well as security is of paramount importance in accomplishment of the DOE Transportation Safeguards mission. All vehicles undergo an extensive maintenance check prior to every trip, as well as periodic preventative maintenance inspections. As a result, STA vehicles experience few en-route breakdowns and have had no accidents due to equipment malfunction. Nuclear weapons, components, and SNM are transported on public roadways in the specially constructed SGTs. The SGTs are 40-foot highway trailers which are used by STA as mobile vaults. The walls are specially constructed to incorporate special deterrent and denial features. The doors are also of robust construction and are secured with electronically coded locks. They are highly resistant to unauthorized entry,

attack, and also provide a high degree of cargo protection in the event of serious accident, including fire. High reliability tie-down equipment assures further safety by holding cargo in place under possible high stress situations. Head-on crashes at 60 miles per hour have been simulated analytically to successfully test tie down integrity. Petroleum fire tests have been simulated to prove the insulative quality of the vault walls.

B.2.6.2. Shipment Coordination. STA is an addressee for any nuclear weapon or nuclear component movement request across the nuclear weapons complex and DoD nuclear weapon locations. All movements are planned well in advance to ensure availability of resources and adequate security and logistical planning. For movements between DoD and DOE facilities, STA receives the MTO issued by DTRA. For DOE-to-DOE movements, STA receives the TSR. The actual logistics involved are the same regardless of the shipper or receiver.

B.2.6.2.1. At STA, Operational Planning and Support Branch performs all mission planning functions for the organization, including fielding shipping requests (MTOs and TSRs) from DOE or DoD shipper sites and DTRA. STA takes the request and initiates detailed planning to assure the mission can be performed by the STA. The planning process is performed in accordance with the STA Shipment Planning Desktop Procedure which requires close coordination with the shipper sites to the level of understanding exact serial numbers for those items that will be transported. Serial numbers are used for tracking each item carried on STA trailers. The paper receipts that the STA Federal Agents use for custody transfer process provide a paper trail that documents the serial numbers of the items that will be transported and are compared against the serial numbers in the shipment (known as a trip) paperwork. The trip itinerary and trip manifest contain the exact serial numbers of items to be shipped. Material courier receipts identify shipment contents using unclassified terms, called line numbers, as published in the classified JNWP, TP 20-11.

B.2.6.3. Identification of Shipping Contents. For nuclear bombs, the part number, serial number, and weapon designation are all marked on the outer surface of the bomb body. The bombs are shipped in handling gear, where the markings are visible. Ballistic missile warheads, cruise missile warheads, and nuclear components are shipped in containers. Containers are externally marked with the part number, serial number, and weapon designation (if appropriate) of the warhead/component that is packed in the container. Packaging personnel at the shipping location apply the markings to the containers during the packaging process. The trip itinerary and manifest will contain the exact serial numbers of each item being shipped.

B.2.6.4. Transfer of Custody from Shipper to STA. Upon arrival at the shipping location (authorized military installation/Safe Haven), the SGT is allowed entry to the shipping platform after verification of the STA Federal Agents' credentials. The Agents then verify the identification of the shipping custodian against a joint DoD/DOE Certified Personnel Directory. Once identification is verified, the Agents visually ensure the DD Form 1911 or DOE Courier Receipt is consistent with the cargo. After confirmation, the shipper loads the contents onto the SGT and ties down the contents in accordance with TP 45-51, *Transportation of Nuclear Weapons Materiel - General Shipping and Limited Life Component (LLC) Data.* After verifying the loaded contents and tie-down configuration, the Agents sign the DD Form 1911 or DOE Courier Receipt to accept custody.

B.2.6.5. Transportation Phase. During the STA secure transportation phase, the shipment is provided full security coverage, including redundant real-time tracking of the convoy and associated security vehicles and full-time communication through the STA Transportation and Emergency Communications Center (TECC) system. The TECC provides real-time tracking and monitoring of all STA shipments 24 hours a day, 7 days a week. The TECC maintains multiple redundant communications capabilities for monitoring shipment status. The TECC also assimilates data from various outside sources and provides advice to the Convoy Commanders regarding weather, road conditions, location-specific disruptions (such as protests at a site), or other considerations. The TECC also provides emergency response capability for STA shipments, other accidents that may involve the DOE, or in support of other organizations. Prior to arrival at the receipt location, the receiving organization is alerted of the arriving convoy.

B.2.6.6. Transfer of Custody from STA to Receiver. The STA Federal Agents ensure the recipient custodians are on the CPD. The recipients verify the trailer contents with the DoD Forms 1911 and 1348-1A for military shipments or with the DOE Courier Receipt for intra-DOE shipments. They verify type, quantity, serial numbers, seals, and condition. If all the paperwork and contents are acceptable, the recipients sign the forms, accepting custody of the weapons.

B.3. Documentation Used for the Purpose of Proper Accountability, Custody Receipting, and Shipping Transactions

B.3.1. Common Forms and Database Systems

B.3.1.1. DOE/Nuclear Regulatory Commission (NRC) Form 741, *Nuclear Materiel Transaction Report*. DOE/NCR Form 741 is used by NNSA when shipping nuclear weapons or nuclear components containing Source and Special (SS) nuclear materiel. The nomenclature, serial number, and part number of the smallest separate and specifically identifiable component containing SS materiel shall be shown on the DOE/NRC Form 741. If the component cannot be physically separated from an assembly because of design, construction, or regulatory restrictions, the nomenclature and serial number of the higher assembly shall also be shown. This transfers loan account materiel to the DoD as part of a bomb unit, warhead, major assembly, etc., and identifies the unit by the appropriate nomenclature and serial number.

B.3.1.2. DOE Courier Receipt (AEC Form 60/DOE Form AD 60/DOE Form 1540.2). Receipts generated by DOE to accompany classified shipments of weapons or components. These forms are treated similar to the DD Form 1911.

B.3.1.3. Nuclear Material Management and Safeguards System (NMMSS). The national database that captures nuclear material transactions and inventory data. Transfers of reportable quantities of NM between facilities having different Reporting Identification Symbols are documented on a DOE/NRC Form 741. The DOE/NRC Form 741 is transmitted to the NMMSS and copies are distributed for each shipment of NM in accordance with DOE M 470.4-6 and specified guidance from the NNSA Y-12 Site Office.

B.3.1.4. Certified Personnel Directory. Listing of all personnel authorized to sign for nuclear weapons and components.

B.3.2. Y-12 National Security Complex

B.3.2.1. WorkStream™/ Dynamic Special Nuclear Materials Control and Accountability System (DYMCAS). Used at Y-12 to manage and document the transfer of accountable quantities of nuclear material between MBAs.

B.3.2.2. MBA Data Sheets and Maps. Formally documents geographic boundaries and functions of the MBAs and identify material types, forms, and quantities permitted.

B.3.2.3. Traveler Card. The traveler card is attached to each secondary and indicates the unique identifying number. For inventory purposes, a pressure-sensitive, color-coded, pre-numbered bar code inventory sticker is applied to each secondary's unique traveler card.

B.3.2.4. Y-12 Form UCN-12929A , *Verification of Receipts* and Y-12 Form UCN-1840C, *Receiving Report*. Used by warehouse material controllers after transfer checks and measurements are completed.

B.3.3. LANL

B.3.3.1. Materials Accountability Safeguards System (MASS). The official SNM inventory database at LANL. Pit marking ID is entered in the MASS and as this item (the pit) moves through the remaining assembly sequences, the location and required attributes are updated in MASS. Therefore, MASS is used to track the location and process status of the in-process as well as completed items. All external NM transfers and internal transaction activity are documented in the MASS in accordance with DOE Order 470.4-6. The item and transaction history in MASS, the source documentation from various organizations at the Laboratory, and the transaction history at NMMSS provide the necessary audit trails.

B.3.4. Pantex

B.3.4.1. Manufacturing Resource Planning (MRP) System. Manufacturing and production database/system which schedules and tracks actions, issues orders, directs movements, accepts/changes custody, etc.

B.3.4.2. Move Right System (MRS). Tracks materials (nuclear material and high explosives) to ensure the plant does not violate criticality safety or explosives safety parameters. MRS verifies locations of materials before moves are made to prevent safety risks.

B.3.4.3. Local Area Nuclear Materials Accounting System (LANMAS). Nuclear materials accounting system that tracks on-site and off-site transfers of assets as well as actual item weights.

B.3.4.4. Daily Change Report (DCR). Created to reflect the reduction of the inventory by that weapon. The DCR is used to update the Weapon Information System (within 24 hours), which then is used to update DoD's DIAMONDS database.

B.3.4.5. Pantex Form Q-1621, *Nuclear Weapon Confirmation.* Used by Safeguards personnel to record measurements verifying the presence of specific nuclear materials.

B.3.4.6. Pantex Form PX-3400A, *Material Movement – Planning and Authorization.* Documents internal transfer of nuclear material.

B.3.5. LLNL

B.3.5.1. In addition to the common forms identified in B.3.1, COMATS prints a workstation report listing item ID and nuclear material quantities for all items in each workstation. The report is updated and reposted whenever an item is added or removed from the workstation.

B.3.5.2. A special label is printed for each item and attached to its storage container. This label contains the item ID, quantity of nuclear material, and relevant safety information. If the item is transferred onsite from the vaults, the label is attached to the transport container.

B.3.5.3. A Controlled Material Identification Tag is also attached to the transport container whenever the item is transferred onsite but outside of the Plutonium Facility. This tag contains the item ID, quantity of nuclear material, and relevant safety information.

B.3.6. STA

B.3.6.1. DoD Form 1911, *Material Courier Receipt.* Used as a custody transfer document for shipments of nuclear weapons to and from DoD locations. Reflects the specific contents of the shipment.

B.3.6.2. DoD Form 1348-1A, *Issue Release/Receipt Document.* Formally documents the release of the shipment to the receiver for reporting in DIAMONDS. STA does not sign the DoD Form 1348-1A. The form is delivered to the receiver, who signs the form.

B.4. <u>Standards and Procedures for DOE Nuclear Surety-Related Inspections</u>

B.4.1. Within the DOE and NNSA, nuclear weapons surety is defined as a combination of nuclear explosive safety, security, and use control. There is no single program or oversight scheme that evaluates all aspects of surety. There are various layers of oversight ranging from internal reviews by the facility of their own program, to comprehensive DOE Headquarters reviews. The key programs and offices that cover each of the defined nuclear surety areas are Nuclear Explosive Safety Studies (NESS); Office of the Chief, Defense Nuclear Safety Biennial Reviews; Use Control Effectiveness Committee (UCEC) and Deliberate Unauthorized Use

Review Teams; Office of Independent Oversight (OIO) policies and programs effectiveness assessments; Office of Performance Evaluation reviews; Site Office annual surveys; and Facility internal reviews. DOE O 452.1C, *Nuclear Explosive and Weapons Surety Program*, is the order directing the DOE to conduct oversight reviews.

B.4.1.1. NESS Evaluations. DOE O 452.2C, *Nuclear Explosive Safety*, establishes specific program requirements to implement the DOE NESS standards and other NESS criteria for routine and planned nuclear explosive operations (NEO). Headquarters conducts a NESS prior to the authorization of any NEO. These NEOs include dismantlement, maintenance and rebuild activities, both on-site and off-site transportation, and surveillance testing. The NESS determines whether controls identified and implemented to assure safe operations are sufficient to mitigate any nuclear explosive hazards associated with the NEO. NESSs are unique to each weapons system operation and are re-accomplished every five years if not otherwise conducted due to a major NEO change.

B.4.1.2. Office of the Chief, Nuclear Defense Safety Biennial Review. In addition to NESS evaluations, the Office of the Chief, Nuclear Defense Safety, conducts biennial reviews of each NNSA site and Headquarters. These reviews determine compliance with nuclear explosive safety and nuclear criticality safety requirements.

B.4.1.3. UCEC and Deliberate Unauthorized Use Review. DOE/NNSA uses the UCEC and Deliberate Unauthorized Use Review Teams to review proposed and existing operations and weapons systems to determine whether or not NEOs expose a weapon to the threat of in-place detonation. The UCEC performs two assessments per year, rotating between weapons families, in order to determine whether vulnerabilities exist in the nuclear weapons stockpile.

B.4.1.4. Office of Independent Oversight (OIO) Inspections. For physical security and material accountability and control, DOE/NNSA engages in a multi-level oversight model. The OIO provides an independent assessment of the effectiveness of policies and programs in safeguards and security; cyber security; emergency management oversight; environment, safety and health; and other critical functions of immediate interest to the Secretary of Energy, the Deputy Secretary of Energy, the Administrator of the NNSA, the Under Secretary for Energy, and the Under Secretary for Science. The office is independent of the DOE offices that develop and implement policy and programs; therefore, it can objectively evaluate Departmental operations and provide an unbiased assessment for senior DOE managers by using a systematic oversight process that emphasizes performance and testing.

B.4.1.5. Office of Performance Evaluation. This office performs periodic reviews of the Site Offices to determine if they are adequately performing their contractor oversight responsibilities in an effective and efficient manner.

B.4.1.6. Site Offices. Site Offices are required to conduct annual reviews of their operations. Responsibility for conducting the annual reviews falls to the Federal Site Office Security Staff, which consists of subject matter experts in the topical areas of security, to include protective force, physical security, and materials control and accountability. Site Offices may

use the results of an OIO inspection to fulfill their annual review requirements for the year the OIO inspection was conducted.

B.4.1.7. Facilities. Facilities managers are required to implement an internal review and assessment program to determine specific element and overall MC&A system effectiveness. The annual schedule of internal review activities is documented and formally approved by the cognizant Site Office.

B.4.2. Defense Nuclear Security (DNS) Performance Assurance Program. In addition to the directives and programs mentioned above, the DOE developed the DNS Performance Assurance Program, which is governed by the *DNS Performance Assurance Program Guide*. This guide defines the framework, philosophy and expectations of the DNS Performance Assurance Program. The DNS Performance Assurance Program is a much broader program than that of the same name and described in the DOE M 470.4-1, *Safeguards and Security Program Planning and Management*.

B.4.2.1. The DNS Performance Assurance Program facilitates the DNS Program Management Plan goal of ensuring an integrated, complex-wide approach to safeguards and security. The effective performance of the following must be ensured:

B.4.2.1.1. The Office of DNS and Site Offices must provide effective oversight of site contractor safeguards and security program implementation.

B.4.2.1.2. Contractor award fee and performance evaluations must accurately measure contractor performance against baselines approved as part of the annual Program Management Plan and Program Execution Guidance process.

B.4.2.1.3. Performance testing must demonstrate that NNSA sites are able to meet the threats identified in the DOE Design Basis Threat Policy.

B.4.2.1.4. Internal and independent reviews must validate the effectiveness of systems and performance.

B.4.2.2. The Performance Assurance Program reviews conducted by DNS are a primary component of accurately evaluating performance against established goals and facilitating Program Assessment Rating Tool reporting to the Office of Management and Budget and the development of the Defense DNS Annual Report.

B.4.2.3. The DNS Performance Assurance Program consists of all activities necessary to obtain the knowledge, understanding, and verification of the effectiveness of Site Office and contractor performance, and serves to document and communicate overall program results to headquarters management.

B.4.2.4. The DNS uses the term Performance Assurance as a broad term that describes the DNS approach and oversight expectations to ensure a comprehensive and thorough review of all aspects of Federal and Contractor security programs across the NNSA complex.

The Performance Assurance Program requirements defined in DOE M 470.4-1, Change 1, Section F should be considered one element of the overall DNS Performance Assurance Program.

B.4.2.5. The program's structure provides a multi-tiered system of self-assessments and other performance reviews, which, when aggregated, provide the Administrator, the Associate Administrator, and Departmental senior officials realistic indicators of the adequacy and effectiveness of the NNSA complex in meeting security responsibilities.

B.4.2.6. While the Site Office is primarily responsible for assessment of contractor operations, programmatic assessments are also conducted by DNS, the DOE Office of Independent Oversight, and other Governmental Agencies, who are required to periodically review the performance of Site Office and contractor operations to ensure defined programmatic expectations are being fully and adequately implemented. These assessments provide assurance to DOE and NNSA senior management, and outside stakeholders, that the DNS Program is meeting DOE, NNSA, and national security objectives and performance expectations.

B.5. Training of all Personnel Involved in the Handling, Management, and Accountability of Nuclear Weapons and Components

B.5.1. DOE and NNSA

B.5.1.1. Human Reliability Program. All DOE personnel involved with the handling, accountability, and control of nuclear weapons and nuclear components (e.g., pits and secondaries) must be in the HRP. The HRP is a security and safety reliability program designed to ensure that individuals who occupy positions affording access to certain materials, nuclear explosive devices, facilities, and programs meet the highest standards of reliability and physical and mental suitability. This objective is accomplished under this part through a system of continuous evaluation that identifies individuals whose judgment and reliability may be impaired by physical or mental/personality disorders, alcohol abuse, use of illegal drugs or the abuse of legal drugs or other substances, or any other condition or circumstance that may be of a security or safety concern.

B.5.2. Y-12 National Security Complex

B.5.2.1. Training of Personnel Controlling and Handling Secondaries at Y-12. DOE orders mandate training requirements for personnel to successfully execute their responsibilities for safeguarding DOE security interests. To accomplish this objective, the Y-12 NMC&A training program is guided by a performance-based training system as the primary management tool for analyzing, designing, developing, implementing, and evaluating training. The system uses the Instructional Systems Design (ISD) model to incorporate these requirements in the NMC&A performance-based training program. The ISD model meets the criteria specified in DOE Manual 470.4-1, *Safeguards and Security Program Planning and Management*. In addition, the NMC&A training program reflects the requirements in the applicable Y-12 plans, polices, and procedures.

B.5.2.1.1. NMC&A. Training Module MCA-101, *Introduction to Nuclear Materials Control and Accountability*, is required for persons performing NMC&A functions and is a prerequisite to other NMC&A training. NMC&A site-specific training is conducted through classroom and OJT training settings. Other MC&A training is provided by the National Training Center (NTC) which includes classroom training, self-paced computer-based training, and distance learning courses. Y-12 training includes company-required, functional-specific, project-specific, and job-specific training. The NMC&A Manager, through the NMC&A Training Coordinator, has the overall responsibility for the training program.

B.5.2.1.2. The NMC&A Training Coordinator is responsible to ensure that the NMC&A training program performs a self-assessment on the entire training program on an annual basis. In addition, an independent internal audit is conducted on the NMC&A function to assess compliance with internal plans and procedures.

B.5.2.1.3. A training and qualification program has been established for the NMC&A-related job functions within the Y-12 National Security Complex specifying the required NMC&A training. The establishment and maintenance of these NMC&A training and qualification programs is the responsibility of the NMC&A Training Coordinator.

B.5.2.1.4. The Training Position Description (TPD) is the Y-12 process used to define and document the training and qualification requirements for Y-12 personnel. The Y-12 NMC&A Training Coordinator develops a TPD for each NMC&A employee to identify training needs according to the job analysis results for each position.

B.5.2.1.5. Training course content provides students with the knowledge and skills needed to perform tasks associated with the NMC&A positions for which training is being conducted. The NMC&A courses implement NMC&A procedure requirements to ensure tasks are performed according to the procedure requirements. The NMC&A modules are reviewed every two years or for procedure changes as required. If necessary, the module content should be revised to reflect changes in procedures, DOE requirements, and technical content.

B.5.2.1.6. Each Y-12 employee, subcontractor, or other DOE contractor is responsible for contacting the NMC&A Training Coordinator to schedule applicable NMC&A training. The NMC&A site-specific modules are taught on a regular basis. Training records are maintained. The job performance of NMC&A training attendees is evaluated formally by their supervisors. Y-12 Human Resources maintain records documenting the completion of the performance review.

B.5.2.1.7. All training is documented and approved with a Lesson Plan or Performance Documentation Checklist (PDC) for OJT. Lesson plans are approved by the NMC&A Manager and the Y-12 Training Manager. Training methodology and courses are standardized. Examinations (written, oral, or performance evaluations) on material included in training programs are administered and documented.

B.5.2.1.8. Procedure Y90-027, *Conduct of Training Manual*, is the basis for NMC&A instructor qualification. The Y-12 NMC&A training program is implemented by

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YIDG-26658, *Y-12 Nuclear Materials Control and Accountability Training Approval Program.* Procedure Y90-027 and Procedure Y20-NM-52-001, *Nuclear Materials Control and Accountability Training Program*, document the requirements for NMC&A training at Y-12.

B.5.2.1.9. Inventory Team Members. Manufacturing conducts formalized training for SNM workers that includes information on inventory requirements. Most MBAs conduct pre-job briefings prior to beginning the performance of their inventory. These pre-job briefings are held with the physical inventory team to review the inventory requirements and lessons learned from previous inventories. Attendance is taken at these meetings and serves as documentation of training for inventory personnel. The smallest MBAs, typically those that contain sources/standards, do not perform pre-job briefs due to the small number of accountable nuclear material items contained in the MBA.

B.5.2.1.10. Measurement Personnel. Specific training and qualification programs are required for measurement personnel involved in destructive or nondestructive methods of determining accountability values of NM during inventory.

B.5.3. LANL

B.5.3.1. Training of Personnel Controlling and Handling Pits at LANL. Operators are trained and qualified by formal work instructions prior to performing any material processing or movements. This is tracked in the LANL Employee Development System (EDS). All manufacturing operators are trained and qualified as fissile material handlers with additional specific training in the areas of responsibility. Training is tracked in the EDS and a QC-1 compliant database. Periodic re-qualification is a mandatory requirement.

B.5.3.1.1. All personnel that handle plutonium in Plutonium Facility-4 must be, and are, trained according to the requirements of DOE Order 5480.20A. Facility-specific training is given in the form of annual training/qualification as well as on-the-job instruction and qualification. Training records are maintained in the LANL EDS. TA55-AP-585, *Nuclear Material Control and Accountability Implementation Plan*, is a part of that training, which also includes classroom training.

B.5.4. Pantex

B.5.4.1. Training of Personnel Controlling and Handling Weapons, Pits, and Secondaries at Pantex. Nuclear Material Control and Accountability training is provided through the National Training Center. Pantex performs site specific training for the following:

- MBA custodians - initial only.
- Nuclear Material Tracking – re-qualification required.
- Nuclear Material Inventories – re-qualification required.
- Tamper Indicating Devices - initial only.

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- Confirmation Measurements – re-qualification required.
- LANMAS Training - provided by the National Training Center as LANMAS user and LANMAS administrator. Pantex provides some OJT.
- MRP/MRS - On the job training.

B.5.5. LLNL

B.5.5.1. All personnel receive training required for the duties they perform. Personnel who perform MC&A duties receive special training under the auspices of the MC&A Program. In addition, all individuals who handle significant quantities of nuclear material are trained in the use of COMATS and TIDs.

B.5.6. STA

B.5.6.1. Training of STA Federal Agents. After careful screening and selection, federal agent trainees undergo a rigorous basic training course, during which they must pass tests on tractor/trailer driving; qualify with weapons, meet physical standards, operate communications-electronic systems; and have detailed knowledge of basic operating procedures. Federal agents receive frequent in-service courses which include training related to firearms, special tactics and physical fitness training. Much of this training places heavy emphasis on teamwork.

B.5.6.1.1. STA personnel that are involved in handling, management and accountability of nuclear weapons and components are STA federal agents that actually receipt for the shipment and shipment planners that provide the coordination function for establishing shipment requirements with DOE and DoD organizations.

B.5.6.1.2. Nuclear weapon accountability and custody transfer operations are the responsibility of the Convoy Commander in Charge (CCIC), but will involve other federal agents in order to satisfy the two-person concept. The federal agent training is an ongoing process with agents being put through a rigorous formal training program that includes the following broad topics: Main Battle Force Operational Training and Leadership Development education. These basic courses are required of federal agents.

B.5.6.1.3. STA provides a Convoy Commander Course developed specifically to aid the CCIC in organizing and managing a convoy in normal and emergency operations and to understand the basic structure and function of the STA Incident Command System. The course is taught with the Federal Agent SOP (FASOP) as a guiding document with guided discussion, demonstration and practical application as the method of instruction. A formal written examination is required.

B.5.6.1.4. The Convoy Commander Course is not mandatory for STA federal agent CCICs. The Convoy Commander Course has been taught to a majority of CCICs

within STA. Custody and transfer procedures are typically conveyed to junior CCICs by informal OJT on STA missions with seasoned and more senior CCICs that direct increased levels of responsibility based on their expert judgment. STA has indicated that this informal program of instruction will be converted to formalized OJT program, the framework of which already exists within STA for federal agents.

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APPENDIX A: ALPHABETICAL LISTING OF ACRONYMS

- **AETC**: Air Education and Training Command
- **AFB**: Air Force Base
- **AFI**: Air Force Instruction
- **AFIA**: Air Force Inspection Agency
- **AFNWC**: Air Force Nuclear Weapons Center
- **AFPD**: Air Force Policy Directive
- **AFSC**: Air Force Specialty Code
- **AMMOS**: Aircraft Maintenance and Munitions Officer School
- **AT&L**: Acquisition, Technology and Logistics
- **ATSD(NCB)**: Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs
- **CCIC**: Convoy Commander In Charge
- **CDC**: Career Development Course
- **CDI**: Commander Directed Investigation
- **CFETP**: Career Field Education and Training Program
- **CJCS**: Chairman of the Joint Chiefs of Staff
- **CJCSI**: Chairman of the Joint Chiefs of Staff Instruction
- **CMOC**: Conventional Munitions Officer Course
- **CNO**: Chief of Naval Operations
- **COTS**: Commercial Off The Shelf
- **CPD**: Certified Personnel Directory
- **CSA**: Canned Sub-Assembly
- **CSNI**: Office symbol for DTRA's Combat Support Inspections Branch
- **CSNO**: Office symbol for DTRA's Stockpile Operations Branch
- **DCR**: Daily Change Report
- **DIAMONDS**: Defense Integration and Management of Nuclear Data Services
- **DLA**: Defense Logistics Agency
- **DNS**: Defense Nuclear Security
- **DNSI**: Defense Nuclear Surety Inspection
- **DNWS**: Defense Nuclear Weapons School
- **DoD**: Department of Defense
- **DOE**: Department of Energy
- **DON**: Department of the Navy
- **DOT**: Department of Transportation
- **DSB**: Defense Science Board
- **DTRA**: Defense Threat Reduction Agency
- **DYMCAS**: Dynamic Special Nuclear Materials Control and Accountability System
- **EIRC**: Electronic Inspection Record Card
- **FASOP**: Federal Agent Standard Operating Procedure

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- **FMH**: Fissile Material Handler
- **GOCO**: Government Owned Contractor Operated
- **GraFIC**: Graphical Facility Information Center
- **HAF**: Headquarters Air Force
- **HRP**: Human Reliability Program
- **ICBM**: Inter-Continental Ballistic Missile
- **IG**: Inspector General
- **IRC**: Inspection Record Card
- **ISD**: Instructional Systems Design
- **ISSM**: Integrated Safeguards and Security Management
- **IST**: Initial Skills Training
- **JNSEC**: Joint Nuclear Surety Executive Course
- **JNWPS**: Joint Nuclear Weapons Publication System
- **JS**: Joint Staff
- **JTA**: Joint Test Assembly
- **LANL**: Los Alamos National Laboratory
- **LANMAS**: Local Area Nuclear Materials Accounting System
- **LDO**: Limited Duty Officer
- **LIL**: Location Inventory Listing
- **LIMS**: Laboratory Information Management System
- **LLC**: Limited Life Component
- **LLNL**: Lawrence Livermore National Laboratory
- **LMSSC**: Lockheed Martin Space Systems Company
- **LOT ID**: Lot Identification
- **MAA**: Material Access Area
- **MAJCOM**: Major Command
- **MASO**: Munitions Accountable Systems Officer
- **MASS**: Materials Accountability Safeguards System
- **MBA**: Material Balance Area
- **MC&A**: Material Control and Accountability
- **MFD**: Military First Destination
- **MMOC**: Missile Maintenance Officer Course
- **MOFC**: Munitions Officer Fundamentals Course
- **MOIC**: Maintenance Officer Intermediate Course
- **MRP**: Manufacturing Resource Planning
- **MRS**: Move Right System
- **MT**: Material Type
- **MT**: Missile Technician
- **MTO**: Materiel Transfer Order
- **NAC**: Nuclear Accountability Course
- **NAF**: Numbered Air Force

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- **NAPSAC:** Naval Atomic Planning, Support, and Capabilities
- **NEO:** Nuclear Explosive Operation
- **NESS:** Nuclear Explosive Safety Study
- **NFC:** Nuclear Fundamentals Course
- **NIPRNet:** Unclassified but Sensitive Internet Protocol Router Network
- **NM:** Nuclear Materials
- **NMC&A:** Nuclear Material Control and Accountability
- **NMCC:** National Military Command Center
- **NMMSS:** Nuclear Material Management and Safeguards System
- **NMOC:** Nuclear Munitions Officer Course
- **NNSA:** National Nuclear Security Administration
- **NOSS:** Nuclear Ordnance Shipping Schedule
- **NRC:** Nuclear Regulatory Commission
- **NSA:** National Security Agency
- **NSI:** Nuclear Surety Inspection
- **NSIC:** Nuclear Surety Inspection Course
- **NSN:** National Stock Number
- **NTC:** National Training Center
- **NTS:** Nevada Test Site
- **NUREP:** Nuclear Weapons Reports
- **NWC:** Nuclear Weapons Council
- **NWCSSC:** NWC Standing and Safety Committee
- **NWOC:** Nuclear Weapons Orientation Course
- **NWSM:** Nuclear Weapons Stockpile Memorandum
- **NWSP:** Nuclear Weapons Stockpile Plan
- **NWTI:** Nuclear Weapons Technical Inspection
- **OC:** Operations Center
- **OCC:** Operating Center "C"
- **ODSNW:** Operationally Deployed Strategic Nuclear Weapons
- **OI:** Operating Instruction
- **OIO:** Office of Independent Oversight
- **OJT:** On-the-Job Training
- **OPNAVINST:** Office of the Chief of Naval Operations Instruction
- **OSD:** Office of the Secretary of Defense
- **OS-PT:** Operations Support, Packaging, and Transportation
- **OTSM:** Offsite Transportation Safety Manual
- **P/N:** Part Number
- **PA:** Protected Area
- **PDC:** Performance Documentation Checklist
- **PF:** Plutonium Facility
- **PIDAS:** Perimeter Intrusion Detection and Assessment System

- **PMT**: Plutonium Manufacturing Technology
- **PRP**: Personnel Reliability Program
- **RPD**: Requirements and Planning Document
- **SAAM**: Special Assignment Airlift Mission
- **SCR**: Status Change Report
- **SCV**: Stock Change Voucher
- **SECDEF**: Secretary of Defense
- **SECENG**: Secretary of Energy
- **SEV**: Stockpile Emergency Verification
- **SFC**: Shop Floor Control
- **SGT**: Safeguards Transporter
- **SIMEX**: Secure Information Management Exchange System
- **SIPRNet**: Secret Internet Protocol Router Network
- **SIR**: Semi-annual Inventory Report
- **SLA**: Service Logistics Agent
- **SLBM**: Submarine-Launched Ballistic Missile
- **SMO**: Strategic Missile Officer
- **SMSgt**: Senior Master Sergeant
- **SNL/NM**: Sandia National Laboratories/New Mexico
- **SNM**: Special Nuclear Material
- **SPO**: Security Patrol Officer or Security Police Officer
- **SRAN**: Stock Record Account Number
- **SS**: Special Source
- **S&S**: Safeguards and Security
- **SSBN**: Ship, Submersible, Ballistic, Nuclear (U.S. Navy hull designation for ballistic missile submarines)
- **SSP**: Strategic Systems Programs
- **SSPINST**: Strategic Systems Program Office Instruction
- **SSSP**: Site Specific Security Plan
- **SST**: Safe Secure Trailer
- **STA**: Secure Transportation Asset
- **STIG**: Security Technical Implementation Guidelines
- **SWF**: Strategic Weapons Facility
- **SWFLANT**: Strategic Weapons Facility, Atlantic
- **SWFPAC**: Strategic Weapons Facility, Pacific
- **SWO**: Strategic Weapons Officer
- **SWOP**: Special Weapons Ordnance Publication
- **T.O.**: Technical Order
- **TA-55**: Technical Area 55
- **TAP**: Training Approval Program
- **TECC**: Transportation and Emergency Communications Center

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- **TID:** Tamper Indicator Device
- **TMT:** Technical and Measurements Team
- **TP:** Technical Publication
- **TPD:** Training Position Description
- **TSR:** Transportation Shipping Request
- **TYCOM:** Type Commander
- **UCEC:** Use Control Effectiveness Committee
- **UR:** Unsatisfactory Report
- **USAF:** United States Air Force
- **USD(AT&L):** Under Secretary of Defense for Acquisition, Technology and Logistics
- **USSTRATCOM:** United States Strategic Command
- **VPN:** Virtual Private Network
- **VTR:** Vault-Type Room
- **WCL:** Weapons Custody Listing
- **WIS:** Weapons Information System
- **WR:** War Reserve
- **WSR:** Weapons Status Report

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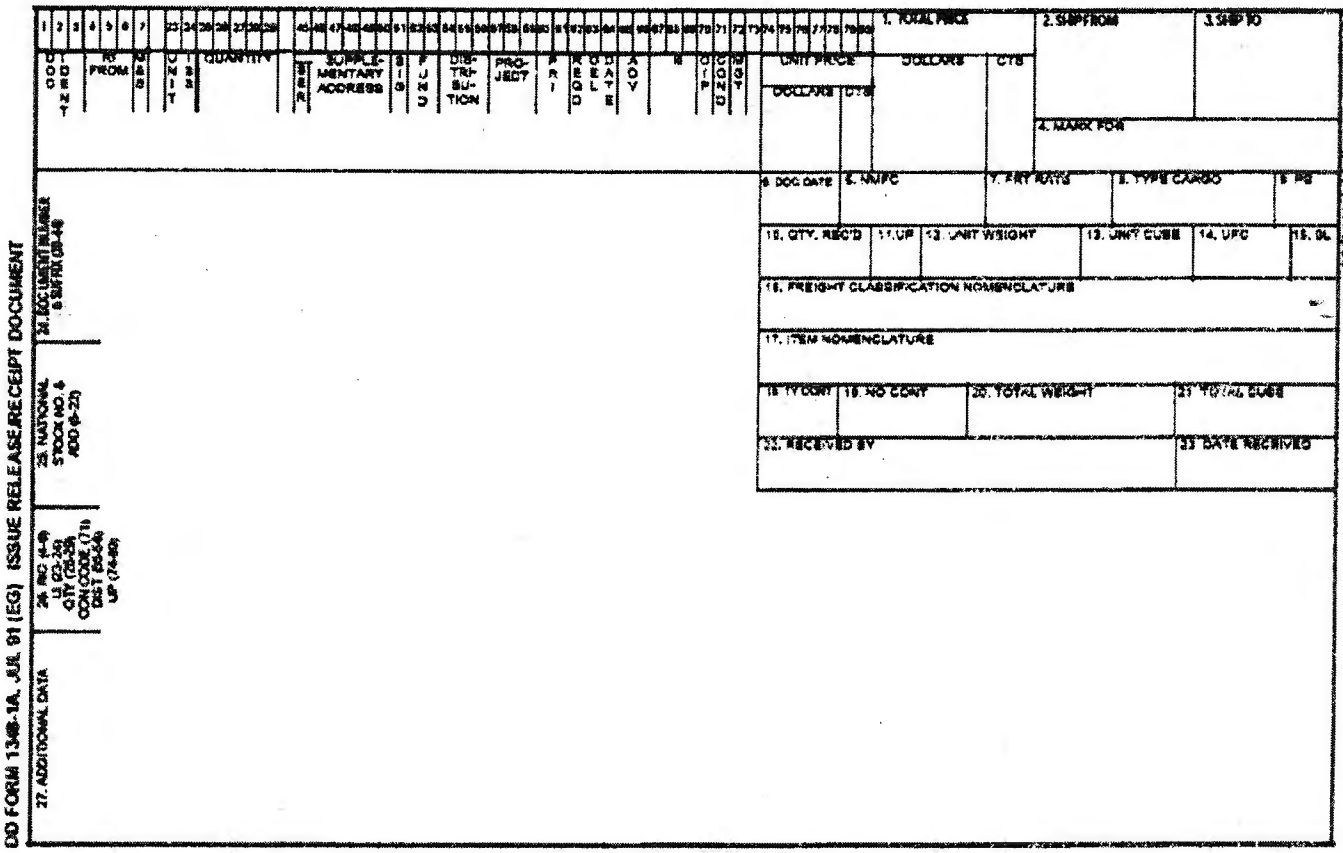
APPENDIX B: SAMPLE FORMS



CERTIFICATION VERIFICATION OF SHIPMENT I certify that the required preshipment inspection of the items identified on this document has been performed and the contents of the shipping container(s) have been verified. 1 Serial numbers continued from block 27 on front side of form.2_____ (Signature)

_____ (Typed or Printed Name and Rank)

_____ (Title and Organization)

_____ (Account Number)

Notes: 1. Certification only required IAW paragraph 5-10.

2. The entire reverse side may be used to record serial numbers when certification statement is not present.

DD Form 1348-1A
ISSUE RELEASE/RECEIPT DOCUMENT

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BT

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MATERIEL COURIER RECEIPT	SHIPPER'S CONTROL/DOCUMENT NO.	PRIVACY ACT STATEMENT
SHIPPER	SUPPLY ACCOUNT NUMBER	AUTHORITY: 5 U.S.C., Sec 552a (PL 93-579) PRINCIPAL PURPOSES: To provide a receipt for transfer of controlled material. The use of the SSAN is required and is necessary to provide positive identification of the individuals receipting for the material. ROUTINE USES: To document transfer of material from a shipper to a courier, courier to courier and/or receiver. DISCLOSURE IS VOLUNTARY: Since the SSAN must be used, refusal to provide SSAN may be grounds for action to remove the individual concerned from duties involving the material transferred by use of this form.
DESTINATION	SUPPLY ACCOUNT NUMBER	
I certify by my signature that I have inventoried the material listed on this form and am aware of the applicable safety and security requirements		SHIPMENT DESCRIPTION

SHIPMENT TRANSFERS			LINE NUMBER	QUANTITY	SERIAL NUMBERS	REMARKS
FIRST	LOCATION OF TRANSFER	DATE (YYMMDDAY)				
RECIPIENT'S PRINTED NAME (LAST, FIRST, M.I.)	ORGAN. OR ACCOUNT NO.					
SIGNATURE	SOCIAL SECURITY NUMBER					
RECEIPT	LOCATION OF TRANSFER	DATE (YYMMDDAY)				
RECIPIENT'S PRINTED NAME (LAST, FIRST, M.I.)	ORGAN. OR ACCOUNT NO.					
SIGNATURE	SOCIAL SECURITY NUMBER					
THIRD	LOCATION OF TRANSFER	DATE (YYMMDDAY)				
RECIPIENT'S PRINTED NAME (LAST, FIRST, M.I.)	ORGAN. OR ACCOUNT NO.					
SIGNATURE	SOCIAL SECURITY NUMBER					
FOURTH	LOCATION OF TRANSFER	DATE (YYMMDDAY)				
RECIPIENT'S PRINTED NAME (LAST, FIRST, M.I.)	ORGAN. OR ACCOUNT NO.					
SIGNATURE	SOCIAL SECURITY NUMBER					
FIFTH	LOCATION OF TRANSFER	DATE (YYMMDDAY)				
RECIPIENT'S PRINTED NAME (LAST, FIRST, M.I.)	ORGAN. OR ACCOUNT NO.					
SIGNATURE	SOCIAL SECURITY NUMBER					

DD FORM 1911, MAY 82 (EG) PREVIOUS EDITION MAY BE USED UNTIL 31 DEC 82 DSAPPC V1.01

Reset

DD Form 1911
MATERIEL COURIER RECEIPT

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REQUEST FOR ISSUE OR TURN-IN	ISSUE / TURN-IN	SHEET NO.	NO. OF SHEETS	6. REQUEST NUMBER
1. FROM:	5. DATE MATERIEL REQUIRED			7. PRIORITY
2. TO:	8. VOUCHER NUMBER		9. POSTED	DATE / BY / DATE / BY
3. ACCOUNTING AND FUNDING DATA				
4. END ITEM IDENTIFICATION	a. NAME AND MANUFACTURER	b. MODEL	c. SERIAL NUMBER	d. PUBLICATION

ITEM NO. a	STOCK NUMBER, DESCRIPTION, AND CODING OF MATERIEL AND/OR SERVICES b	* CODE c	UNIT OF ISSUE d	QUANTITY e	SUPPLY ACTION f	UNIT PRICE g	TOTAL COST h
							0.00
							0.00
							0.00
							0.00
							0.00
							0.00
						SHEET TOTAL	0.00
						GRAND TOTAL	

*ISSUE - I - Initial; R - Replacement TURN-IN - U - Unserviceable; S - Serviceable

10. ISSUE OR TURN-IN QUANTITIES IN "QUANTITY" COLUMN IS REQUESTED	DATE	BY	11. RECEIVED QUANTITIES IN "SUPPLY ACTION" COLUMN	DATE	BY

DD FORM 1150, OCT 57 REPLACES EDITION OF 1 JUL 58 WHICH MAY BE USED Reset Adobe Professional 7.0

DD Form 1150
REQUEST FOR ISSUE OR TURN-IN

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SCR Number: 04-011M

SCR Status: Submitted

Major Assembly/Component Status Change Report

1.Date 23-Jan-2004 | 2.Time 17:02 | 3.Control No. 04-011M

4.Name of Person Preparing Report (Last,First, Middle Initial) | 5.Signature | 6.Grade

A	B	C	D	E	F	G	H	I	J	K
Line No	Change Code	FSN Part No	Serial No	Alteration No	PAL Code	MFG/Pack Date	Condition	Associated With Part No	Associated With Serial No	Cont/Bolster H No	Cont/Bolster Status

Line No	Change Code	FSN Part No	Serial No	Alteration No	PAL Code	MFG/Pack Date	Condition	Associated With Part No	Associated With Serial No	Cont/Bolster H No	Cont/Bolster Status
[illegible]	[illegible]	853978-03	400007	123, 144, 155, 666	B	[illegible]	Y	-	-	-	-

Remarks: Line No. 1 - Weapon Prepped for Storage

8. WSR Number | 9. Name of Person Verifying Report (Last,First, Middle Initial) | 10. Signature of Person Verifying Report

--

Print

DIAMONDS STATUS CHANGE REPORT (SAMPLE)

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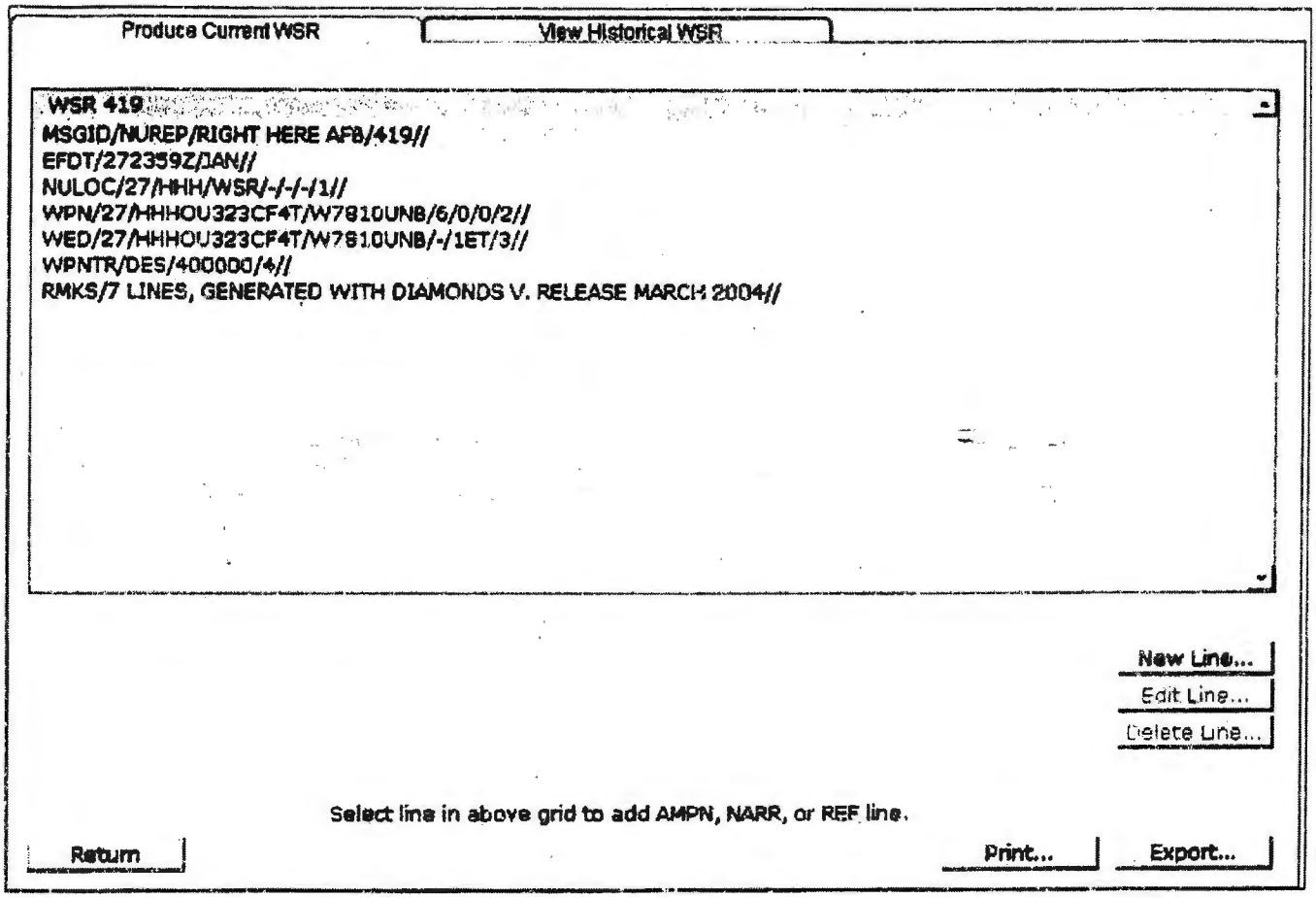

DIAMONDS WEAPONS STATUS REPORT (SAMPLE)

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Stock Record Card for 456789-33:

Tran Date	Doc Number	WSR	SCR	Trans	From/To	Inc	Dec	Serv	Unsrv	IU Serv	IU Unsrv
12-AUG-2004	FK293580002	10	04-004	REC	FK3333	1	0	1	0	0	0
12-AUG-2004	05-228	10	04-004	ISU	FK1234	0	0	0	0	1	0

New...
Edit...
Delete...
Return

DIAMONDS STOCK RECORD CARD (SAMPLE)

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WEAPONS CUSTODY TRANSFER DOCUMENT

1. Control Number	2. Warhead/Bomb/Reentry Vehicle Serial Number(s)	3. Missile Serial Number(s) (if applicable)	4. Reentry System/Pylon Launcher Serial Number (If Applicable)	5. A/C Tail Number (If Applicable)

6. CUSTODY STATEMENT. I accept custodial responsibility for the items listed below. I acknowledge that custodial responsibility referred to in this statement entails the custody, care, and safekeeping of these items and their components. Responsibility will be transferred when the signature of an authorized individual and appropriate date are entered on the next line following my signature below.

CUSTODIAN A	POSITION B	ORGANIZATION C	TIME/DATE D	LOCATION E
TRANSFERRED FROM (Print and Sign)				
TRANSFERRED TO (Print and Sign)				
TRANSFERRED TO (Print and Sign)				
TRANSFERRED TO (Print and Sign)				
TRANSFERRED TO (Print and Sign)				
TRANSFERRED TO (Print and Sign)				
TRANSFERRED TO (Print and Sign)				
TRANSFERRED TO (Print and Sign)				
TRANSFERRED TO (Print and Sign)				
TRANSFERRED TO (Print and Sign)				
TRANSFERRED TO (Print and Sign)				

AF FORM 504, 20080117

AF Form 504
WEAPONS CUSTODY TRANSFER DOCUMENT
(SAMPLE)

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~~FOR OFFICIAL USE ONLY~~

DOE/NRC FORM 741

U.S. DEPARTMENT OF ENERGY AND U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0003

NUCLEAR MATERIAL TRANSACTION REPORT

WARNING: FALSE STATEMENTS IN THIS CERTIFICATE MAY BE SUBJECT TO CIVIL AND/OR CRIMINAL PENALTIES. NRC REGULATIONS REQUIRE THAT SUBMISSIONS TO THE NRC BE COMPLETE AND ACCURATE IN ALL MATERIAL RESPECTS. 18 U.S.C. SECTION 1001 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

DOE/NRC Form 741
NUCLEAR MATERIAL TRANSACTION REPORT

~~FOR OFFICIAL USE ONLY~~

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~~CONFIDENTIAL/FRD~~

~~FOR OFFICIAL USE ONLY~~

U.S. DEPARTMENT OF ENERGY
DOE Form AD-60 (8/82)

FOR TRAINING PURPOSES ONLY

COURIER RECEIPT

55887

I have received: No. of envelopes 0 No. of packages 0 No. of containers 5 AL

Transmitted by ROCKWELL INTERNATIONAL, ROCKY FLATS, CO
(NAME AND ADDRESS OF SENDER)

Addressed to WESTINGHOUSE, SRO, AIKEN, SC
(NAME AND ADDRESS OF ADDRESSEE)

Identified as follows: FIVE (5) METAL DRUMS NUMBERS 101, 102, 103, 104, AND 105.

NOTHING FOLLOWS

PRINTED NAME & BADGE NUMBER / PRINTED NAME & BADGE NUMBER

SIGNATURE & BADGE / SIGNATURE & BADGE

(NAME OF PERSON FROM WHOM RECEIVED (If courier, indicate Courier Card Number))

(SIGNATURE OF RECIPIENT (If courier, indicate Courier Card Number))

ROCKY FLATS, CO (PLACE OF TRANSFER)

11-20-06 (DATE)

DOE Form AD-60, *Courier Receipt*
(Replaced by DOE Form 1540.2)

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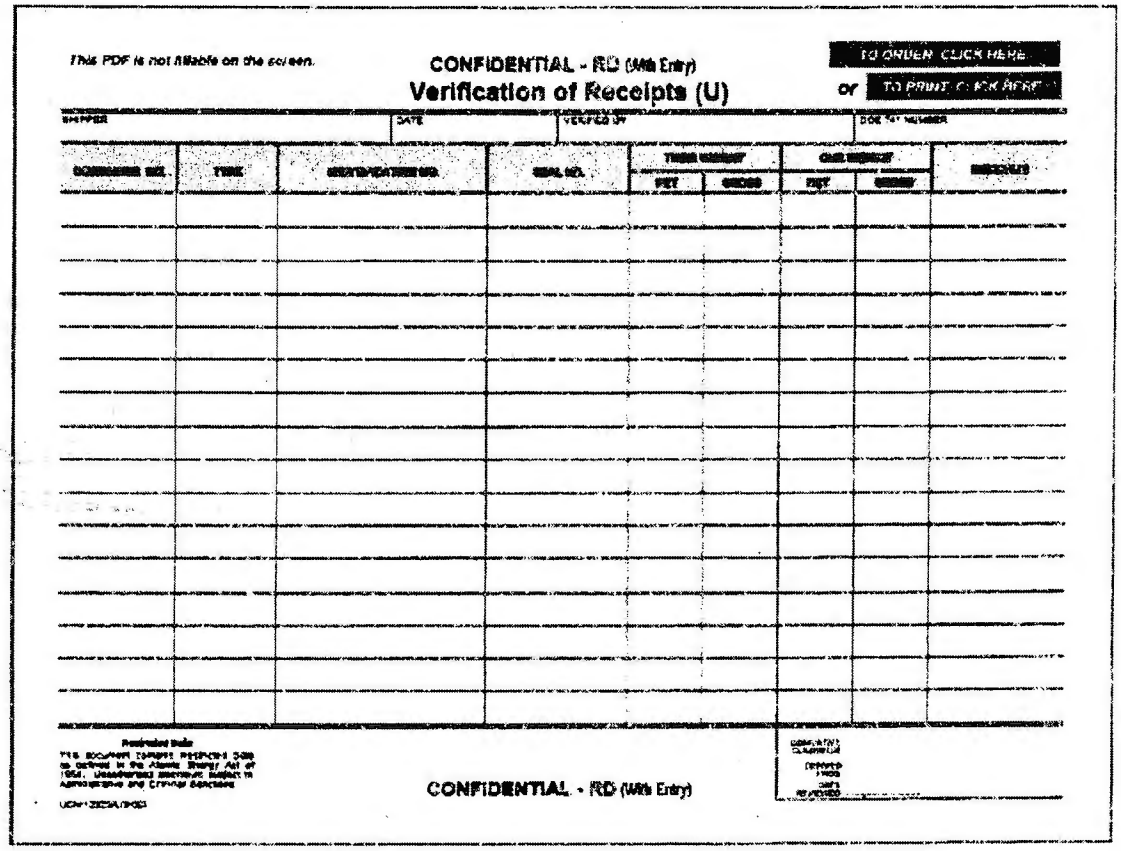

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CONFIDENTIAL - RD (Mfg Entry)

Verification of Receipts (U)

TO ORDER CLICK HERE

or TO PRINT CLICK HERE

SHIPPER | DATE | VERIFIED BY | DOE TAT NUMBER

SUBMISSION NO.	TYPE	IDENTIFICATION NO.	SEAL NO.	TAMPER VERIFIED		CASE WEIGHT		REMARKS
				YES	NO/NA	YES	NO/NA	

Restricted Data

THIS DOCUMENT CONTAINS RESTRICTED DATA as defined in the Atomic Energy Act of 1954. Unauthorized disclosure subject to administrative and criminal sanctions.

UCN-12929A (10-03)

CONFIDENTIAL - RD (Mfg Entry)

DERIVED FROM

DATE REVIEWED

Y-12 Form UCN-12929A, *Verification of Receipts*

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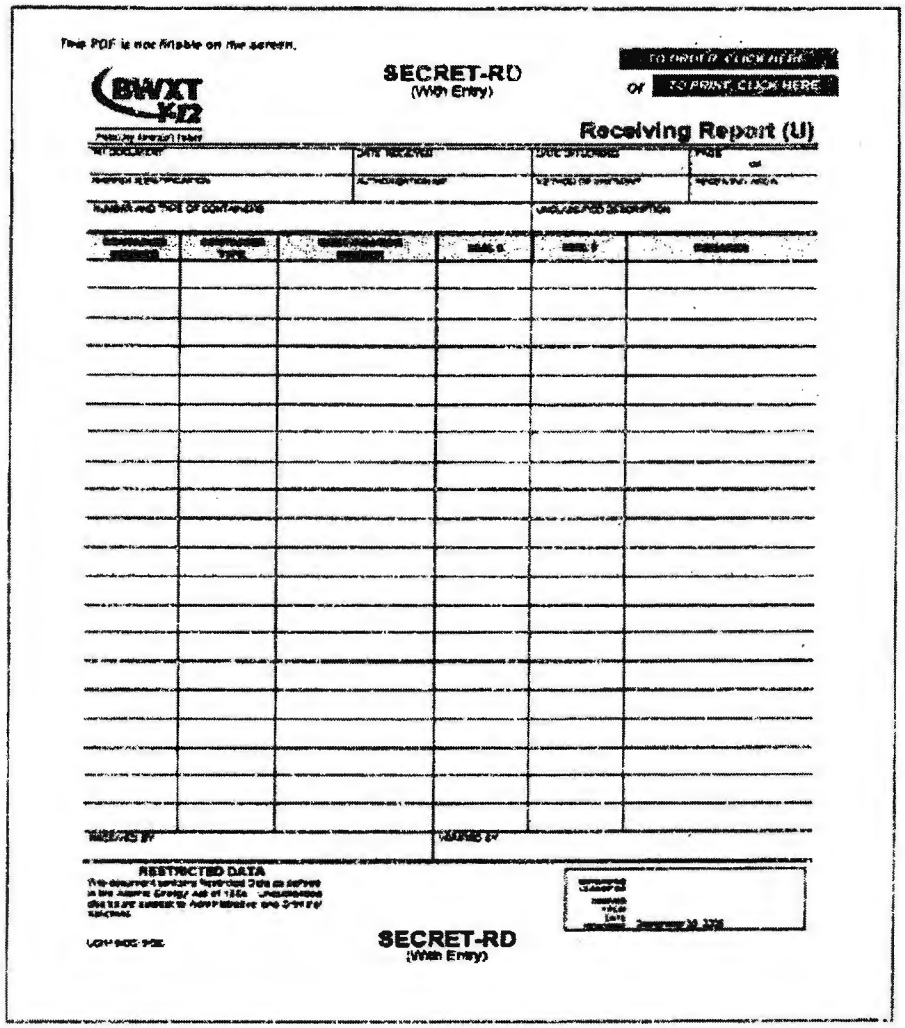

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BWXT Y-12

SECRET-RD
(With Entry)

TO ORDER, CLICK HERE
OR
TO PRINT, CLICK HERE

Receiving Report (U)

RESTRICTED DATA

SECRET-RD
(With Entry)

Y-12 Form UCN-1840C, *Receiving Report*

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****

UNCLASSIFIED

ALB-2 SANDIA NATIONAL LABORATORIES - CALIFORNIA (SNL)

CERTIFICATION EXPIRES JULY 17, 2008

CERTIFIED SHIPPING ADDRESS FOR OST COURIERED SRD MATERIAL
A. SANDIA NATIONAL LABORATORIES
ATTN:

(FOR EXPLOSIVES ONLY)
B. SANDIA NATIONAL LABORATORIES
ATTN:

MAILING:
SANDIA NATIONAL LABORATORY
ATTN: TRAFFIC PROGRAM

PRIMARY CONTACT TELEPHONE (FTS/COMM)

OPERATIONAL CONTACT (FTS/COMM)

24 HOUR CONTACT
SNL CA SECURITY FORCE (FTS/COMM)

CERTIFIED AUTHORIZED RECIPIENTS

THE FOLLOWING PERSONNEL OF THE SNL SECURITY FORCE ARE AUTHORIZED (DURING NON-OPER. HRS) TO RECEIPT FOR, TSD VEHICLES (LOCKED, SEALED, EMPTY, OR LOADED), FIREARMS, AND CLASSIFIED DOCUMENTS:

IN ADDITION TO THE ABOVE, ANY MATERIAL, VEHICLES, FIREARMS, AND DOCUMENTS MAY BE RELEASED TO VALERIE SULLIVAN, DOE OAK OPERATIONS OFFICE SITE REPRESENTATIVE (OFFICE AT LLNL), FOR FURTHER RELEASE TO SANDIA LABS-LIVERMORE.

NOTES
THIS DATA SHEET IS FOR SNM AND EXPLOSIVE CLASS A AND CLASS B OR OTHER CLASSIFIED MATERIAL AT SNL CA.

*FOR MPB PERSONNEL: USE FOLLOWING ADDRESSES FOR CLASSIFIED TWX'S-
C

ISSUE DATE 07/17/07

CIVPAGE 19

UNCLASSIFIED

Sample Certified Personnel Directory (CPD)

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~~CONFIDENTIAL/FRD~~
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B&W Pantex

OFFICIAL USE ONLY
Q-FORM

SAFEGUARDS CONFIRMATION FOR NUCLEAR WEAPONS (U)

P7-0849.3 Issue	
WI 02.02.03.02.16 Issue	
Program	
Mod	
Alts	
Part Number	
Primary Measurement: MCA	
Probe Size	
Secondary Measurement: MCA	
Probe Size	

Document Custodian: _____
Date: 01/21/08

OFFICIAL USE ONLY
May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552) exemption number and category:
Exemption 2H – Circumvention of Statute
Department of Energy review required before public release
Name/Org.: _____
Date: 01/10/08
Guidance (if applicable): CG-SS-04 09/2000

Index No. Q-1621
Page No. 1 of 2
Issue AM

S:\M80\PitProc\QFORMS\Q-1621(AM).doc

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Pantex form Q-1621, *Confirmation for Nuclear Weapons* (Page 1)

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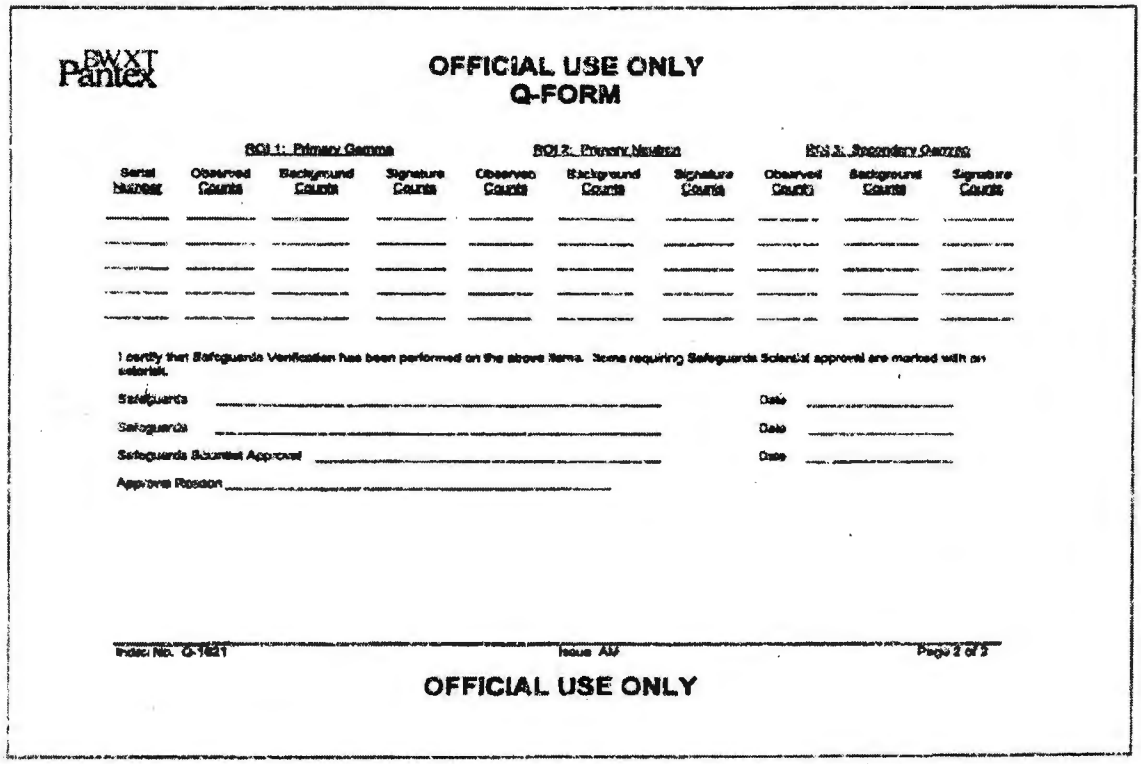

BWXT Pantex

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Q-FORM

	ROI 1: Primary Gamma			ROI 2: Primary Neutron			ROI 3: Secondary Gamma		
Serial Number	Observed Counts	Background Counts	Signature Counts	Observed Counts	Background Counts	Signature Counts	Observed Counts	Background Counts	Signature Counts

I certify that Safeguards Verification has been performed on the above items. Items requiring Safeguards Scientist approval are marked with an asterisk.

Safeguards _____ Date _____

Safeguards _____ Date _____

Safeguards Scientist Approval _____ Date _____

Approval Reason _____

Index No. Q-1621 Issue AM Page 2 of 2

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Pantex form Q-1621, *Confirmation for Nuclear Weapons* (Page 2)

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	SECRET RD Unclassified When Blank	Index No. PX-3400A Page No. 1 of 2 Issue No. 1
Planning Number	**Material Movement – Planning and Authorization [U]** Reference: P7-3400	Authorization Number

FROM	TO
Location:	Location:
Originator:	Receiver:
Phone/Pager	Phone/Pager

Containers Qty	Containers Type	Program	Part No.	S/N (If Applicable)	Item Count	TOTAL PU Wt. (kg)	TOTAL Explosive Wt. (lbs)	Haz Class & Group (ex 11D,13C)
	RADIOACTIVE? ±	Yes	No	LEVEL ±				

COMMENTS: _____

ORIGINATOR SIGNATURE: _____ RECEIVER SIGNATURE: _____

DATE: _____ DATE: _____

MBA Custodian/Alternate signatures are required for moves of Special Nuclear Material and Nuclear Material between MBA 04 and MBA 12. Signatures signify transfer checks have been performed.

Shipping Custodian:	Receiving Custodian:
Date:	Date:

RESTRICTED DATA This document contains Restricted Data as defined in the Atomic Energy Act of 1954. Unauthorized disclosure subject to Administrative and Criminal Sanctions.		Derivative Classifier: Gary Bowen Title: Section Manager Source: LA-4000, Rev. 7, 09/93
	SECRET RD	

Pantex form PX-3400A, *Material Movement – Planning Authorization*

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APPENDIX C: LIST OF REFERENCES

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2) AFI 21-101, "Aircraft and Equipment Maintenance Management," June 29, 2006.
3) AFI 21-200, "Munitions and Missile Maintenance Management," March 10, 2007.
4) AFI 21-204, "Nuclear Weapons Maintenance Procedures," January 17, 2008 (incorporating through change 2, March 30, 2009).
5) AFI 21-210, "Department of Energy and Other Non-USAF Agency Nuclear Weapon Related Visits to Air Force Organizations," March 3, 2006.
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7) AFI 36-2201 V2, Air Force Training Program Training Management," January 13, 2004.
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9) AFMAN 23-110, "USAF Supply Manual," January 1,2009.
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11) Air Force Blue Ribbon Review, February 8, 2008.
12) CJCSI 3150.04, "Nuclear Weapons Stockpile Logistics Management and Nuclear Weapons reports under the Joint Reporting Structure," December 20, 2006.
13) Commander, Air Combat Command, Commander Directed Investigation, October 2007
14) COMNAVSUBFORINST 8120.2, "Submarine Force Nuclear Weapons Manual," July 29, 2003
15) Defense Nuclear Security Performance Assurance Program Guide, Revision 1, December 2006
16) The Defense Science Board Permanent Task Force on Nuclear Weapons Surety," Report on the Unauthorized Movement of Nuclear Weapons," February 2008.
17) DoD Directive 3150.2, "DoD Nuclear Weapon System Safety Program," December 23, 1996.
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19) DoD Directive 4151.18, "Maintenance of Military Materiel," March 31, 2004.
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21) DoD Directive 5210.81 "United States Nuclear Weapons Command and Control, Safety and Security," August 8, 2005.
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23) DOE O 452.2C, "Nuclear Explosive Safety," June 12, 2006.
24) DOE O 452.3, "Management of the Department of Energy Nuclear Weapons Complex," June 8, 2005.
25) DOE O 461.1A, "Packaging and Transfer or Transportation of Materials of National Security Interest," April 26, 2004.
26) DOE M 461.1-1, "Packaging and Transfer of Materials of National Security Interest Manual," September 29, 2000.
27) DOE M 470.1, "Integrated Safeguards and Security Management Policy," May 8, 2001.
28) DOE M 470.4-1 Change 1, "Safeguards and Security Program Planning and Management," August 26, 2005.
29) DOE M 470.4-2, "Physical Protection," August 26, 2005.
30) DOE M 470.4-3 Change 1, "Protective Force," August 26, 2005.

31) DOE M 470.4-5, "Personnel Security," August 26, 2005.
32) DOE M 470.4-6, "Nuclear Materials Control and Accountability," August 26, 2005.
33) DOE O 461.1A, "Packaging and Transfer or Transportation of Materials of National Security Interest," April 26, 2004.
34) DOE O 470.4, "Safeguards and Security Program," May 25, 2007.
35) DOE O 5480.20A Change 1, "Personnel Selection, Qualification and Training Requirements for DOE Nuclear Facilities," July 12, 2001.
36) DOE P 470.1, "Integrated Safeguards and Security Management Policy," May 8, 2001.
37) Los Alamos National Laboratory's "Material Control and Accountability Plan,".
38) OPNAVINST 5040.6, "DON Nuclear Weapons Technical Inspections (NWTIs) and Nuclear Weapon Readiness Certification," September 12, 1997.
39) OPNAVINST 8110.18, "Department of the Navy Nuclear Weapon System Safety Program," November 24, 1998.
40) PMT3-AP-523, "Shipping Hazardous Materials."
41) PMT3-WI-100, "Vault Door Access Control and Security."
42) PMT3-WI-101, "Requirements for Vault Operators,"
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50) Technical Area (TA) 55-AP-100, "Requirements for Vault Users Intending to Remove Items from the Vault or Bring Items to the Vault."
51) TA 55-AP-585, "Nuclear Material Control and Accountability."
52) TA 55-WI-001, "Shelving and/or Retrieving Items in the Vault."
53) Technical Order 11N-3150-8-1, "USAF DIAMONDS Policy and Procedures," October 1, 2009.
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55) Technical Publication 20-11, "General Guidance and Materiel Hazard Information for Nuclear Weapons Components and Non-Nuclear Weapons Designations," July 31, 2007.
56) Technical Publication 25-1, "DoD Nuclear Weapons Technical Inspection System," February 19, 2008.
57) Technical Publication 45-51, "Transportation of Nuclear Weapons Materiel - General Shipping and Limited Life Component (LLC) Data," March 22, 2006.
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