

**BY ORDER OF THE COMMANDER
SPANGDAHLEM AIR BASE (USAFE)**



**SPANGDAHLEM AIR
BASE INSTRUCTION
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**Maintenance
AIRCRAFT LIQUID OXYGEN
SERVICING UNIT CONTROL
PROCEDURES**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This publication implements Air Force Policy Directive (AFPD) 21-1, *Air and Space Maintenance*. It establishes guidance, procedures, and responsibilities for accountability and issuing of aircraft liquid oxygen (LOX) servicing units. Proper care and security are the user's responsibility. The user will ensure servicing equipment is safe and functional prior to operation. Only properly qualified individuals will operate servicing equipment. This instruction applies to all authorized Aircraft Maintenance Units (AMU), 726th Air Mobility Squadron (AMS), support equipment maintenance organizations, and all transient alert personnel on Spangdahlem Air Base. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFI 33-322, *Records Management and Information Governance Program*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at <https://www.my.af.mil/afirms/afirms/afirms/rims.cfm>. Refer recommended changes and questions about this publication to the OPR listed above using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate chain of command. 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 is substantially revised and must be completely reviewed.

This revision incorporates specific responsibilities to improve accountability and issuing of aircraft liquid oxygen (LOX) servicing units and has removed details pertaining to Liquid Nitrogen servicing as mentioned in the previous publication. Additionally, this document contains updated technical order instructions, applicable safety warnings, and contact information for agencies responsible for processes contained in this publication.

1. 52d Logistics Readiness Squadron (52 LRS), Fuels Management Flight, Cryogenics Section shall:

1.1. Store serviceable aircraft LOX servicing units in the servicing area of building 650 when facility is operational, hereafter referred to as “cryogenic storage.”

1.2. Fill aircraft LOX servicing units in adherence to Air Force Instruction (AFI) 23-201, *Fuels Management*, and Technical Order (TO) 42B6-1-1, *Quality Control Aviators Breathing Oxygen And Aviators Gaseous Breathing Oxygen*.

1.3. Establish and maintain a “ready line” for serviceable aircraft LOX servicing units.

1.4. Establish and maintain a “hold line” for aircraft LOX servicing units. Servicing units will be placed on the hold line for the following conditions:

1.5. When the servicing unit is returned to cryogenic storage unserviceable, cryogenic personnel discover discrepancies during servicing, or discrepancies that cannot be corrected “on the spot” that are documented on Air Force Technical Order (AFTO) Form 244, *Industrial/Support Equipment Record* or AFTO Form 134, *Aviators Breathing Oxygen Servicing Trailer Log (Liquid/Gaseous)*. **NOTE:** Report all unserviceable aircraft LOX servicing units to the 52d Maintenance Squadron Production Superintendent.

1.6. Aircraft LOX servicing unit “low use trailer” servicing information is located in TO 42B6-1-1 and defined “as one which was not used to service aircraft on the past 7 calendar days”. **When to fill a low use trailer-** a low use trailer shall be filled before servicing aircraft if it was not filled during the past two calendar days. **When to drain and fill a low use trailer-** a low use trailer shall be drained and filled before servicing aircraft if it was not drained during the past 12 calendar days. Exception: If a trailer has been filled with 45 gallons or more on one of the 12 days, it may be considered drained and filled.

1.7. When a trailer is identified as low-use and cannot be filled IAW T.O. 42B6-1-1, the AFTO Form 244 will be annotated with a Red X and 52 MXS will be notified by the Fuels Service Center (FSC). Low-use servicing units will be drained by 52 MXS prior to filling the unit with new product. In T.O. 42B6-1-1, paragraph 2.22, step b., it is advisable to keep trailers containing liquid oxygen to a minimum. Those trailers not required for current levels of operation will be maintained in standby status.

1.8. Cryogenics servicing will be conducted Monday through Friday, excluding base holidays between the hours of 0830-1000 at building 650. These hours will be flexible during 52FW exercises to meet mission needs.

1.8.1. A two-person safety policy will be observed during all aircraft LOX unit servicing. This two-person team will consist of one Fuels Specialist, AFSC 2FOX1, and one safety person designated to assist in positioning equipment and performing safety person duty. Mission permitting, the Fuels Management Flight will provide the safety person for all daily servicings conducted. In cases where a second person is not available due to mission requirements, the Fuels Management Flight will coordinate with AMC MOC or the MXG MOC to provide personnel to perform fireguard duties.

1.8.2. Fuels Management Flight will provide all Personnel Protective Equipment (PPE) required during cart filling operations and direct use as required by applicable AFIs, TOs and Occupational Safety & Health standards.

1.8.3. Emergency servicing is classified as servicing required outside normal servicing hours and must be justified by an actual aircraft emergency or when required by the 726 AMS to fulfill a real-world mission after exhausting all alternative routes. The 726 AMS will be given priority for 'loaner' aircraft LOX servicing units to prevent mission delays. Proper management, coordination and preplanning are a must; however emergency filling will be accomplished using the following guidelines: **Emergency fills** should be kept to an absolute minimum. All emergency fill requests will initially come through the Maintenance Operation Center (MOC) to the FSC at 452-6621 and provide the following information: cart number requiring service, tail numbers of aircraft requiring cryogenic product, take off times of aircraft requiring cryogenic product, and estimated time of arrival of carts at the cryogenic section.

1.8.4. Flight Superintendent or acting Shift Super Production Superintendent of the organization in need of the emergency fill will contact FSC (452-6621) to verify request, in turn FSC will contact Fuels Management for approval.

1.8.5. Continuous unscheduled servicing outside of the servicing hours listed herein will be recorded by the Cryogenics Servicing Supervisor in the FSC pass on log and reported to each organization involved for resolution.

1.8.6. **The requesting agency is responsible for providing a safety person for all emergency servicing.** When maintenance personnel are required, they will remain with the carts during filling to act as the safety observer under the two-person policy required for cryogenic servicing operations. Fuels Management Flight will provide a specific briefing regarding safety observer's responsibilities during a mishap (IAW AFI 23-201, para. 5.20.3) and all required PPE. Appropriate PPE will be worn and all safety procedures in the servicing checklist will be followed.

1.8.7. Exceptions to servicing hours will be made under the following circumstances: During contingencies, carts will be serviced without regard to normal servicing hours. Coordination with FSC is required. When the cart's in-commission rate falls below 50%, special servicing hours may be established upon request.

1.9. Resolve discrepancies with users when incorrect documentation is discovered on AFTO Form 134 preventing LOX servicing carts from being filled IAW AFI 23-201.

1.10. Notify 52 MXS Production Superintendent when aircraft LOX servicing units and are placed on the hold line (see [paragraph 1.4](#)).

2. 52MXS/E&E Section shall:

2.1. Provide daily status of all aircraft LOX servicing units to 52 MXS Production Superintendent, 52 MXS Maintenance Superintendent, 52 MXS Accessories Flight Chief, and 52 MXS Aerospace Ground Equipment Flight (AGE).

2.2. Assign and distribute cryogenic servicing units between agencies based on assigned aircraft. E&E still maintains ownership of aircraft LOX servicing units; distribution to agencies establishes more direct control for servicing unit availability to support aircraft servicing operations.

2.3. Coordinate with cryogenic storage to place aircraft LOX servicing units on hold line to support deployments, exercises, or scheduled/unscheduled maintenance (see paragraphs **1.5 and 1.6**).

2.4. Coordinate with AGE flight to conduct scheduled/unscheduled maintenance on aircraft LOX servicing units (see **paragraph 1.6**).

2.5. Notify 52d Maintenance Group (MXG)/MOC or AGE dispatch to transport aircraft LOX servicing units to cryogenic storage to support deployments or exercises, or for scheduled/unscheduled maintenance (see **paragraph 3.3**).

2.6. Notify the 52 MXG/MOC or AGE dispatch to transport aircraft LOX servicing units to E&E section for scheduled/unscheduled maintenance (see **paragraph 3.3**).

2.7. Resolve aircraft LOX servicing unit AFTO Form 244 documentation discrepancies IAW TO 00-20-1, *Aerospace Equipment Maintenance General Policies and Procedures*, when discovered during scheduled/unscheduled maintenance, or when notified by cryogenic storage as specified in **paragraph 1.7**.

2.8. Input all E&E scheduled maintenance pertaining to aircraft LOX servicing units into Integrated Maintenance Data System.

3. 52 MXS/AGE Section shall:

3.1. Review the AFTO Form 244 prior to moving the cart. If cart contains an open Red X condition, take it to the affected agency as applicable for completion. If the AFTO Form 244 is missing, leave the cart where it is, and notify 52 MXS Production Superintendent. The Production Superintendent will notify the affected agency where the servicing asset is located, and this agency is responsible for initiating a 52 MXG Form 145, *Lost Tool/Object Report*.

3.2. Perform a walk around inspection and visually check tires and general condition on all aircraft LOX servicing units prior to transport. If damage is found, immediately notify Quality Assurance and the 52 MXS Production Superintendent.

3.3. Transport aircraft LOX servicing units to servicing and maintenance facilities.

3.4. Document all aircraft LOX servicing unit pickups and drop-offs on AF Form 864, *Daily Requirement and Dispatch Record*.

3.5. Notify E&E section when aircraft LOX servicing units are brought to AGE for scheduled/unscheduled maintenance (see **paragraph 2.1**); notify E&E when cart leaves AGE after maintenance is completed for accurate daily status reporting (see **paragraph 2.1**).

4. 52 MXS Production Superintendent shall: Facilitate resolution of issues concerning aircraft LOX servicing carts between E&E section and using agencies.

5. 52 MXG/MOC shall: Notify E&E of any cart requiring maintenance and AGE in order to transport the cart to either servicing repair facility as required.

6. All aircraft LOX Using Agencies (Visiting Units, AMS and Transient Alert) shall:

- 6.1. Review AFTO Forms 244 and AFTO Form 134 on LOX servicing units to determine equipment serviceability prior to use.
- 6.2. Perform a walk-around inspection and visually check tires, gauges, general condition, and product level prior to use.
- 6.3. Agencies requiring use, are responsible to coordinate the “borrowing” of aircraft LOX servicing equipment with remaining units when their assigned carts are deployed or unserviceable due to scheduled/unscheduled maintenance.
- 6.4. Users are responsible to ensure security of aircraft LOX servicing units at all times while in their possession.
- 6.5. Transient alert, AMS and visiting units are responsible to report unserviceable aircraft LOX servicing units to the 52 MXS Production Superintendent immediately.
- 6.6. Ensure AFTO Form 244 and AFTO Form 134 have been properly documented to reflect current status of carts IAW TO 00-20-1 and TO 42B6-1-1.
- 6.7. Ensure all valves on aircraft LOX servicing units are in proper position (open/closed) IAW TO 15X-1-1, *Oxygen Equipment*.
- 6.8. Ensure aircraft LOX servicing units do not go below 15 gallons of product prior to turn in to avoid unnecessary purges. The 726 AMS will ensure aircraft LOX units do not fall below 5 Gal of product prior to servicing.
- 6.9. Notify 52 MXG/MOC when assets are found that require maintenance or servicing. 726 AMS personnel will notify their on-duty Production Superintendent of assets that require maintenance or servicing.
- 6.10. Ensure personnel are properly trained on pre-use, servicing, inspection, post-use, “borrowing” and transportation as stated in paragraphs **6.1 through 6.9**.
- 6.11. Anyone finding an AFTO Form 134 or AFTO Form 244 missing will notify their respective Production Superintendent and 52 MXS Production Superintendents. The user who has the equipment assigned to them is responsible for initiating notifications to 52 MXG/MOC and 52 MXG Quality Assurance.

DAVID C. EPPERSON, Colonel, USAF
Commander

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

AFPD 21-1, *Maintenance of Military Material*, 1 August 2018

AFI 23-201, *Fuels Management*, 20 June 2014

AFI 33-322, *Records Management and Information Governance Program*, 23 March 2020

TO 42B6-1-1, *Quality Control of Aviators Breathing Oxygen*, 6 March 2012

TO 00-20-1, *Aerospace Equipment Maintenance General Policies and Procedures*, 6 September 2019

TO 15X-1-1, *Oxygen Equipment*, 1 September 2020

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

AF Form 864, *Daily Requirement and Dispatch Record*

AFTO 134, *Aviators Breathing Oxygen Servicing Trailer Log (Liquid/Gaseous)*

AFTO 244, *Industrial/Support Equipment Record*

Abbreviations and Acronyms

AFI—Air Force Instruction

AFTO—Air Force Technical Order

AGE—Aerospace Ground Equipment

AMS—Air Mobility Squadron

AMU—Aircraft Maintenance Unit

CAF—Combat Air Force

EPU—Emergency Power Unit

IAW—in accordance with

LIN—liquid nitrogen

LOX—liquid oxygen

LRS—Logistics Readiness Squadron

MOC—Maintenance Operation Center

MXG—Maintenance Group

PPE—Personnel Protective Equipment

TO—Technical Order