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Flying Operations

C-130J MAFFS OPERATIONS LOADMASTER CHECKLIST

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This checklist establishes procedures for employing the Modular Airborne Fire Fighting System (MAFFS) on C-130J aircraft employed by Mobility Air Forces (MAF) to accomplish their worldwide mission. This checklist complements AFMAN 11-2C-130J-V3, *Operations Procedures*, and is printed on standard 8 ½" x 11" bond paper, and trimmed to fit the standard plastic aircrew checklist binders. This checklist is intended to provide MAFFS certified crewmembers quick reference to procedures required for the safe execution of MAFFS ground and flight operations. All MAFFS certified C-130J loadmasters will carry this annex. 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 chain of command.

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C-130J MAFFS OPERATIONS LOADMASTER CHECKLIST

MAFFS CHECKLIST PROCEDURES: Items on the MAFFS BEFORE TAKEOFF, AFTER TAKEOFF, BEFORE LANDING, and AFTER LANDING CHECKLISTS will be accomplished following completion of the normal checklist items from T.O. 1C-130J-1CL-2. The CL-2 checklists will not be called complete for MAFFS missions until items of the MAFFS checklist are accomplished. The loadmaster will verbalize the setting of the Compressor Enable Switch and the pressure of the MAFFS hydraulic system when calling the CL-2 Before Takeoff checklist complete. As always, the checklists and these instructions are not substitutes for sound judgment and special circumstances may require modifications of these procedures.

PART ONE – NORMAL PROCEDURES

CAUTION

Do not operate the MAFFS compressors if use of propeller de-icing is expected. Operation of the MAFFS compressors in icing conditions may exceed maximum generator loads. If icing conditions are anticipated, ensure Compressor Enable switch is in the OFF position. The loadmaster will obtain a verbal confirmation from the pilot prior to enabling compressors.

MAFFS PRE-FLIGHT CHECKLIST

1. Left and Right Hand Locks - Checked
2. Tie down Chains – Connected
3. Support Struts (4) – Connected
4. Foam Tank Manual Shutoff Valve (V29) – CLOSED (If foam tank is installed but not used)
5. High Pressure Tanks – Checked
6. MAFFS Hydraulic Quantities – Checked
7. MAFFS Hydraulic System – Depressurized

a. Slowly open Main hydraulic valve to vertical position

b. After depressurization, return Main valve to CLOSED position (horizontal)

8. Main System Accumulator – Pre-charge (1500 PSI +/- 100 PSI)
9. Emergency Accumulator – Pre-charge (1500 PSI +/- 100 PSI)
10. Main Tank Purge Valve – CLOSED
11. High Pressure Air Reservoir Purge Valve – CLOSED

ELECTRICAL PRE-FLIGHT CHECKLIST

1. AC and DC Power Hook Up (FWD Pallet) – Completed
2. Emergency Battery Cable Connected (FWD Pallet) - Completed
3. Circuit Breakers (FWD Pallet) - Checked IN
4. Energy Level Test Switch – Press – Battery OK Light "ON"

5. Emergency Stop – OUT
6. 28 VDC Power Switch (FWD Pallet) – ENABLE
7. Hydraulic Pump Switch (FWD Pallet) – ENABLE
8. Test Lamps Button (Cabin Control Box) – (PRESS TO TEST/CHECKED)
    a. Power: ON
    b. Armed: ON
    c. Compressors Armed: ON
    d. System Fail: ON
    e. Reservoir Pressure: ON
    f. Tank Pressure: ON
    g. E-Dump Electrical: ON
    h. Hydraulic Pressure: ON
    i. Nozzle Open: ON
    j. Compressor Oil: 2 lights – ON
    k. Compressor Hot: 2 lights – ON
    l. Main Tank Quantity Indicator Lights – ON
    m. Foam Tank Quantity Indicator Lights – ON
    n. Foam Control Panel Lights (Armed/Inject) - ON

9. Lamp Test Button (Vent Valve Box) – (PRESS TO TEST/CHECKED)
    a. Vent Valve Closed – ON
    b. Vent Valve Open – ON
10. Arming Switch – ARM (As Required)

CAUTION

Prior to Arming the system ensure the Retardant Fill Line Handle is Closed.

NOTE

If high pressure reservoirs are pressurized, pressure loss will occur during Arming/Disarming sequence.

a. Cabin Control Box Armed Light – ON
b. Drop Control Assemblies Armed Lights – ON/FLASHING
c. Nozzle Strobe Light – ON/FLASHING

11. Arming Switch – DISARM

MAFFS RETARDANT/WATER/FOAM SERVICING PROCEDURES

1. 28 VDC Power Switch (FWD Pallet) – ENABLE
2. Arming Switch – DISARM (Tank pressure should read zero)
3. Vent Valve – OPEN

NOTE

If NOZZLE OPEN light remains illuminated, place NOZZLE switch to CLOSE position after charging Hydraulic System. To charge Hydraulic System, follow "CHARGING THE MAFFS SYSTEM USING EXTERNAL GROUND POWER" procedure.

4. Nozzle Open Light – OFF

CAUTION

If electrical power fails during filling operations, shut off the retardant fill line handle immediately and determine the problem.

CAUTION

Monitor tank quantity indicator while filling and shut off retardant fill line handle when desired quantity is reached

DO NOT OVERFILL

5. Retardant GROUND & SYSTEM Fill Line Handles – Open
6. Place Float Switch to Spare then back to Primary Position to check volume indicator – Verify filled to correct quantity
7. Retardant Fill Line – Closed
8. Ground Nozzle – Disconnected and Cap On
9. Right Hand Fill Line – Retract and Secure
10. Vent valve – CLOSED
11. If a foam drop is planned, service foam system:
    a. After foam tank filled, filler cap replaced – CHECK
    b. Foam Tank Manual Shutoff Valve (V29) – OPEN
12. 28 VDC Power Switch (FWD Pallet) – DISABLE (As required)

MAFFS GROUND AIR SERVICING PROCEDURES

CHARGING THE MAFFS SYSTEM USING EXTERNAL HIGH PRESSURE COMPRESSOR

1. High Pressure line – Connect to fill port
2. Monitor High Pressure Reservoir Gauge and charge system to 1150 - 1200 PSI.
3. High Pressure line – Disconnect from fill port.

CHARGING THE MAFFS SYSTEM USING EXTERNAL GROUND POWER

1. Compressor Enable Switch - OFF
2. Connect AC and DC cables to Ground Electrical Connectors, J104 & J105.
3. 28 VDC Power Switch (FWD Pallet) – ENABLED
4. Hydraulic Pump Switch (FWD Pallet) – ENABLED
5. Power Switch – GROUND MODE
6. Compressor Enable Switch – ON

NOTE
Compressor will automatically shut off at 1150 - 1200 PSI.

7. Compressor Enable Switch – OFF
8. Hydraulic Pump Switch (FWD Pallet) – DISABLE
9. 28 VDC Power Switch (FWD Pallet) – DISABLE (As required)
10. Disconnect AC and DC cables from Ground Electrical Connectors.

MAFFS BEFORE TAKEOFF CHECKLIST

1. Paratroop Door Plug Latches – Locked
2. Power Switch – AIR MODE
3. Compressor Enable Switch - OFF
4. Circuit Breakers (FWD Pallet) – Checked IN
5. 28 VDC Power Switch (FWD Pallet) – ENABLE

WARNING

Emergency Hydraulic system must be pressurized to accomplish an emergency drop.

6. Hydraulic Pump Switch (FWD Pallet) – ENABLE (Only after all 4 engines are at normal ground idle).

NOTE

If normal/emergency pressure is between 1900 and 2500 PSI, depressurization is required before pressurizing main tank because of system logic. Depressurize by slowly opening only the Main hydraulic valve to the vertical position. After depressurization, return valve to CLOSED (horizontal) position.

7. Normal/Emergency Hydraulic System – "**Pressurized**" (State Pressure)
8. Vent Valve Switch – CLOSED
9. Compressor Enable Switch – "SET" (State setting) (LM)

NOTE

If Compressor does not start, turn Compressor Enable Switch to "OFF". After verifying that Hydraulic System is pressurized (2500 – 2900 PSI), turn Compressor Enable Switch to "ON".

10. Drop Selection Switch – SET to Coverage Level 1/ALL
11. Seat belt and shoulder harness – Fastened, unlocked
12. Seat Position – As Required

MAFFS AFTER TAKEOFF CHECKLIST

WARNING

Do not depressurize/cycle emergency accumulator system IN FLIGHT or EMERGENCY DUMP capability may be lost.

NOTE

If Compressor does not come on and tank pressure is above 600 PSI, you must press Compressor Start buttons on FWD pallet within 45 seconds of placing the Compressor Enable Switch to "ON." Once compressors are running, set both Compressor Start switches to the extended (disabled) position.

1. Compressor Enable Switch – **"SET"** (State setting) (LM)
2. Compressor Armed Light – Verify ON (As required)

DROP PREPARATION CHECKLIST

1. **"ACKNOWLEDGED"** (LM)
2. Helmets – ON (As required)
3. Left and Right Hand Locks – Checked
4. Tie Down Chains – Checked
5. Support Struts (4) – Checked
6. DROP PREPARATION CHECKS **"COMPLETE"** (LM, CP)

SLOWDOWN CHECKLIST

1. **"ACKNOWLEDGED"** (LM)
2. Compressor Enable Switch – **"OFF"** (LM)
3. Arming Switch – ARM (Pistol Grip Armed Light Illuminated)
4. *Drop Selection Switch – **"SET"** (state setting) (LM)

NOTE

If a foam drop is planned the following steps must also be accomplished.

a. Foam Switch – ON

b. Foam Tank Armed Light – ON

c. Foam Tank Pressure – 125 PSI +/- 15 PSI

d. Foam Mix – **"SET"** (state setting) (LM)

5. *System Status – **"ARMED"** (LM)

NOTE

The Armed light on the drop control assembly will flash when the arming cycle is initiated. The light will be on and steady when the system is fully armed. The system takes approximately 30 seconds to complete the arming cycle.

6. *SLOWDOWN CHECKS – **COMPLETE"** (LM, CP)

ONE MINUTE ADVISORY

1. **"ACKNOWLEDGED"** (LM)
2. Seat belt and shoulder harness – Fastened, unlocked
3. Seat Position – As Required

RELEASE POINT CHECKLIST

1. Status of Load – **"LOAD CLEAR"** (Or condition) (LM)

NOTE

If multiple drops are planned for a sortie, re-accomplish checklists starting with asterisked items of the SLOWDOWN checklist.

NOTE

For multiple drop sorties, drops may be accomplished with the reservoir pressure light and main tank pressure light on the cabin control unit illuminated, provided adequate pressure is indicated in the main tank. If adequate pressure is not indicated, disarm the system, charge the high pressure tanks and proceed with the SLOWDOWN checklist.

COMPLETION OF DROP CHECKLIST

NOTE

If multiple drops are not planned, the Copilot's "Flaps" call on the Release Point Checklist initiates the Completion of Drop Checklist.

1. Arming Switch – DISARM (Only after the last drop)
2. Foam Switch – OFF (As required after last drop)

NOTE

If NOZZLE OPEN light remains illuminated, close NOZZLE switch.

3. Compressor Enable Switch – **"SET"** (State setting) (LM)

NOTE

If Compressor does not come on and tank pressure is above 600 PSI, you must press Compressor Start buttons on FWD pallet within 45 seconds of placing the Compressor Enable Switch to "ON." Once compressors are running, set both Compressor Start Switches to the extended (disabled) position.

4. DROP CHECKS – **"COMPLETE"** (LM) (CP)

MAFFS WEIGHT TABLES

MAFFS Weight Chart (thousands of pounds)				
Quantity (gal.)	**Retardant**	**Retardant** (Foam Tank Removed)	**Water and Foam**	**Water Only**
Empty	**15.1**	**14.8**	**15.1**	**15.1**
500	**19.6**	**19.3**	**19.5**	**19.3**
1000	**24.1**	**23.8**	**23.9**	**23.4**
1500	**28.6**	**28.3**	**28.2**	**27.6**
2000	**33.1**	**32.8**	**32.6**	**31.7**
2500	**37.6**	**37.3**	**37.0**	**35.9**
3000	**42.1**	**41.8**	**41.4**	**40.0**
NO WATER, FULL FOAM TANK			**16.5**	

Fluid Weights (pounds per gallon)		
Retardant	**Water**	**Foam**
9.0	**8.3**	**8.5**

System Capacity (gallons)	
Main Tank	**Foam Tank**
3000	**160**

NOTE

Weights provided above are rounded estimates for planning purposes and actual weights must be verified. Actual weight of a MAFFS II unit can be found in the weight and balance section of the maintenance documentation specific to each unit.

MAFFS BEFORE LANDING CHECKLIST

1. Compressor Enable Switch – **"SET"** (State setting) (LM)
2. Vent Valve – CLOSED (If landing with water/retardant in tank)

WARNING

Prior to an emergency landing, if conditions permit, depressurize high pressure tanks 1 and 2 to reduce risks associated with pressure vessel breach during impact. Opening the high pressure jettison valve (V10) will depressurize both tanks.

3. Seat belt and shoulder harness – Fastened, unlocked
4. Seat Position – As Required

MAFFS AFTER LANDING CHECKLIST

1. Hydraulic Pump Switch (FWD Pallet) – DISABLED (Prior to any engine being downsped)
2. 28 VDC Power Switch (FWD Pallet) – DISABLED (As required)
3. Main Hydraulic System Pressure – Depressurized (As required)

RETARDANT DE-SERVICING PROCEDURES

NOTE

Use the following procedures to transfer the retardant from the tank into the ground storage tank.

1. Right Retardant Fill Line Cap – REMOVED
2. 28 VDC Power Switch (FWD Pallet) – ENABLE
3. Vent Valve – OPEN
4. Retardant Fill Line Handle – OPEN
5. Tank Quantity – EMPTY
6. Retardant Fill Line Handle – CLOSED
7. Ground Fill Line – DISCONNECTED
8. Retardant Fill Line Cap – ON

SYSTEM DE-ARMING CHECKLIST

NOTE

After the system has been armed, use the following checklist prior to landing.

1. Arming Switch – DISARM (hold until the Arming light goes out)
2. Tank Pressure – Zero PSI and Main Tank Pressure light goes out
3. Vent Valve – CLOSED
4. System De-Arming Checklist – COMPLETE (LM)

BEFORE LEAVING AIRPLANE

1. Compressor Enable Switch – OFF
2. Hydraulic Pump Switch (FWD Pallet) – DISABLE
3. 28 VDC Power Switch (FWD Pallet) – DISABLE
4. Emergency battery circuit breaker (CB1 on battery, FWD Pallet) – PULLED (Last flight of the day or as required)
5. Main Tank Purge Valve – OPEN
6. High Pressure Air Reservoir Purge Valve – As required
7. Main Hydraulic System Pressure – Depressurized
8. Emergency Hydraulic System – Depressurized
9. Before Leaving Airplane Checklist – COMPLETE

PART TWO – EMERGENCY PROCEDURES

EMERGENCY DROP

1. Emergency Drop – **"CLEARED TO DROP"** (P)
2. EMERGENCY DROP SWITCH – Lift Guard and Toggle (LM) (CP)

WARNING

If nozzle fails to open after both the pilot and loadmaster select E-Dump, move the NOZZLE switch on the cabin control unit to OPEN.

WARNING

If the system is in the armed state, the system must be disarmed prior to moving the NOZZLE switch on the cabin control unit to OPEN.

3. Status of Load – **"LOAD CLEAR"** (Or condition) (LM)
4. Nozzle – CLOSED

NOTE

The nozzle can only be closed by placing the NOZZLE switch to the CLOSE position. This function is not available for 90 seconds after the pintle is retracted.

5. EMERGENCY DROP CHECKS – **"COMPLETE"** (LM) (CP)

EMERGENCY SHUTDOWN

To stop both compressors and all hydraulic pumps from the MAFFS loadmaster station:

1. Power Switch – GROUND MODE
2. EMER STOP (FWD Pallet) – IN
3. 28 VDC Power Switch (FWD Pallet) – DISABLE

If conditions dictate complete removal of power to the MAFFS unit:

4. Generators 1 and 4 – **"OFF"** (PM)
5. TR 2 Circuit Breaker – **"PULLED"** (P)
6. TR 4 Circuit Breaker – **"PULLED"** (CP)

When conditions permit:

7. MAFFS Power Cables – **"REMOVED"** (LM)
8. TR 4 Circuit Breaker – **"RESET"** (CP)
9. TR 2 Circuit Breaker – **"RESET"** (P)
10. Generators 1 and 4 – **"ON"** (PM)

WARNING

Once the MAFFS unit power cables are disconnected from the aircraft, pulling the MAFFS battery circuit breaker will remove all power from the MAFFS unit including power required for an emergency dump. Pulling this circuit breaker is only recommended if you have already dropped and the MAFFS DC system is suspected of causing smoke or fire.

11. MAFFS Battery Circuit Breaker – **"PULLED"** (if required) (LM)
12. EMERGENCY SHUTDOWN CHECKS – **"COMPLETE"** (LM, PM)