

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

AIR FORCE INSTRUCTION 91-117

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Safety

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

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements AFPD 91-1, *Nuclear Weapons and Systems Surety*. This publication is consistent with AFPD 13-5, *Air Force Nuclear Enterprise*. It applies to operations with the Airborne Launch Control System (ALCS) Configured E-6B weapon system. Section A assigns responsibilities. Section B contains each nuclear weapon systems' safety rules. The safety rules in Section B may only be changed or supplemented using procedures in AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*. See attachment 1 for abbreviations and acronyms used in this instruction. This instruction applies to the Air Force Reserve and Air National Guard. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located in the Air Force Records Information Management System (AFRIMS). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through the appropriate functional's chain of command. Field activities must send implementing publications to the higher headquarters functional OPR for review and coordination before publishing. 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*, 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 OPR for non-tiered compliance items.

SUMMARY OF CHANGES

This document has been substantially revised and requires complete review. There are some minor administrations and formatting changes and regulation references were updated. Placed paragraph 3.3 under paragraph 3.2 to properly align responsibilities for guidance. Added paragraph 5.3 to require compliance with AFI 91-102. Changed wording in paragraph 6.2 to better reflect ALCS controls when critical components are aboard. Added wording to paragraph 6.3 to deny unauthorized use of ALCS alert-configured aircraft. Added paragraph 15 to prevent positioning of ALCS aircraft near nuclear bomber generation. This revision incorporates AFI 33-360 guidance to include tier waiver requirements and incorporates Interim Change 1, 3 April 2012.

Section A—Authority, Limitations, and Responsibilities

1. The Secretary of Defense Direction. In accordance with (IAW) DOD 3150.2-M, *DoD Nuclear Weapon System Safety Program Manual*, paragraph C2.3.6., the Secretary of Defense has directed the Secretary of the Air Force to develop and implement safety rules for all Air Force nuclear weapon systems.

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

3. Functional Responsibilities.

3.1. The Chief of Air Force Safety:

3.1.1. Ensures safety rules provide maximum safety consistent with operational requirements.

3.1.2. Ensures MAJCOMs enforce the safety rules.

3.1.3. Is responsible, through the Air Force Safety Center, for interpretation/clarification of general and specific guidance in Section B.

3.2. Using Commands (COCUM/MAJCOM):

3.2.1. Ensure their units follow the safety rules.

3.2.2. Ensure safety standards and procedures agree with the approved safety rules.

3.2.3. Inspect for compliance.

3.2.4. Ensures its manuals, checklists, and technical orders do not conflict with the safety rules.

3.3. Navy will comply with this publication IAW *MOA with the USAF for Nuclear Certification of the E-6 Airborne Launch Control Center* dated 11 Jul 1995.

Section B—Safety Rules

4. General Guidance. Per DoD 3150.2-M, 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. Safety rules always apply, even during war.

- 4.1. Nuclear weapons shall not be intentionally exposed to abnormal environments except in an emergency. (T-0).
- 4.2. Nuclear weapons shall 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).
- 4.3. Nuclear weapons may be used for exercises except when explicitly prohibited by specific safety rules. (T-0).
- 4.4. 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).
- 4.5. The total number of personnel performing nuclear weapon system operations shall be held to the minimum consistent with the operations performed. (T-0).
- 4.6. At least two authorized persons must be present during any operation with a nuclear weapon, except when authorized by a specific safety rule; i.e., 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).
- 4.7. Personnel that have physical access to nuclear weapons must be qualified under the Personnel Reliability Program (PRP), in accordance with DoD Directive 5210.42, *Nuclear Weapon Personnel Reliability Program*. (T-0).
- 4.8. Physical security will be maintained, in accordance with DoD Directive 5210.41, *Security Policy for Protecting Nuclear Weapons-Series*. (T-0).
- 4.9. Nuclear weapons will be transported as determined by the Combatant Commander or the Military Department, in accordance with DoD Directive 4540.05, *Logistic Transportation of Nuclear Weapons*. Additionally, the following safety guidance applies:
 - 4.9.1. Movement(s) will be kept to a minimum consistent with operational requirements. (T-0).
 - 4.9.2. Custody and accountability transfers during logistic movements shall be by courier receipt system to ensure positive control (N/A for ALCS). (T-0).
- 4.10. Permissive Action Link (PAL) operations shall be in accordance with plans and procedures prescribed by the applicable Combatant Command and technical publications (N/A for ALCS). (T-0).
- 4.11. 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 and/or DOE before the conduct of an operational test (N/A for ALCS). (T-0).
- 4.12. Deviations from safety rules are permitted in an emergency, except as follows: (T-0).
 - 4.12.1. 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.
 - 4.12.2. Nuclear weapons shall not be expended unless a valid, properly authenticated nuclear control order conveying release or expenditure authority is received.

4.12.3. Jettisoning of nuclear weapons is permitted in the event of an emergency, and is to be accomplished according to plans and procedures prescribed for the area of operations (N/A for ALCS).

5. Specific Guidance.

5.1. 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. DoD Directive 3150.02, *DoD Nuclear Weapon System Surety Program*, 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).

5.2. These safety rules, weapon system features, operational and administrative controls, and technical procedures, ensure that ALCS-configured E-6B weapon system meets the Nuclear Weapon System Safety Standards in AFI 91-101, *Air Force Nuclear Weapons Surety Program*, and DoD Directive 3150.02.

5.3. 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*.

6. Security Criteria.

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

6.2. 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 team IAW 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 Two-Person Concept team assigned to the aircraft, is present. (T-0)

6.3. Upon notification, security forces must respond and immediately take control to deny unauthorized use of ALCS alert-configured aircraft. (T-0)

7. Tamper Control and Detection. AFI 91-104, *Nuclear Surety Tamper Control and Detection Programs*, applies.

8. Handling and Storage of Critical Components and Certified Software. AFI 91-105, *Critical Components*, applies.

9. Handling and Storage of Positive Control Material (PCM). CJCSI 3260.01C, *Joint Policy Governing Positive Control Material and Devices*, applies.

9.1. 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 by HQ AFSEC (with appropriate coordination) and implemented. (T-0)

10. Personnel Reliability. DoD 5210.42-R and applicable Service (AFMAN 10-3902; SECNAVINST 5510.35A) and COCOM (USSTRATCOM Directive 227-2) supplemental guidance apply.

10.1. An ALCS alert-configured (PCM and/or AF Critical Components) aircraft must remain under the control of PRP certified personnel. (T-0)

11. Equipment, Procedures, Checklists, and Modifications:

11.1. 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)

11.2. 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. (T-0)

12. Operational Code Control:

12.1. Before loading either the operational cryptovariable or the operational S-data, a certified MCC-A must successfully complete the following test sequences: (T-0)

12.1.1. Airborne Operational Program Crypto Sumcheck (CSC).

12.1.2. Fail CSC.

12.1.3. Fail Code Processor Equipment (CPE).

12.1.4. CPE Test.

12.1.5. Decrypt Test Sequences.

12.2. Reinitiate the preceding tests if any of the following equipment is replaced with a different unit: (T-0).

12.2.1. Airborne Launch Control System Controller (ALCSC) processor chassis.

12.2.2. ALCSC expansion chassis.

12.2.3. Portable Storage Unit (PSU).

12.2.4. CPE.

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

12.4. Individuals will not concurrently perform MCC-A duties and be a USWAC-401 custodian or member of a USWAC-401 handling team. MCC-As must be decertified prior to performing USWAC-401 custodian or handling team duties. 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).

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

12.6. 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).

12.7. 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).

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

12.9. 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).

12.10. When non-alert ALCS-configured aircraft are uploaded with complete operational cryptovvariable data, the aircraft will not take off with operational unlock documents aboard. (T-0).

12.11. Do not authorize/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. Aircraft Configuration:

13.1. 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:

13.1.1. Keep the ALCC switch in the OFF position. (T-0).

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

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

13.2. 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. Do not preclude aircraft takeoff directed by an emergency war order if the erase circuits fail to verify. (T-0).

13.3. 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).

13.3.1. 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. 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).

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

14. Simulated Electronic Launch Test Procedures. For applicable missile system safety rules, consult AFI-91-114, *Safety Rules for Intercontinental Ballistic Missile Weapon Systems*.

15. Aircraft Operations During Weapons Loading. ALCS alert-configured aircraft will not be positioned at a location where bomber nuclear weapons generation is being performed.

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Chief of Safety

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

DoD Directive 3150.02, *DoD Nuclear Weapon System Surety Program*, 24 April 2013

DoD Directive 3150.2M, *DoD Nuclear Weapons System Safety Program Manual*, Dec 1996

DoD Directive 4540.05, *DoD Transportation of U.S. Nuclear Weapons*, 23 June 2011

DoD-S 5210.92-M, *DoD Physical Security Requirements for Nuclear Command and Control (NC2) Facilities*, 26 Aug 2010

DoD Directive 5210.41-M, *Nuclear Weapon Security Manual, Volumes 1, 2 and 3*, 13 July 2009

DoD Directive 5210.42-R_AFMAN 10-3902, *Nuclear Weapon Personnel Reliability Program Regulation*, 2 Nov 2010 (with IC2)

CJCSI 3260.01C, *Joint Policy Governing Positive Control Material and Devices(S)*, 30 Jun 11

EAP-STRAT Vol 16, *ICBM Code Component Control Policy and Procedures*, 1 May 2008

AFI 31-101, *The Air Force Installation Security Program*, 8 Oct 09

AFI 31-401, *Information Security Program Management*, 1 Nov 05

AFMAN 10-3902, *Nuclear Weapons Personnel Reliability Program*, 13 Nov 06 (with AFGM-1)

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

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

AFI 91-101, *Air Force Nuclear Weapons Surety Program*, 13 Oct 2010

AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*, 24 Jun 2010

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

AFI 91-105, *Critical Components*, 2 Aug 2013

AFI 91-114, *Safety Rules for Intercontinental Ballistic Missile Weapon Systems*, 25 Oct 2011

AFMAN 91-221, *Weapons Safety Investigations and Reports*, 8 Nov 2010

AFI 91-204, *Safety Investigations and Reports*, 24 Sep 08

AFMAN 33-363, *Management of Records*, 1 Mar 08

SECNAVINST 5510.35A, *Nuclear Weapon Personnel Reliability Program*, 26 Jun 02

USSTRATCOM Directive 227-2, *Nuclear Weapons Personnel Reliability Program*, 11 Feb 09

MOA with the USAF for Nuclear Certification of the E-6 Airborne Launch Control Center, 11 Jul 95

Adopted Forms

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

Abbreviations and Acronyms

AFI—Air Force Instruction
AFMC—Air Force Materiel Command
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
COCOM—Combatant Command
CPE—Code Processor Equipment
CSC—Crypto Sumcheck
DoD—Department of Defense
DOE—Department of Energy
EAP—Emergency Action Procedures
EWO—Emergency War Orders
HQ AFSEC—Headquarters, Air Force Safety Center
IAW—In Accordance With
ICBM—Intercontinental Ballistic Missile
MAJCOM—Major Command
MCC—A – Missile Combat Crew-Airborne
NWTI—Nuclear Weapon Technical Inspection
OPR—Office of Primary Responsibility
PAL—Permissive Action Link
PCM—Positive Control Material
PL—1 – Protection Level One
PRP—Personnel Reliability Program
PSU—Portable Storage Unit
RDS—Records Disposition Schedule
VKA—Volatile Keying Assembly