

**BY ORDER OF THE COMMANDER
374TH AIRLIFT WING**

**374TH AIRLIFT WING INSTRUCTION
21-102**



27 OCTOBER 2016

Maintenance

**HANDLING C-130 CHAFF/FLARE
LOADED AIRCRAFT**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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RELEASABILITY: There are no releasability restrictions on this publication

OPR: 374 MXG/MXQ

Certified by: 374 MXG/CC
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Supersedes: 374 AWI 21-102,
17 November 2011

Pages: 10

This instruction establishes specific guidelines for 374th Airlift Wing (374 AW) C-130 aircraft configured with chaff/flare munitions for Aircraft Defensive Systems (ADS). These systems use Hazard Class/Division 1.3 and 1.4 explosives which require special handling and coordination. The following procedures must be accomplished to ensure explosives are handled safely and expeditiously while on Yokota Air Base or at a deployed location. All personnel working around explosives-loaded aircraft must be trained and familiar with the hazards involved. They will also ensure explosives operations expose a minimum number of people to minimum amount of explosives for a minimum amount of time. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and dispose of IAW the Air Force Records Information Management System (AFRIMS) 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 AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through their appropriate functional chain of command. Commanders and supervisors will ensure all personnel comply with this instruction.

SUMMARY OF CHANGES

This document has been substantially revised and must be completely reviewed. Major changes include: extensive additions to the safety briefing requirements in paragraph 4 and documentation procedures directed in paragraph 7.

1. General Policy and Responsibility.

1.1. Explosives safety standards are an extension of the will of CONGRESS and have the power of law. Explosives safety policy is established through Department of Defense Directive DoD 6055.09M, *General Explosives Safety Information and Requirements*.

1.2. The Air Force provides explosives safety guidance in AFMAN 91-201, *Explosives Safety standards*. This manual is an extension of DoD 6055.9M, and provides further guidance for Air Force specific explosive safety issues.

1.3. The 374th Maintenance Group Commander (374 MXG/CC) is responsible for ensuring all known rules are followed within his/her command. The 374 MXG/MXQ assists him/her in these endeavors and must ensure compliance with all known explosives safety technical orders, directives and standards.

2. Mishap Notification and Emergency Actions.

2.1. When a mishap occurs, involving explosives:

2.1.1. Immediately notify the 374th Maintenance Operations Center (MOC), which in turn follows the emergency action checklist.

2.1.2. All nonessential personnel will be withdrawn to the minimum distance required for the greatest munitions hazard present.

Table 1. ADS Explosive Payload Limits per Aircraft.

Nomenclature	Hazard Class/Division	Fire Symbol	Withdrawal Distance
M-206 Flare	1.3/G	3	600 ft.
MJU-50 Flare	4.2/G	3	600 ft.
M-211 Flare	4.2/G	3	600 ft.
RR-170 Chaff	1.4/S	4	300 ft.
RR-188 Chaff	1.4/S	4	300 ft.
WARNING: If munitions are involved in a fire, do not use Halon, carbon dioxide or water fire extinguishers on or near flares. Breathing apparatus is required for fire fighting personnel. These extinguishers may be used on surrounding areas. Attempt to fight fire only if explosives are not directly involved.			

3. Procedures for Chaff/Flare Pre-load Checks.

3.1. Munitions mission requirements will be identified in the weekly flying schedule using the appropriate configuration code. Changes to the weekly flying schedule requiring additional munitions support will require coordination using the AF Form 2407, *Weekly/Daily Flying Schedule Coordination*.

3.2. The 374 AMXS Production Superintendent will:

3.2.1. Contact the 374 MOC, munitions load team, and 374 MXS Production Superintendent no later than 1600 hours on the day prior to the mission to confirm the

aircraft tail number, aircraft location, chaff/flare payload requirements, and the required delivery time to the aircraft.

3.2.2. Coordinate with the munitions load team to start the chaff/flare pre-load checks prior to magazine delivery time.

3.2.3. Coordinate with 374 MXS Production Superintendent to ensure munitions will be ready for delivery to the aircraft at the appropriate time.

3.3. The load team will notify the 374 AMXS Production Superintendent when the pre-load checks are completed and the aircraft is ready to be loaded.

4. Procedures for Requesting, Transporting and Uploading/Downloading Chaff/Flare Modules.

4.1. Authorized upload/download parking locations: The Yokota AB flight line and all aircraft parking locations are authorized for uploading/downloading chaff/flare provided that the quantity of munitions being loaded or unloaded is limited to a single aircraft load. Vehicles parked for loading/unloading of munitions are considered in transit.

4.2. Delivery times for chaff and flare loads will be coordinated between the load team, 374 AMXS Production Superintendent and 374 MXS Production Superintendent to assess the risks and hazards associated with seasonal weather patterns when determining chaff and flare delivery times.

4.3. Aircraft should normally be refueled before uploading/downloading munitions. Aircraft refueling is authorized after munitions are installed in aircraft.

4.4. Explosives will be protected IAW AFMAN 91-201 and AFI 24-301, *Vehicle Operations*.

4.5. Drivers of vehicles that handle or transport explosives must be trained using a lesson plan certified by 374 AW/SEW.

4.6. At the Production Superintendent's request, the 374 MOC will contact 374 MXS Production Superintendent and request delivery/pickup of munitions to/from the aircraft.

4.7. The Munitions Flight will contact the 374 MOC when transportation of munitions is started and completed.

4.8. The load team will notify the 374 MOC when munitions loading operations are started and completed.

4.9. The 374 MOC will notify Base Operations and 374 CES/CEF when munitions transport is started/completed.

4.10. The MOC must also ensure 374 CES/CEF is made aware of the location of explosives awaiting upload/pickup, upload/download operations, explosives-loaded aircraft on the flight line, and explosives-loaded aircraft that have departed the flight line.

4.11. The load team, which will consist of a minimum of two qualified technicians, will "secure" the munitions loading/unloading area with explosive operations signs or cones. Load team members will remain vigilant throughout upload/download operations to ensure nonessential personnel do not come within 50 feet of explosives upload/download operations.

4.11.1. Personnel Limits: One supervisor, two workers and one casual observer.

4.11.2. Casual observers are persons not normally part of an explosives operation but who have duties that require their presence, such as quality assurance, medical, safety or inspection personnel.

4.12. If munitions are unloaded for quick maintenance actions, exceeding no longer than 8 hours, munitions may be consolidated at the maintenance site. The chaff/flare team will utilize ammo cans to store non-empty magazines, which will be placed together at the edge of the work area, away from normal traffic routes. The magazines will be secured with use of explosives operation cones at a minimum of a 25 foot radius. When re-uploading the munitions, care will be taken to load magazines into the dispenser that they were removed from, as recorded in the aircraft's current AF Form 2434, *Munitions Configuration and Expenditure Document*.

4.13. All personnel performing explosives operations must be currently trained on handling explosives IAW AFI 91-202, *The US Air Force Mishap Prevention Program*.

4.14. The following will not be conducted within 100 feet of munitions uploading/downloading operations: Refueling/defueling, liquid oxygen servicing, aircraft radio operations, or engine runs (300 feet if engine are run to maximum power).

4.15. The loading team chief will provide a safety briefing before munitions delivery is accomplished. As a minimum, it will contain:

4.15.1. Fire fighting procedures.

4.15.2. Designated evacuation location and procedures.

4.15.3. Steps to take for dropped or damaged explosives.

4.15.4. Withdrawal distances.

4.15.5. Any specific safety requirements for the explosives being handled.

4.15.6. Direction/briefing to remove watches, rings and all other jewelry.

4.15.7. Direction to not key radios, or utilize cellular devices, within 25 feet of electrically-primed munitions.

4.15.8. Task assignment/responsibilities of load team members:

4.15.8.1. The load crew chief will:

4.15.8.1.1. Ensure applicable operational checks are current.

4.15.8.1.2. Ensure stray voltage is accomplished prior to loading.

4.15.8.1.3. Ensure safety standards are enforced.

4.15.8.1.4. Ensure proper documentation is accomplished.

4.16. The following safety precautions will be strictly adhered to:

4.16.1. Personnel must ground themselves before handling electrically primed munitions. Frequently re-accomplish this procedure during the uploading/downloading operations.

- 4.16.2. The wear of static-producing clothing such as 100% nylon, rayon, wool or polyester is prohibited as an outer garment. Personnel will not put on or remove garments while engaged in explosives operations. Gortex garments may be worn during uploading/downloading operations. Green fleece jackets are prohibited during upload/download operations.
- 4.16.3. Explosives must never be carried in pockets, CTKs or tool pouches.
- 4.16.4. Personnel should avoid pointing electrically-primed munitions toward themselves, others, vehicles or aircraft.
- 4.16.5. Do not tumble, drag, throw or roll explosives or containers.
- 4.16.6. Disassembly of any munition modules are prohibited.
- 4.16.7. No radio frequency transmissions of any kind, including cellular phones, will be made within 25 feet of the immediate area of explosives.
- 4.16.8. Ensure adequate area lighting when uploading/downloading explosives during hours of dusk/darkness.
- 4.16.9. Discontinue all explosives uploading/downloading operations when lightning is within 5 nautical miles and/or winds exceed 35 knots.
- 4.17. Refer to TO 1C-130A-33-1-2, *Organization Maintenance -- Nonnuclear Munitions Loading Procedures, AN/ALE-47 Countermeasures Dispensing Set, C-130e and C-130h Aircraft*, or TO 1C-130A-33-1-2CL-9, *Organization Maintenance Checklist -- Nonnuclear Munition Loading Procedures, An/Ale-47*, for specific step-by-step uploading/downloading procedures.
- 4.18. The load team will notify 374 MOC when the upload/download is started and give the greatest fire symbol posted.
- 4.19. The 374 MOC will notify Base Operations, 374 CES/CEF and 374 SFS when upload/download is started and give the greatest fire symbol posted. The MOC will notify all flight line personnel of munitions upload/download operations, identifying aircraft parking location and tail number/aircraft call-sign or generation line number (contingencies).
- 4.20. Each ALE-47 Control Display Unity (CDU) munitions type inventory (i.e., 01, 02, CH, FL) will meet the minimum mission requirement, as agreed upon by operations and maintenance personnel, of 90% inventory. Mispoll data will not exceed 10% of individual inventories.
- 4.21. If the number of mispolls exceeds 10% inventory, load crews will verify proper installation of magazines and/or swap out magazines with 374 MXS Munitions Flight, if mispolls persist. If mispolls still exceed the standard, the countermeasures dispenser system (CMDS) will be troubleshot IAW applicable MDS fault isolation technical data. If proper CMDS operation is assured, then load teams will request replacement munitions from munitions flight
- 4.22. The aircraft armament placard and an AFTO Form 781A, *Maintenance Discrepancy and Work Document*, "Info Note" will be used to annotate the type and quantity of munitions loaded on the aircraft. This "Info Note" will include both the physical quantity and the quantity reported by the CDU.

- 4.23. The load team will notify 374 MOC when upload/download is complete.
- 4.24. The MOC will notify Base Operations, the 374 CES/CEF and 374 SFS when upload/download is complete.
- 4.25. The 374 AMXS Expediter will notify the 374 MOC when loaded aircraft depart/arrive parking spot.
- 4.26. The 374 MOC will notify Base Operations and the 374 CES/CEF of explosives-loaded aircraft arrival to or departure from parking spot.

5. Maintenance Precautions on Explosives-Loaded Aircraft.

- 5.1. Aircraft are considered explosives-loaded when chaff or flares are loaded in any part of the weapon system or being transported as cargo, and will be handled IAW TO 11A-1-33, *Handling and Maintenance of Explosives Loaded Aircraft - (ATOS)*, and AFMAN 91-201.
- 5.2. Vehicles not directly involved with the explosives uploading/downloading operation will remain at least 50 feet from explosives.
- 5.3. Hangaring of chaff/flare loaded aircraft is prohibited IAW TO 11A-1-33.
- 5.4. Wing Jacking and other maintenance that will affect aircraft "Weight on Wheels" switch configuration is prohibited (chaff/flare must be downloaded).
- 5.5. Functional Check Flights (FCF) with explosives are performed only if the explosives are vital to the FCF.
- 5.6. Maintenance that requires electrical power to the ADS equipment will not be performed until the systems are "safed" by a qualified technician.
- 5.7. Maintenance that will increase the probability of fire, explosives release, etc., will not be performed. All maintenance actions on munitions loaded aircraft will be coordinated through the Production Superintendent.
- 5.8. If an unknown/hazardous condition is encountered, cease all maintenance, evacuate personnel to the applicable safe distance as outlined in Table 1, and notify MOC.

6. Procedures for Recovering and Downloading Explosives-Loaded Aircraft.

- 6.1. When an explosives-loaded aircraft is inbound, the 374 MOC will notify the 374 AMXS Production Office. If a munitions download is required, 374 MOC will notify 374 MXS Production Superintendent. In addition, if the system was armed during flight, the 374 MOC will coordinate with 374th AW Command Post (374 AW/CP) to ensure the aircraft is inspected for partially ejected flares prior to proceeding to normal parking.
- 6.2. After landing, the aircraft will proceed to the "hammerhead" for end of runway inspections by aircrew for partially ejected flares. If no partially ejected flares are found, the aircraft may proceed to normal parking.
- 6.3. If an uncommanded release of munitions occurs:
 - 6.3.1. Aircrew will perform all applicable partially ejected flare checks at the hammerhead.
 - 6.3.2. If no partially ejected flare is discovered, the aircraft will taxi to normal parking when cleared to do so.

6.3.3. Upon arrival at the parking spot, the aircraft will be impounded IAW AFI 21-101 and 374 MXG OI 21-103, *Aircraft/Equipment Impoundment Procedures*, and a thorough investigation will be performed by qualified 2A8X1X technician.

6.4. If a partially ejected flare or unknown condition exists:

6.4.1. Aircrew will notify the 374 AW/CP. The 374 AW/CP will notify the 374 AW/SE, the 374 CES/CEF and the 374 MOS/MOC to respond to the aircraft. The 374 AW/CP will notify Yokosuka EOD.

6.4.2. Engines will be shut down immediately and aircraft will be chocked.

6.4.3. Aircrew personnel will recheck that the ADS system is SAFE.

6.4.4. Aircrew and all nonessential personnel will evacuate to a minimum safe distance of 600 feet or as directed by the on scene commander.

6.5. Normal operations require chaff/flare downloading after flight. When the aircraft will fly subsequent missions requiring chaff/flares, the Production Superintendent will determine if downloading is required.

6.5.1. Load crews will coordinate with the 36th Airlift Squadron (36 AS)/Tactics to determine the maximum expenditures allowed before reconciliation of chaff/flares is required.

6.6. If downloading is required, the load team will repeat steps in paragraph 4 of this instruction after the aircraft is recovered at normal parking.

6.6.1. The load team will annotate AF Form 2434, *Munitions Configuration and Expenditure Document*, with expenditures and provide a copy to 374 MXS/MXMW.

6.6.2. The Munitions Flight personnel will account for all downloaded modules prior to departure from the flight line. Discrepancies will be corrected prior to full acceptance of modules by Munitions Flight. Full counts must match the AF Form 2434.

6.7. Squib/Flare Misfire procedure:

6.7.1. The flight crew or munitions load team will annotate the remarks block of the AF Form 2434 if there are any misfires detected. The load team personnel will attach the AF Form 2434 detailing which magazine number and which sequence number stick(s) misfired.

6.7.2. The Munitions Flight personnel will inspect squib/flare misfires and take appropriate actions deemed necessary by the Munitions Flight Chief and applicable TOs.

7. Documentation Procedures:

7.1. AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance*: Document the AFTO Form 781H, IAW TO 00-20-1-WA-1, *Web Access - Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures*.

7.2. The aircraft armament placard will be used to annotate the munitions physical count (e.g. 180 = CH, 360 = FL), and the date munitions were uploaded.

7.3. AFTO Form 781A:

7.3.1. Enter the following in the AFTO Form 781A, IAW TO 00-20-1-:

- 7.3.1.1. An AFTO Form 781A, *Maintenance Discrepancy and Work Document*, “INFO NOTE” will be used to annotate the type and quantity of munitions loaded on the aircraft. This “Info Note” will include both the physical quantity and the quantity reported by the CDU, including specific quantity and type of munitions loaded as well as specific dispensers locations if full load is not accomplished (e.g., “Info Note: 120 M-206 Flares loaded in nose dispensers only, carry forward until downloaded” or “Info Note: 240 M-206, 240 M-211, 60 RR-188 Chaff loaded, carry forward until downloaded.”)
- 7.3.2. Enter the appropriate Red symbol/discrepancy in AFTO Form 781A, IAW TO 00-20-1-WA-1: “Munitions upload/download required, IAW TO 1C-130A-33-1-2CL-9.”
- 7.3.3. A qualified Red X munitions load personnel will clear the discrepancy after munitions upload/download is complete.
- 7.4. AF Form 2434:
- 7.4.1. The following blocks will be annotated with applicable information when the aircraft is loaded with munitions:
- 7.4.1.1. “Page x of y”
 - 7.4.1.2. “Unit”
 - 7.4.1.3. Enter aircraft tail number in Column 1, “ACFT SERIAL NO.”
 - 7.4.1.4. Enter MSCL configuration code in Column 2, “CONFIGURATION CODE.”
 - 7.4.1.5. Enter dispenser loaded in Column 3, “ACFT STA.”
 - 7.4.1.6. Enter module serial number (i.e., Y301) in Column 4, “LAUNCHER / RACK / SSU S/N.”
 - 7.4.1.7. Enter the specific module quantity of munitions loaded in Column 5, “MUNITIONS, QTY LOADED.”
 - 7.4.1.8. Enter the specific type of munitions loaded in Column 6, “MUNITIONS, TYPE”, (e.g., M-206).
 - 7.4.1.9. Enter the specific module quantity of installed impulse cartridges in Column 11, “IMPULSE CARTS, QTY INST.”
 - 7.4.1.10. Enter the type of impulse cartridges installed in Column 12, “IMPULSE CARTS, TYPE.”
- 7.4.2. The following blocks will be annotated with applicable information when munitions are downloaded from the aircraft:
- 7.4.2.1. Enter the specific quantity of munitions expended from applicable modules in Column 7, “MUNITIONS, QTY EXPENDED.”
 - 7.4.2.2. Enter the specific quantity of impulse cartridges expended from applicable modules in Column 13, “IMPULSE CARTS, QTY EXP.”
 - 7.4.2.3. Enter any chaff/flare misfire information in Column 17, “REMARKS.”
 - 7.4.2.4. Enter the date the munitions were downloaded in “DATE” block.

7.4.3. An authorized member will sign the AF Form 2434 and send a copy to Munitions Flight org box: FV5209.

8. Training Requirements and Documentation:

8.1. Load team members will accomplish the following training:

8.1.1. Explosives Safety IAW AFMAN 91-201.

8.1.2. C-130 Munitions Loading Academic training from a qualified WTQC/WTQM.

8.1.3. C-130 Munitions Loading Practical training from a qualified WTQC/WTQM.

8.2. Load Team Supervisor Prerequisites: 6 months as load team member, perform at least one aircraft chaff/flare load, and be at least a 5-level 2A8X1X technician or a 7-level chaff/flare qualified personnel.

KENNETH E. MOSS, Colonel, USAF
Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFI 21-101, *Aircraft and Equipment Maintenance Management*, **Chapter 11**, *Aircraft Defensive Systems Loading Program*, 21 May 2015

AFI 24-301, *Vehicle Operations*, 5 May 2016

AFI 31-101, *Integrated Defense (FOUO)*, 8 October 2009

AFMAN 91-201, *Explosives Safety Standards*, 12 January 2011

AFI 91-202, *The US Air Force Mishap Prevention Program*, 5 June 2015

Department of Defense Directive DoD 6055.9M, *General Explosives Safety Information and Requirements*, 29 February 2008

T.O. 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures*, 01 April 2016

T.O. 1C-130A-33-1-2CL-9, *Organization Maintenance Checklist -- Nonnuclear Munition Loading Procedures, Countermeasure Dispensing Set AN/ALE-47*, 1 May 2013

T.O. 11A-1-33, *Handling and Maintenance of Explosives Loaded Aircraft*, 27 May 2009

T.O. 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*, 9 August 2015

T.O. 1C-130A-33-1-2, *Organization Maintenance – Organization Maintenance Checklist -- Nonnuclear Munitions Loading Procedures, Countermeasures Dispensing Set, AN/ALE-47*, 1 May 2013

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*, 22 September 2009

AF Form 2407, *Weekly /Daily Flying Schedule Coordination*, 1 June 1972

AF Form 2434, *Munitions Configuration and Expenditure Document*, 1 December 1996

AFTO Form 781A, *Maintenance Discrepancy and Work Document*, 8 January 2008

AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance*, 15 September 2010

Abbreviations and Acronyms

ADS—Aircraft Defensive Systems

CDU—Control Display Unit

FCF—Functional Check Flights

IAW—in accordance with

MOC—Maintenance Operations Center

OPR—Office of Primary Responsibility

RDS—Records Disposition Schedule