

**BY ORDER OF THE  
SECRETARY OF THE AIR FORCE**

**AIR FORCE INSTRUCTION 91-105**

**22 JULY 2016**



**Safety**

**CRITICAL COMPONENTS**

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This Instruction implements Air Force Policy Directive (AFPD) 91-1, *Nuclear Weapons and Systems Surety*. This publication is consistent with AFPD 13-5, *Air Force Nuclear Enterprise*. It outlines requirements for certifying, decertifying, designating, marking, controlling, and storing critical components. This Instruction applies to all Air Force personnel who perform operations, maintenance, security, or logistics movement of critical components. For guidance on Nuclear Weapons Related Material (NWRM) see Air Force Instruction (AFI) 20-110, *Nuclear Weapons-Related Materiel Management*. This instruction is applicable to the Air Force Reserve Command (AFRC) and Air National Guard (ANG) units performing nuclear missions. Send major command (MAJCOM) supplements to this Instruction to Air Force Safety Center, Weapons Safety Division (AFSEC/SEW) at [HQAFCSEW@kirtland.af.mil](mailto:HQAFCSEW@kirtland.af.mil) or 9700 G Avenue, Kirtland AFB NM 87117-5670 for coordination before publication. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW the Air Force Records Disposition Schedule (RDS) in the Air Force Records Information Management System (AFRIMS). The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, Table 1.1, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication Office of Primary Responsibility (OPR) for non-tiered compliance items. Refer recommended changes and questions about this publication to the OPR using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command.

## ***SUMMARY OF CHANGES***

This revision added new responsibilities to the Assistant Secretary of the Air Force (Acquisition) and Air Force Materiel Command not previously codified in policy as well as clarifying shipping and storage requirements for critical components. Additionally, roles for Program Managers were clarified.

### ***Section A—General Information***

**1. Air Force Goal.** To prevent unauthorized activation of critical functions, as specified in AFI 91-107, *Design, Evaluation, Troubleshooting, and Maintenance Criteria for Nuclear Weapon Systems*, the Air Force develops positive measures to protect against inherent risks and threats, and to ensure components are compatible with the assembled nuclear weapon system.

1.1. A critical component is a component of a nuclear weapon system that if bypassed, activated, or tampered with could result in or contribute to deliberate or inadvertent authorizing, pre-arming, arming, or launch of a combat delivery vehicle carrying a nuclear weapon or the targeting of a nuclear weapon to other than its planned target.

### ***Section B—General Responsibilities***

**2. Air Force Chief of Safety (AF/SE).** AF/SE establishes requirements to designate, certify and manage the critical component process and directs AFSEC/SEW to:

2.1. Designate critical components (when not designated by the AF Nuclear Weapon System Surety Group (NWSSG)).

2.2. Designate split-handling or split-knowledge procedures, as defined in AFI 91-101, *Air Force Nuclear Weapons Surety Program*, for critical components if not previously determined or if procedures proposed or in use are determined by AFSEC/SEW to be inadequate (when not designated by the AF NWSSG).

2.3. Approve Operational Certification (OPCERT)/Operational Decertification (DECERT) and procedural controls for critical components.

2.4. Approve vaults and containers used to store critical components (see paragraph 12).

2.5. Nuclear safety design certify Tamper Detection Indicators (TDI) per AFI 91-103, *Air Force Nuclear Safety Design Certification Program*, and approve their use to protect the certification status of critical components.

**3. Assistant Secretary of the Air Force (Acquisition) (SAF/AQ):**

3.1. Identifies Program Manager responsibilities for critical components

3.2. Ensures Program Managers for nuclear capable/certified weapon systems and nuclear certified mission support items develop OPCERT and DECERT procedures.

**4. Air Force Materiel Command (AFMC) Commander will:**

4.1. Ensure that the Air Force Nuclear Weapons Center (AFNWC) commander will:

4.1.1. Support nuclear certification requirements IAW AFI 63-125, *Nuclear Certification Program*.

4.1.2. Ensure TDI and designated critical components are nuclear safety design certified IAW AFI 63-125, as appropriate.

4.1.2.1. Ensure Nuclear Certification Impact Statements (NCIS) affecting designated critical components and TDIs are coordinated with AFSEC/SEW to determine appropriate nuclear safety design certification requirements.

4.1.2.2. Ensure designated critical components are properly identified in the Master Nuclear Certification List (MNCL).

**5. Air Force Nuclear Weapon System Surety Group.** Per DoDM 3150.02, *DoD Nuclear Weapon System Safety Program Manual*, the AF NWSSG reviews nuclear weapon system designs and operations to determine if they meet the Department of Defense (DoD) Nuclear Weapon System Safety Standards. It proposes safety rules and recommends changes to improve nuclear weapon system surety. Specifically, the AF NWSSG:

5.1. Designates which nuclear weapon system components are critical and reviews those designated by AF/SE.

5.2. Designates which nuclear certified critical components require split-handling or split-knowledge procedures and reviews those designated by AF/SE.

5.3. Designates split-handling or split-knowledge procedures during the lifecycle of the nuclear weapon system critical component and reviews those designated by AF/SE.

5.4. Reviews and, if required, updates weapon system safety rules.

**6. Program Managers.** AFI 63-125 provides a process for establishing and administering the nuclear certification of Air Force nuclear systems throughout their life cycles. The Program Manager responsible for procuring or modifying a nuclear weapon system must:

6.1. Notify AFSEC/SEW of weapon system modifications that impact current critical components by submitting a NCIS to the AFNWC/NTS (Surety and Certification Division). The NCIS IAW AFI 63-125 provides a functional description of the proposed new system or modification and includes the System Program Manager's evaluation of its potential for nuclear certification impact. Further NCIS guidance is provided in AFI 63-125.

6.2. Recommend items for critical component status to AFSEC/SEW.

6.3. Recommend OPCERT and DECERT concepts and Technical Order procedures of critical components to AFSEC/SEW. Recommend decertification of critical components when component is no longer part of an assembled nuclear weapon system.

**7. Commanders of Organizations Possessing Critical Components will:**

7.1. Implement split-handling and split-knowledge control procedures. (T-0).

7.2. Operationally certify critical components IAW AFI 91-103 and as required by approved Technical Order procedures.

7.3. Decertify critical components according to AFI 91-103 and associated Technical Orders.

7.4. Control certified critical components according to Section D of this Instruction. (T-0).

### *Section C—Designating and Marking Critical Components*

**8. Designating Critical Components.** Critical components must receive nuclear certification IAW AFI 63-125 and be listed in the MNCL.

8.1. Items designated as a critical component will be clearly identified as a critical component in the MNCL.

8.2. The National Security Agency (NSA) may request critical component designation for NSA-produced software and hardware used with a nuclear weapon or nuclear weapon system. The NSA-provided software and hardware items receive certification equal to that provided by the Air Force and therefore do not need additional Air Force design certification.

**9. Marking Critical Components. Organizations possessing critical components will:**

9.1. Affix the label or tag to the outside of the critical component and the component's shipping container. (T-0). ICBM code components will be tagged while outside of shipping containers. (T-0).

9.2. Cover the label or tag when the component is not certified for operational use. (T-0).

9.3. Ensure no external markings are made which identify areas, facilities, aircraft, or equipment as containing critical components (e.g. adding identifying paint stripe). (T-0).

### *Section D—Controlling Critical Components*

**10. Two-Person Concept.** The Two-Person Concept (TPC), as defined in AFI 91-101, protects a part of each critical component's life cycle. This minimizes the possibility that an unauthorized or inadvertent act could degrade the nuclear surety of a nuclear weapon or nuclear weapon system. TPC for a critical component may begin at the time of production and continue until the critical component's destruction or may occur during any interim period. Complete the following tasks:

10.1. Handle and control the component following the guidelines for operationally certified critical components in AFI 91-104, *Nuclear Surety Tamper Control and Detection Programs*. (T-0).

10.2. Keep a code component or device under TPC or store it according to the methods described in paragraph 12 when an operational code that cannot be overwritten passes through it. (T-0). TPC applies if the code component or device has no operational DECERT procedure and continues until all embedded codes are superseded or IAW controlling authority, per Emergency Action Procedures-Strategic (EAP-STRAT), Volume 16, *ICBM Code Component Control Policy and Procedures*.

**11. Shipping Requirements.** If using a TPC team or NSA-approved TDIs to protect the certification status, you will use the DoD Courier Service to transport operationally certified critical components. (T-0).

**12. Storage Requirements.** These storage requirements apply to certified critical components. Decertified critical components require storage units to meet security classification requirements, IAW CG-W-5, *Joint DoE/DoD Nuclear Weapons Classification Policy Guide*. (T-0).

12.1. Operational Use of Critical Components. Protect certified critical components in operational use by keeping them under TPC or in a storage facility as specified in paragraph 12.2. (T-0).

12.2. Use one of the following methods to store certified critical components that are not under TPC.

12.2.1. Method 1. Store components in an approved reinforced concrete vault. (T-0).

12.2.2. Method 2. Store components in an approved storage container. (T-0).

12.2.3. Method 3. Protect components with TDIs approved IAW AFI 91-104.

12.3. Apply the following for methods 1 and 2.

12.3.1. Store the component in a no-lone zone. (T-0).

12.3.2. Secure every entrance to the no-lone zone with two General Services Administration (GSA) medium-security locks ensuring no individual can open both locks, or a GSA approved combination lock which requires two separate combinations to be dialed out for it to be unlocked ensuring no lone individual can gain access to the no-lone zone. (T-0).

12.3.3. Use volumetric motion detectors and door detectors with capability to cover all facility openings greater than 96 square inches; all detectors must report independently to a remote, continuously staffed location. (T-0).

12.3.3.1. Incorporate a line supervision scheme within the alarm reporting circuits for the storage area that detects tampering and reports it to the remote monitoring facility. (T-0).

12.3.3.2. Keep at least one person focused on security functions at the alarm monitor location. (T-0).

12.4. Unless they are protected by method 3, keep temporarily stored certified critical components (e.g. uncoded Minuteman missile guidance sets remaining overnight at missile alert facilities) in a no-lone zone. Protect the components as their classification warrants. "See EAP-STRAT Volume 16, [Chapter 4](#), paragraph 7, for procedures concerning code components." (T-0).

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Major General, USAF  
Chief of Safety

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

DoDM 3150.02, *DoD Nuclear Weapon System Safety Program Manual*, 31 January 2014

AFPD 13-5, *Air Force Nuclear Enterprise*, 6 July 2011

AFPD 91-1, *Nuclear Weapons and Systems Surety*, 13 December 2010

AFI 20-110, *Nuclear Weapons-Related Materiel Management*, 23 October 2014

AFI 33-360, *Publications and Forms Management*, 1 December 2015

AFI 63-125, *Nuclear Certification Program*, 8 August 2012

AFI 91-101, *Air Force Nuclear Weapons Surety Program*, 15 August 2014

AFI 91-103, *Air Force Nuclear Safety Design Certification Program*, 24 March 2016

AFI 91-104, *Nuclear Surety Tamper Control and Detection Programs*, 23 April 2013

AFI 91-107, *Design, Evaluation, Troubleshooting, and Maintenance Criteria for Nuclear Weapon Systems*, 11 December 2012

AFMAN 33-363, *Management of Records*, 1 March 2008

CG-W-5, *Joint DoE/DoD Nuclear Weapons Classification Policy Guide*, 30 September 1997

EAP-STRAT - Emergency Action Procedures-Strategic Volume 16, *ICBM Code Component Control Policy and Procedures*, 1 March 2012

AFRIMS RDS, <https://www.my.af.mil/afirms/afirms/afirms/rims.cfm>

***Adopted Forms***

AF Form 847, *Recommendation for Change of Publication*

***Abbreviations and Acronyms***

**AF**—Air Force

**AF/SE**—Air Force Safety

**AFB**—Air Force Base

**AFI**—Air Force Instruction

**AFMAN**—Air Force Manual

**AFMC**—Air Force Material Command

**AFNWC**—Air Force Nuclear Weapons Center

**AFPD**—Air Force Policy Directive

**AFRC**—Air Force Reserve Command

**AFRIMS**—Air Force Records Information Management System

**ANG**—Air National Guard

**AFSEC**—Air Force Safety Center

**AFSEC/SEW**—Air Force Safety Center, Weapons Safety Division

**AFSEC/SEWN**—AFSEC/SEW, Nuclear Weapon Safety Branch

**DECERT**—Operational Decertification

**DoD**—Department of Defense

**DoE**—Department of Energy

**EAP**—Emergency Action Procedures-Strategic

**ICBM**—Intercontinental Ballistic Missile

**GSA**—General Services Administration

**MAJCOM**—Major Command

**MNCL**—Master Nuclear Certification List

**NSA**—National Security Agency

**NCIS**—Nuclear Certification Impact Statement

**NTS**—Surety and Certification Division

**NWRM**—Nuclear Weapons Related Material

**NWSSG**—Nuclear Weapon System Surety Group

**OPCERT**—Operational Certification

**OPR**—Office of Primary Responsibility

**RDS**—Records Disposition Schedule

**SAF/AQ**—Assistant Secretary of the Air Force, Acquisition

**TDI**—Tamper Detection Indicators

**TPC**—Two-Person Concept