

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

AIR FORCE INSTRUCTION 91-117

29 AUGUST 2022



Safety

**SAFETY RULES FOR THE AIRBORNE
LAUNCH CONTROL SYSTEM**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements Air Force Policy Directive (AFPD) 91-1, *Nuclear Weapons and Systems Surety*, and is consistent with DAFPD 13-5, *Air Force Nuclear Mission*. The publication is subject to 44 U.S.C. § 3501 et seq. (commonly known as the Paperwork Reduction Act of 1995). **(T-0)** This instruction applies to Department of the Air Force (DAF) civilian employees and uniformed members of the Regular Air Force, Air Force Reserve, Air National Guard and nuclear certified equipment, facilities involved with nuclear weapons, nuclear weapon systems, and radioactive materials-related program. This publication does not apply to the United States Space Force. The United States Navy (USN) will comply with this publication in accordance with (IAW) Memorandum of Agreement (MOA), *Warfare Integration for Information Warfare and Chief of Safety*, with the United States Air Force (USAF) for Nuclear Certification of the E-6 Airborne Launch Control Center dated 1 July 2016. Ensure all records generated as a result of processes prescribed in the publication adhere to Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the office of primary responsibility (OPR) using DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. This publication may not be supplemented or further implemented/extended. The authorities to waive wing or 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 Department of the Air Force Manual (DAFMAN) 90-161, *Publishing Processes and Procedures*, 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 requestor's commander for non-tiered compliance items. Compliance with the attachment references in this publication is mandatory.

SUMMARY OF CHANGES

This document has been updated for administrative changes. There are some minor administrative and formatting changes and the regulation references were updated. Removed "N/A for Airborne Launch Control System (ALCS)" statements from General Guidance for consistency across Weapon System Safety Rules publications. Clarified security requirements associated with physical security, Positive Control Material (PCM), Code Processor Equipment (CPE), and cryptovvariable data.

Section A—Authority, Limitations, and Responsibilities

1. The Secretary of Defense (SecDef). The SecDef directs the Secretary of the Air Force to implement these safety rules for the Airborne Launch Control System (ALCS).

2. Secretary of the Air Force (SecAF). The SecAF designates the Chief of Safety (AF/SE) as being responsible for overseeing nuclear surety of nuclear weapons and weapon systems throughout the Department of the Air Force. This responsibility includes implementation of these safety rules for the ALCS.

3. Additional Limitations. The United States Air Force or United States Navy may impose restrictions that are stricter than those contained in safety rules, but may not unilaterally change the safety rules.

4. Functional Responsibilities.

4.1. The Air Force Chief of Safety.

4.1.1. Must ensure safety rules provide maximum safety consistent with operational requirements.

4.1.2. Ensures Major Commands (MAJCOMs) enforce the safety rules.

4.1.3. Is responsible for interpretation and clarification of general and specific guidance in **Section B** and **Section C**.

4.2. Using Commands (Combatant Command/Major Commands).

4.2.1. Ensure their units follow the safety rules.

4.2.2. Ensure all supplemental guidance and procedures agree with the approved safety rules.

4.2.3. Inspect for compliance.

4.2.4. Ensure their manuals, checklists, and technical orders do not conflict with the safety rules.

*Section B—General Safety Rules***5. General Guidance.**

5.1. Per Department of Defense Manual (DoDM) 3150.02, *DoD Nuclear Weapon System Safety Program Manual*, general safety rules apply to all nuclear weapons and nuclear weapon systems. General safety rules primarily apply safety policy and shall be included as part of the Military Department's safety rules package. **(T-0)** Safety rules always apply, even during war. **(T-0)**

5.2. Nuclear weapons shall not be intentionally exposed to abnormal environments except in an emergency. **(T-0)**

5.3. Nuclear weapons will not be used for training or for troubleshooting (i.e., to confirm the existence of a fault, aid in fault isolation, or verify that a fault has been corrected) except as explicitly allowed by a specific safety rule. **(T-0)**

5.4. Nuclear weapons may be used for exercises except when explicitly prohibited by specific safety rules. **(T-0)**

5.5. Personnel having physical access to nuclear weapons must be certified under the Personnel Reliability Assurance Program (PRAP), in accordance with Department of Defense Instruction (DoDI) 5210.42, *DoD Nuclear Weapon Personnel Reliability Assurance*. **(T-0)**

5.6. Only certified procedures, personnel, equipment, facilities, and organizations, authorized by the appropriate level of authority, shall be employed to conduct nuclear weapon system operations. **(T-0)**

5.7. The total number of personnel performing nuclear weapon system operations shall be held to the minimum consistent with the operations performed. **(T-0)**

5.8. At least two authorized persons must be present during any operation with a nuclear weapon, except when authorized by a specific safety rule; e.g., alert fly. They must be able to detect incorrect or unauthorized procedures in the task being performed. They must also have knowledge of and understand applicable safety and security requirements. **(T-0)**

5.9. Physical security will be maintained, in accordance with Department of Defense Directive (DoDD) 5210.41, *Security Policy for Protecting Nuclear Weapons*. **(T-0)**

5.10. Nuclear weapons will be transported as determined by the Combatant Commander or the custodial Military Department, in accordance with DoDI 4540.05, *DoD Transportation of U.S. Nuclear Weapons*. Additionally, custody and accountability transfers during logistic movements will be by courier receipt system to ensure positive control. **(T-0)**

5.11. Use control operations will be in accordance with plans and procedures prescribed by the applicable Combatant Command and Technical Publications. **(T-0)**

5.12. Verification that a nuclear warhead is not present in a test assembly must be made utilizing nonnuclear assurance procedures at the last practical opportunity agreed upon by the Department of Defense (DoD) and/or Department of Energy (DOE) before the conduct of an operational test. **(T-0)**

5.13. Deviations from safety rules are permitted in an emergency, except as follows:

5.13.1. U.S. custody must be maintained until receipt of a valid nuclear control order that permits transferring U.S. nuclear weapons to non-U.S. delivery forces. **(T-0)**

5.13.2. Nuclear weapons shall not be expended unless a valid, properly authenticated nuclear control order conveying release or expenditure authority is received. **(T-0)**

5.13.3. Other permissible deviation from safety rules:

5.13.3.1. Jettisoning of nuclear weapons, for applicable systems, is permitted in the event of an emergency, and is to be accomplished according to plans and procedures prescribed for the area of operations. **(T-0)**

5.14. The safety rules may only be changed using procedures in AFI 91-102, *Nuclear Weapon System Studies, Operational Safety Reviews and Safety Rules*.

Section C—Specific Safety Rules

6. Specific Guidance.

6.1. These safety rules, weapon system features, operational and administrative controls, and technical procedures ensure the ALCS meets the Nuclear Weapon System Surety Standards in DAFI 91-101, *Air Force Nuclear Weapons Surety Program*, and DoDM 3150.02, *DoD Nuclear Weapons System Safety Program*. **(T-0)**

6.2. A commander may deviate from a specific rule in an emergency, but may not expend a nuclear weapon until authorized by an emergency war order. **(T-0)** DoDM 3150.02, defines an emergency as "an unexpected occurrence or set of circumstances in which personnel or equipment unavailability, due to accident, natural event, or combat, may demand immediate action that may require extraordinary measures to protect, handle, service, transport, jettison, or employ a nuclear weapon." **(T-0)**

6.3. Violations of referenced instructions in this AFI do not constitute weapons system safety rules (WSSR) violations unless specifically identified in this document. **(T-0)**

6.4. Changes that potentially impact nuclear weapon system surety must meet requirements identified in AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*. **(T-0)**

7. Security Criteria.

7.1. DoD-S 5210.92-M, *DoD Physical Security Requirements for Nuclear Command and Control (NC2) Facilities*, and United States Strategic Command (USSTRATCOM), Air Force, Navy instructions, and MAJCOM supplements apply.

7.2. When any critical component is aboard, control access to the aircraft and deny entry to any personnel unless: a) the critical component is being controlled by a proper code-handling or Two-Person Concept (TPC) team IAW Commander, United States Strategic Command Emergency Action Procedures (EAP-STRAT) Vol. 16, *ICBM Code Component Control Policy and Procedures* or b) the critical component is properly installed and secured IAW EAP-STRAT Vol 16 and a TPC team assigned to the aircraft, is present. **(T-0)**

7.3. Upon notification, security forces must provide Emergency Response and deny unauthorized access to ALCS alert-configured aircraft. **(T-0)**

8. Tamper Control and Detection. DAFI 91-101, Chapter 5, applies. **(T-0)**

9. Handling and Storage of Critical Components and Certified Software. DAFI 91-101, Chapter 6, applies. **(T-0)**

10. Handling and Storage of Positive Control Material (PCM). PCM will be controlled IAW Chairman of the Joint Chief of Staff Instruction (CJCSI) 3260.01 (Series), *Joint Policy Governing Positive Control Material and Devices*. Do not leave unlock documents on an unoccupied aircraft, unless storage design features for access delay and detection and appropriate security response procedures are approved IAW AFI 91-102. **(T-0)**

11. Personnel Reliability. DoDM 5210.42_AFMAN 13-501, *Nuclear Weapon Personnel Reliability Program*, and AFI 31-117, *Arming and Use of Force by Air Force Personnel*, apply. **(T-0)** Additionally, applicable Service SECNAVINST 5510.35D) and Combatant Command (USSTRATCOM Directive 227-2, *Nuclear Weapon Personnel Reliability Program*) supplemental guidance apply. **(T-0)** An ALCS alert-configured (PCM and/or AF Critical Components) aircraft must remain under the control of PRAP certified personnel. **(T-0)**

12. Equipment, Procedures, Checklists, and Modifications.

12.1. Use only equipment, procedures, and checklists that are consistent with technical publications approved by the US Air Force and US Navy for any operations directly associated with the ALCS portion of the ICBM nuclear weapon systems. **(T-0)**

12.2. All technical publications and equipment modifications must be approved by the US Air Force and/or US Navy, as appropriate, and must conform to the safety rules in this instruction and the DoD Nuclear Weapon System Surety Standards as identified in DoDM 3150.02. **(T-0)**

13. Operational Code Control.

13.1. Before loading either the operational cryptovariable or the operational S-data, a certified Missile Combat Crew–Airborne (MCC-A) must successfully complete the following test sequences:

13.1.1. Airborne Operational Program Crypto Sumcheck (CSC) **(T-0)**

13.1.2. Fail CSC **(T-0)**

13.1.3. Fail Code Processor Equipment (CPE) **(T-0)**

13.1.4. CPE Test **(T-0)**

13.1.5. Decrypt Test Sequences **(T-0)**

13.2. Reinitiate the preceding tests if any of the following equipment is replaced with a different unit:

13.2.1. Airborne Launch Control System Controller (ALCSC) processor chassis **(T-0)**

13.2.2. ALCSC expansion chassis **(T-0)**

13.2.3. Portable Storage Unit **(T-0)**

13.2.4. CPE **(T-0)**

13.3. After electronically loading the cryptovvariable data into the CPE, secure the access doors on the CPE with two approved locks to secure the Volatile Keying Assembly–A (VKA-A) and Volatile Keying Assembly-B (VKA-B) and prevent use of the Classified Command Control switch. **(T-0)** A single person must not know both combinations or control the keys to both locks. **(T-0)**

13.4. Individuals will not concurrently perform MCC-A duties and be a USWAC-401 custodian or member of a USWAC-401 handling team. **(T-0)** MCC-As must be decertified prior to performing USWAC-401 custodian or handling team duties. **(T-0)** USWAC-401 custodians or members of a USWAC-401 handling team will not be certified as MCC-As until expiration of worldwide unlock codes period. **(T-0)**

13.5. When transferring components between aircraft in a single Protection Level 1 (PL-1) alert aircraft parking area, lock the VKA-A and VKA-B in the CPE with two approved locks. **(T-0)** A single person must not know the combinations or control the keys to both locks. **(T-0)**

13.6. Only one half of an operational cryptovvariable (VKA-A or VKA-B) may be flown aboard the aircraft when not electrically loaded in the CPE. **(T-0)**

13.7. When removing an ALCS-configured aircraft from alert, erase the cryptovvariable data stored in the CPE by cycling the CPE power switch. The MCC-A must witness the lighting of the CPE's AC and BC lights. **(T-0)**

13.8. Do not remove VKA covers, except for emergency VKA destruction. **(T-0)**

13.9. If proper erasure of the VKA memory cannot be verified, continue to control as an operational VKA until the cryptovvariable data stored in memory have been superseded. **(T-0)**

13.10. ALCS-configured aircraft will not take off without proper control of operational unlock documents and complete operational cryptovvariable data. **(T-0)**

13.11. Do not authorize and/or grant unescorted entry to the ALCS-configured aircraft to anyone who had access to the Offutt Air Force Base Wing Code Processing System when current operational ALCS cryptovvariable data was prepared or has knowledge of any portion of the current worldwide unlock values. **(T-0)**

13.12. Prior to MCC-A departing an ALCS-configured aircraft, the data stored in the ALCS Controller must be overwritten and proper indications received. **(T-0)** If the ALCS Controller OVERWRITE fails, ALCS expansion chassis and ALCS processor chassis cards will remain under TPC control until transferred to USSTRATCOM/J374 for proper storage/control. **(T-0)**

14. Aircraft Configuration.

14.1. If an operationally coded VKA-A or VKA-B is installed or if operational cryptovvariable data are electronically loaded in the CPE, follow these procedures until the MCC-A has authenticated an execution order:

14.1.1. Keep the Airborne Launch Control Center switch in the OFF position. **(T-0)**

14.1.2. Do not activate the Multifunction Selector ALARM OVERRIDE switch, except when electronically loading the operational cryptovvariable data. **(T-0)**

14.1.3. Do not move the Classified Command Control switch inside the CPE to ENABLE. **(T-0)**

14.2. Install the operationally coded VKA-A and VKA-B in the CPE and verify the capability of the VKA erase circuits before an ALCS-configured aircraft takes off. **(T-0)** Do not preclude aircraft takeoff directed by an emergency war order if the erase circuits fail to verify. **(T-0)**

14.3. Keep the operationally-coded VKA-A and VKA-B in the CPE and the selector switches in the ARM position during takeoff, flight, and landing, except when required for airborne equipment checkout and loading procedures, in-flight electronic loading of the cryptovvariable data, and/or fault analysis while airborne. **(T-0)**

14.3.1. If the selector switches need to be placed to the SAFE position, or if the VKAs must be removed while airborne, the aircraft must be in level flight, at cruise altitude, and free of malfunctions that could be dangerous to flight. **(T-0)** The MCC-A will maintain proximity to the CPE to facilitate reinstallation and arming of the VKAs if safety-of-flight status changes. **(T-0)**

14.3.2. The selector switches need not be returned to the ARM position after the MCC-A has authenticated an execution order. **(T-0)**

15. Simulated Electronic Launch—Minuteman Test Procedures. AFI 91-114, *Safety Rules for Intercontinental Ballistic Missile Weapon Systems*, applies. **(T-0)**

16. Aircraft Operations.

16.1. ALCS alert-configured aircraft will not be positioned at a location where bomber nuclear weapons generation is being performed. **(T-0)**

16.2. ALCS alert-configured aircraft will not stand ground alert at a location with active ICBM wings. **(T-0)**

JEANNIE M. LEAVITT
Major General, USAF
Chief of Safety

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

- 44 USC Section 3501, *Coordination of Federal Information Policy*
- AFPD 91-1, *Nuclear Weapons and Systems Surety*, 24 October 2019
- AFPD 13-5, *Air Force Nuclear Enterprise*, 17 July 2018
- DAFI 91-101, *Air Force Nuclear Weapons Surety Program*, 26 March 2020
- AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*, 22 May 2019
- AFI 91-114, *Safety Rules for Intercontinental Ballistic Missile Weapon Systems*, 1 November 2018
- AFI 31-117, *Arming and Use of Force by Air Force Personnel*, 6 August 2020
- AFI 33-322, *Records Management and Information Governance Program*, 22 July 2021
- (U) CJCSI 3260.01E01F, *Joint Policy Governing Positive Control Material and Coded Control Devices (S)*, 22 November 2019
- DAFI 90-160, *Publications and Forms Management*, 14 April 2022
- DAFMAN 90-161, *Publishing Processes and Procedures*, 15 April 2022
- DoD Manual 3150.02, *DoD Nuclear Weapon System Safety Program Manual*, 7 May 2021
- DoD Directive 3150.02, *DoD Nuclear Weapons Surety Program*, 31 August 2018
- DoD Directive 5210.41, *Security Policy for Protecting Nuclear Weapons*, 22 January 2015
- DoD Instruction 5210.42, *DoD Nuclear Weapon Personnel Reliability Assurance*, 27 April 2016
- DoD Instruction 4540.05, *DoD Transportation of U.S. Nuclear Weapons*, 23 June 2011
- (U) DoD S-5210.92-M, *DoD Physical Security Requirements for Nuclear Command and Control (NC2) Facilities*, 26 Aug 2010
- DoD Manual 5210.42_AFMAN 13-501, *Nuclear Weapons Personnel Reliability Program (PRP)*, 19 September 2018
- MOA with Director, *Warfare Integration for Information Warfare and Chief of Safety*, Headquarters, Air Force, 1 July 2016
- SECNAVINST 5510.35D, *Nuclear Weapon Personnel Reliability Program*, 31 July 2019
- USSTRATCOM Directive 227-2, *Nuclear Weapons Personnel Reliability Program*, 11 February 2009
- USSTRATCOM EAP-STRAT Vol 16, *ICBM Code Component Control Policy and Procedures*, 1 December 2015

Adopted Forms

DAF Form 847, *Recommendation for Change of Publication*.

Abbreviations and Acronyms

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFPD—Air Force Policy Directive

AFSEC—Air Force Safety Center

ALCS—Airborne Launch Control System

ALCSC—Airborne Launch Control System Controller

CJCSI—Chairman, Joint Chiefs of Staff Instruction

CPE—Code Processor Equipment

CSC—Crypto Sumcheck

DAF—Department of the Air Force

DAFI—Department of the Air Force Instruction

DAFMAN—Department of the Air Force Manual

DoD—Department of Defense

DoDD—Department of Defense Directive

DoDI—Department of Defense Instruction

DoDM—Department of Defense Manual

DOE—Department of Energy

EAP—Emergency Action Procedures

EAP-STRAT—Commander, United States Strategic Command Emergency Action Procedures

IAW—In Accordance With

ICBM—Intercontinental Ballistic Missile

MAJCOM—Major Command

MCC-A—Missile Combat Crew-Airborne

MOA—Memorandum of Agreement

N/A—Not Applicable

OPR—Office of Primary Responsibility

PCM—Positive Control Material

PL-1—Protection Level One

PRAP—Personnel Reliability Assurance Program

SecAF—Secretary of the Air Force

SecDef—Secretary of Defense

TPC—Two-Person Concept

US—United States

USAF—United States Air Force

USN—United States Navy

USSTRATCOM—United States Strategic Command

VKA—Volatile Keying Assembly

WSSR—Weapon System Safety Rule

Office Symbols

AF/SE—Air Force Chief of Safety