

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

**AIR FORCE INSTRUCTION 91-117**

**9 SEPTEMBER 2009**



*Safety*

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

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(William C. Redmond)

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This instruction implements AFPD 91-1, *Nuclear Weapons and Systems Surety*. 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 does not apply to the Air Force Reserve and Air National Guard. **Records Disposition.** 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 at <https://www.my.af.mil/gcss-af61a/afrims/afrims/>. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF IMT 847, *Recommendation for Change of Publication*; route AF IMT 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.

**SUMMARY OF CHANGES**

Included general safety rules from DoD 3150.2-M, *DoD Nuclear Weapon System Safety Program Manual*. Provided guidance on handling unlock documents, security response requirements for unoccupied, ALCS alert-configured aircraft, and personnel reliability for personnel providing access to the alert-configured aircraft.

### *Section A— Authority, Limitations, and Responsibilities*

**1. The Secretary of Defense Direction.** In accordance with (IAW) DOD 3150.2-M, 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 Commander, Air Force Safety Center, must ensure:

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

3.1.2. Units follow the safety rules.

3.2. Using Major Commands (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.

3.3. Air Force Materiel Command (AFMC) ensures its manuals, checklists, and technical orders do not conflict with the safety rules.

### *Section B— Safety Rules*

**4. General Guidance.** Per DoD 3150.2-M, *DoD Nuclear Weapon System Safety Program Manual*, general safety rules primarily apply safety policy and apply to all nuclear weapons and nuclear weapon systems and shall be included as part of the Air Force's safety rules package. Safety rules always apply, even during war.

4.1. Nuclear weapons shall not be intentionally exposed to abnormal environments, as that term is defined in DoD 3150-2M, except in an emergency.

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).

4.3. Nuclear weapons may be used for exercises except when explicitly prohibited by specific safety rules.

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.

4.5. The total number of personnel performing nuclear weapon system operations shall be held to the minimum consistent with the operations performed.

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.

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*.

4.8. Physical security will be maintained, in accordance with DoD Directive 5210.41, *Security Policy for Protecting Nuclear Weapons-series*.

4.9. Nuclear weapons will be transported as determined by the Combatant Commander or the Military Department, in accordance with DoD Directive 4540.5, *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.

4.9.2. Custody and accountability transfers during logistic movements shall be by courier receipt system to ensure positive control.

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).

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.

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

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.

## 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 3150.2, *DoD Nuclear Weapon System Safety 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."

5.2. These safety rules, weapon system features, operational and administrative controls, and technical procedures, ensure that Airborne Launch Control System (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 3150.2.

## 6. Security Criteria.

6.1. AFI 31-101, *The Air Force Installation Security Program*; DoD C-5210.41-M, *Nuclear Weapon Security Manual (U)-series*; and Air Force Supplement apply.

6.2. When any operational KIK-45 Volatile Keying Assembly (VKA) is aboard, control access to the aircraft and deny entry to any personnel unless the Missile Combat Crew-Airborne (MCC-A) and a certified Deputy MCC-A, assigned to the aircraft are present. **EXCEPTION:** Any Two-Person Concept team assigned to the aircraft may enter if all VKAs are properly controlled by a code handling team, properly installed and secured in the code processor equipment (CPE), or properly secured in the crew mission folder (CMF).

6.3. Security forces must respond and take control of the interior of ALCS alert-configured aircraft as soon as possible upon notification that:

6.3.1. Unauthorized personnel are attempting to access or have gained access to the interior of the aircraft or;

6.3.2. Authorized personnel on board the aircraft are attempting to commit unauthorized acts.

**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 3260.01, *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 AFSC (with appropriate coordination) and implemented.

**10. Personnel Reliability.** DoDD 5210.42, *Nuclear Weapons Personnel Reliability Program*, and, as appropriate, AFI 36-2104, *Nuclear Weapons Personnel Reliability Program*, SECNAVINST 5510.35, *Nuclear Weapon Personnel Reliability Program (PRP)*, or USSTRATCOM Directive 227-2, *Nuclear Weapons Personnel Reliability Program*, apply.

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

**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.

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 Safety Standards.

**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:

12.1.1. Airborne Operational Program Crypto Sumcheck (CSC)

12.1.2. Fail CSC

12.1.3. Fail 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:

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

12.2.2. ALCSC expansion chassis

12.2.3. Portable storage unit

12.2.4. CPE

12.3. After electronically loading the cryptovvariable 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.

12.4. Do not allow a person certified to perform MCC-A duties to be a USWAC-401 custodian or a member of a USWAC-401 handling team.

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.

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.

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.

12.8. Do not remove VKA covers, except for emergency VKA destruction.

12.9. If you cannot erase the VKA memory, continue to control as an operational VKA until the cryptovvariable data stored in memory have been superseded.

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.

12.11. Do not 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.

### **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. 13.1.2. Do not activate the Multifunction Selector ALARM OVERRIDE switch, except when electronically loading the operational cryptovisible data.

13.1.3. Do not move the Classified Command Control switch inside the CPE to ENABLE.

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.

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 cryptovisible data, and/or fault analysis while airborne.

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.

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

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

FREDERICK F. ROGGERO, Major General, USAF  
Chief of Safety

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

DoD Directive 3150.2, *DoD Nuclear Weapon System Safety Program*, 23 Dec 96

DoD Directive 3150.2M, *DoD Nuclear Weapons System Safety Program Manual*, Dec 96

DoD Directive 4540.5, *Logistic Transportation of Nuclear Weapons*, 4 Feb 98

DoD Directive 5200.1-R, *Department of Defense Information Security Program Regulation*, Jan 97

DoD Directive S-5210.41M, *Nuclear Weapon Security Manual (U)*, 1 Feb 07

DoD Directive 5210.42-R, *Nuclear Weapon Personnel Reliability Program*, 8 Jan 01

CJCSI 3260.01 (S), *Joint Policy Governing Positive Control Material and Devices*, 31 Jul 95

AFI 31-101, *The Air Force Installation Security Program*, 1 Mar 03

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

AFMAN 10-3902, *Nuclear Weapons Personnel Reliability Program*, 13 Nov 06

AFPD 91-1, *Nuclear Weapons and Systems Surety*, 13 Feb 07

AFI 91-101, *Air Force Nuclear Weapons Surety Program*, 19 Dec 05

AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*, 28 Jul 04

AFI 91-104, *Nuclear Surety Tamper Control and Detection Programs*, 28 Feb 06

AFI 91-105, *Critical Components*, 10 Dec 93

AFI 91-114, *Safety Rules for Intercontinental Ballistic Missile Weapon Systems*, 3 Apr 06

AFI 91-115, *Safety Rules for Nuclear Logistics Transport By the Prime Nuclear Airlift Force*, 8 Sept 09

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

***Abbreviations and Acronyms***

**AFMC**— Air Force Materiel Command

**ALCC**— Airborne Launch Control Center

**ALCS**— Airborne Launch Control System

**DoD**— Department of Defense

**EAP**— Emergency Action Procedures

**EWO**— Emergency War Orders

**ICBM**— Intercontinental Ballistic Missile

**JCS**— Joint Chiefs of Staff

**JS**— Joint Staff

**MAJCOM**— Major Command

**MCC—A** – Missile Combat Crew-Airborne

**NWSSG**— Nuclear Weapon System Safety Group

**PCM**— Positive Control Material

**OSR**— Operational Safety Review

**PRP**— Personnel Reliability Program

**PSU**— Portable Storage Unit

**UL**— Unauthorized Launch

**SecDef**— Secretary of Defense

**VKA**— Volatile Keying Assembly