PRODUCT MANUAL

CH47D

30 articles · Complete website edition

Includes all article text, tables and available illustrations. Videos and interactive resources are linked. Printed page numbers restart with each article. Use the clickable contents or PDF bookmarks to navigate.

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Miltech Simulations CH47D

Welcome to the CH47D

Note
CH47D IS NOW COMPATIBLE WITH FS2024. Updates are now available for no additional cost at ORBX and Contrail. MSFS Marketplace updates will be available for no additional cost as soon as FS2024 Marketplace opens.

Caution
SIMULATION USE ONLY - DO NOT USE THIS DOCUMENTATION ON A REAL AIRCRAFT

Note
Make sure your hardware is correctly configured for Helicopter Flight: Recommended Hardware Configuration

Overview

At Miltech Simulations, we continue innovating. Two years ago we presented the very first tiltrotor for MSFS. This time we present to you the result of one year of Research and Development towards our most ambitious product yet.

The Mighty Wokka is ready for takeoff on the virtual skies.

Miltech Simulations CH47D is a tandem-rotor, heavy-lift helicopter designed for diverse missions including troop and cargo transport, medical evacuation, and construction support. Its powerful twin engines and counter-rotating rotors provide exceptional lifting capacity for internal or underslung loads. Its robust design and advanced systems allow for operation in demanding environments and ensure the successful completion of critical missions.

Get Started

We've put together some helpful guides for you to get set up with our product quickly and easily.

Requirements

- Microsoft Flight Simulator - PC or Xbox. Latest version available.
- A valid product license from Miltechsimulations.com, ORBX or the MS Marketplace
- Joystick Controller (Recommended) or Xbox controller
- CPU: Quad-core processor or better.
- GPU: At least 6GB of dedicated memory, Nvidia 1060 or better.
- RAM: 8GB Minimum.
- Hard Disk: At least 4GB Recommended.

Where to Buy?

1. Miltech Simulations: https://miltechsimulations.com/collections/aircraft
2. Microsoft Flight Simulator in-game Marketplace

Installation - Miltech Simulations Webstore

Products distributed via Miltechsimulations.com are downloaded and updated via Contrail. Download the Contrail App here: https://cdn-eu.29palms.de/contrail/releases/ContrailSetup.exe

1. Download and Launch Contrail
2. Click on **"Accounts"** on the bottom left corner and "Connect" Miltech Simulations Account (log-in with your Miltech Simulations credentials)
3. Click on **"Downloads"**. Your products will download and install automatically.'

Installation - MS Marketplace

1. Launch Microsoft Flight Simulator
2. Open the Marketplace
3. Search the product
4. Click “Install” and wait for the product to install successfully. The product is by default installed on: (User)\AppData\Roaming\Microsoft Flight Simulator\Packages\Official\miltechsimulations-aircraft-osprey-mv22

Ready to Fly? ✈

Follow our Quick Start Guide

Removal

The product can be removed from ORBX Central or the MS Marketplace, by clicking on the uninstall button.

Introduction

Thank you very much for purchasing Miltech Simulations CH47D.

At Miltech Simulations, we continue innovating. Two years ago we presented the very first tiltrotor for MSFS. This time we present to you the result of one year of Research and Development towards our most ambitious product yet. The Mighty Wokka is ready for takeoff on the virtual skies.

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This product is once again the result from a successful partnership with Maryadi, a talented developer who has worked in very well-known projects since the FSX Days. As result of such collaboration, we now present our rendition of the CH47D for Microsoft Flight Simulator.

We hope you enjoy the product,

Miltech Simulations.

Miltech Simulations CH47D

Disclaimer and Credits

Warning
WARNING: This product may potentially trigger seizures for people with photosensitive epilepsy. If you suffer from this condition, please do not flight the aicraft at night.

Caution
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Caution
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Caution
Although this simulated aircraft resembles its real-world counterparts in many aspects, the product does not accurately represent (nor intends to accurately represent) the performance, systems, design, and/or features of the real-life counterpart.

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Caution
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Credits

- Programming: Maryadi, Gabriel V, Christopher Grybowski
- 3D Modeling & Texturing: Gabriel V, Leonardo Almirez
- Scenery Design: Brayan Lopez, Gabriel V
- Mission Design: Liam Timmerman, Gabriel V
- Animations: Maryadi
- Flight Dynamics: Maryadi, Gabriel V, Christopher Grybowski
- Sounds: Maryadi, Keith Sandford, Echo19 Audio
- Documentation: Gabriel V
- Distribution: Gabriel V, Vantech North America LLC, ORBX, Microsoft, Lars Pinkenburg

- Marketing: Gabriel V, ORBX
- Video and Promotion Materials: AviationLads

Special Thanks to all independent Beta Testers:

- Giogio La Pira, JinxxDCS, Jonathan Hilarie, Bradley Soanes, Keith Sandford, Christopher Olmstead

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Miltech Simulations CH47D

Product Support

All support for this product will be handled initially by Miltech Simulations. Support is available via our support forum: https://miltechsimulations.talkyard.net/latest

Our support is also offered via email in a 1-to-1 manner, through our Email Address: contact@miltechsimulations.com

For company/business inquiries, please contact hello@vantech.dev

Miltech Simulations CH47D

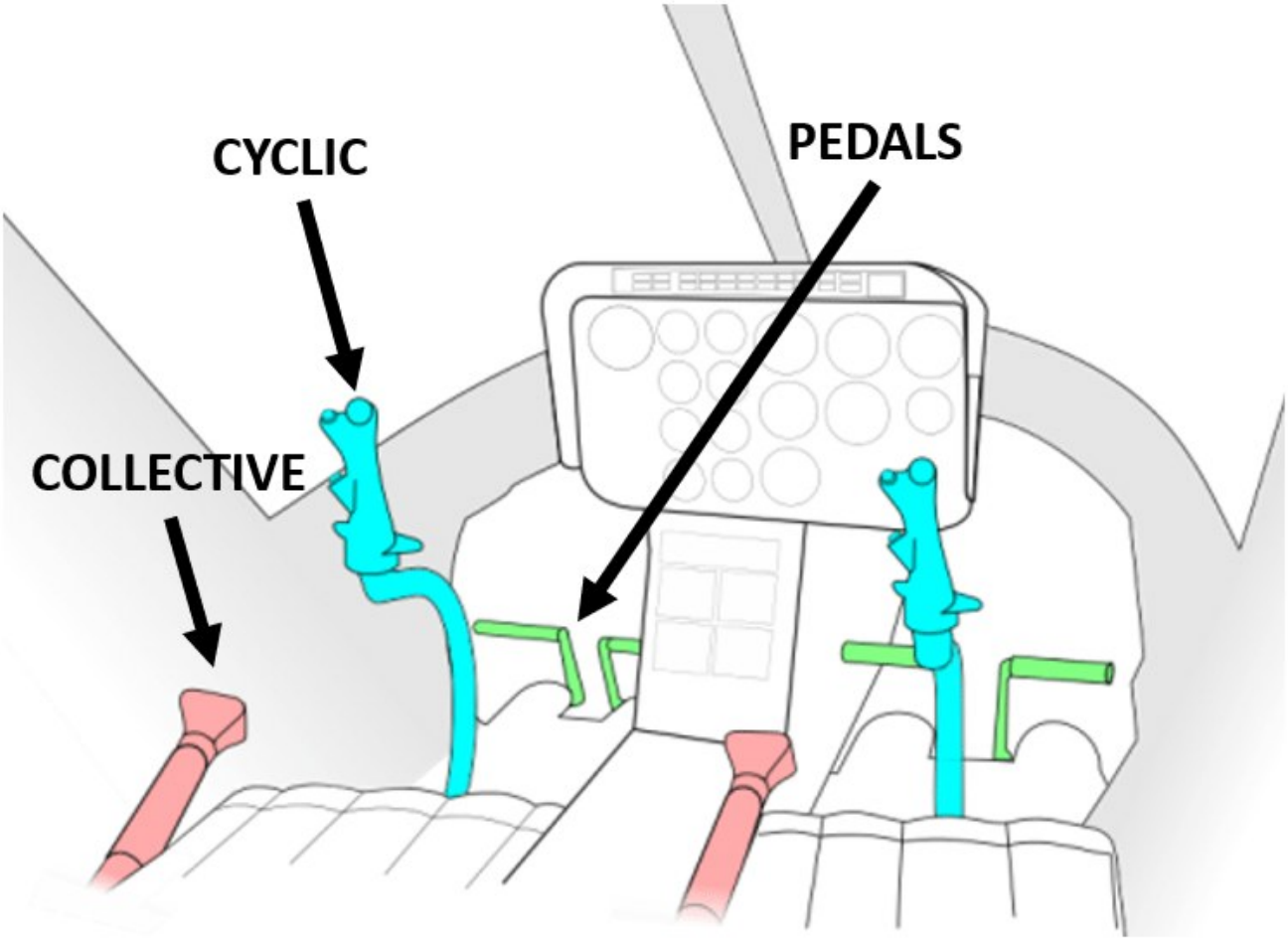
Recommended Hardware Configuration

Caution
A minimum 2% Deadzone in Cyclic (In some cases up to 5% on old or inaccurate hardware) is required for AFCS to function correctly. Not enough deadzone will result in the input controllers and the system inputs conflicting with each other, leading to erratic or unexpected behavior.

Primary Flight Controls Configuration

If you are not familiar with helicopters, this guide should help you understand the basic controls that make them fly, and help you configure the controls correctly.

- **The Cyclic:** This stick sits between your legs. Moving it forward or back controls the helicopter's pitch (nose up or down). Moving it side-to-side controls the helicopter's roll (leaning left or right).
- Pitch Binding: ELEVATOR AXIS or CYCLIC LONGITUDINAL AXIS
- Roll Binding: AILERONS AXIS or CYCLIC LATERAL AXIS
- Both Pitch and Roll can be trimmed, making flight more comfortable for the user:
- Cyclic Pitch Trim Binding: INCREASE ROTOR LONGITUDINAL TRIM and DECREASE ROTOR LONGITUDINAL TRIM
- Cyclic Roll Trim Binding: INCREASE ROTOR LATERAL TRIM and DECREASE ROTOR LATERAL TRIM
- **The Collective:** This lever is on your left side. Raising the collective increases the pitch of all rotor blades at once, generating more lift and making the helicopter rise. Lowering it causes the helicopter to descend.
- Collective Binding: THROTTLE AXIS or COLLECTIVE AXIS
- **Is there Throttle?:** The CH47 does NOT have manual throttle control. Instead, the governor (device that automatically maintains a constant rotor speed (RPM) in a helicopter) will adjust the throttle as required. **DO NOT USE** HELICOPTER THROTTLE AXIS
- **Directional Pedals:** These are on the floor at your feet. Pushing the pedals lets you turn the helicopter nose left or right.
- Directional Pedals Binding: RUDDER AXIS or TAIL ROTOR AXIS
- Ground Steering Control Bindings: RUDDER AXIS or TAIL ROTOR AXIS, however, you must have Power Steering Control set to SWIVEL for ground steering to function. More details here: Center Console



Primary Helicopter Controls

Control Sensitivity Configuration

The design of the CH47D makes it an inherently stable aircraft. No pedal input is required to keep the aircraft under control. For this reason, Control Sensibility is a personal preference of the user and we don't have any particular recommendations to make.

Xbox Controller users may benefit from dampened sensibility in the cyclic axis for more precise control in hover.

Keybinds, LVARs and HEvents

A growing number of functions will be supported for Keybinding and Hardware Interaction over the upcoming updates. The Keybind Guide is frequently updated, and available here: Keybinds Guide

Miltech Simulations CH47D

Keybinds Guide

> Caution
> Support for Keybinded Switches, as well as this guide is still a Work in Progress. We plan to support as many functions as possible given the limited amount of usable keybinds available.
> **NOTE THAT NO KEYBINDS WILL BE AVAILABLE FOR EFB FUNCTIONS.**

Primary Flight Controls

Function	MSFS Axis Bindings
Collective	THROTTLE AXIS or COLLECTIVE AXIS
Cyclic Pitch	ELEVATOR AXIS or CYCLIC LONGITUDINAL AXIS
Cyclic Roll	AILERONS AXIS or CYCLIC LATERAL AXIS
Directional Pedals	RUDDER AXIS or TAIL ROTOR AXIS - You may have to use the Split Rudder Axis depending on your hardware configuration (RUDDER AXIS LEFT and RUDDER AXIS RIGHT)
Steering Control	RUDDER AXIS or TAIL ROTOR AXIS - No dedicated axis for Steering Control.

DO NOT USE HELICOPTER THROTTLE AXIS

Trims

Function	MSFS Axis Bindings
Cyclic Pitch Trim	INCREASE ROTOR LONGITUDINAL TRIM and DECREASE ROTOR LONGITUDINAL TRIM
Cyclic Roll Trim	INCREASE ROTOR LATERAL TRIM and DECREASE ROTOR LATERAL TRIM

Electrical

Function	MSFS Axis Bindings
Battery	MASTER BATTERY ON and MASTER BATTERY OFF
Auxiliary Power Unit Start	APU STARTER
Auxiliary Power Unit Shutdown	APU OFF

Lights

Function	MSFS Axis Bindings
Pilot Search Light	LANDING LIGHT TOGGLE
Copilot Search Light	TAXI LIGHT TOGGLE
Top Collision Light	WING LIGHT TOGGLE
Bottom Collision Light	BEACON LIGHT TOGGLE
Formation Light	LOGO LIGHT TOGGLE

Firefighting

Function	MSFS Axis Bindings
Water Release	FS2020: TOGGLE WATER RUDDER FS2024: TOGGLE PRIMER 4

Others

Function	MSFS Axis Bindings
Release Water (Bucket External Load)	TOGGLE WATER RUDDER
Toggle AFCS Mode - HDG HOLD*	TOGGLE AUTOPILOT HEADING HOLD
Toggle AFCS Mode - BARO ALT HOLD*	TOGGLE AUTOPILOT ALTITUDE HOLD
Toggle AFCS Mode - RAD ALT HOLD*	TOGGLE AUTOPILOT RADIO ALTITUDE HOLD

*Beware that AFCS Mode will not engage unless the AFCS System Selector is correctly configured (System must be ON in the 1/2/Both position)

LVARs

Nearly all switches (unless those with default MSFS Keybinds) can be keybinded to hardware using software such as SPAD.next and LVARs. The LVAR list is too long to fit here, but there are several methods to retrieve LVARs for any 3rd party aircraft. All LVARs on the CH47D are clearly named to make them easy to locate and bind to keys.

If you are inexperienced with finding LVARs, please read the following article by our friends at JustFlights.
https://community.justflight.com/topic/5324/lvar-list/2

Miltech Simulations CH47D

PDF Manual

Caution
PDF Manuals may not be up to date with the latest product information. Using this web manual is recommended over the PDF version.

A PDF Version of this manual is available for download here:

↓ Download PDF manual

Miltech Simulations CH47D

Quick Start Guide

Getting Started

The CH47D is a rather simple aircraft to understand. The Tandem Rotor Design makes it an inherently stable helicopter, requiring no antitorque pedaling. Systems-wise, is what you would expect from an aircraft designed in the 1960s - your typical steam gauges.

You must, however, make sure your controls are correctly configured for helicopter flight. Out of the box, MSFS will interpret your regular throttle, elevator, and aileron axis as collective, cyclic longitudinal, and cyclic lateral axis respectively. However, it is important that if you are used to flying other helicopters, the CH47D **does not make use of "Helicopter Throttle Axis"** and therefore you must keep it deactivated on your hardware.

More information on how to configure your hardware is available here: Recommended Hardware Configuration

Launching the Aircraft

1. Launch MSFS and select Miltech Simulations CH47D.
2. Select any scenery of your preference. We remind you that this product includes sceneries and scenes that can be used to enhance your flying experience:

- RAF Odiham EGVO (UK), home of the No. 7, 18 and 27 squadrons.
- Bryant Airfield PAFR (Alaska), home of the Army Alaska Task Force CH47s.
- Chabelley Airfield HDCH (Djibouti), a growing US Military Base, key for the stability of the Horn of Africa region.
- Camp Resilience US01 (Jordan), a fictional military outpost serving as base for Army CH47s.
- Al Sahra Base US02 (Kuwait), a fictional military outpost serving as base for Army CH47s.
- Multiple small training facilities, exercise scenes, and rescue scenes.

More information on included sceneries here: Included Scenery Packages

3. If you start from C\&D, follow the Normal Procedures Checklist

Doing Cargo Load Operations

Cargo Loading Operations (Both internal and External) follow special procedures, listed here:

Cargo Load Operations - Internal

Cargo Load Operations - External

Familiarize yourself with these procedures as it may confusing the first time you use them.

Launching Missions

Miltech Simulations CH47D includes a growing number of missions.

Missions are predefined flights, from one location to another, featuring custom sceneries in both the initial and final locations and activities to do along the way. Missions are only accessible through the Electronic Flight Bag (EFB) on free flight.

Follow the Special Mission Procedures here: Mission Procedures

For Firefighting Missions, follow: Firefighting Operations

All included missions are listed here: Missions

Miltech Simulations CH47D

Normal Procedures

Caution
SIMULATION USE ONLY - DO NOT USE THIS DOCUMENTATION ON A REAL AIRCRAFT

Sim Operation Remarks

1. Make sure your controls are correctly configured for Helicopter Flight. Check the Recommended Hardware Configuration

Pre-Start

1. EAPS Engine Fan - CLOSED
2. External Lights - AS REQUIRED
3. Copilot Lights - AS REQUIRED
4. Compass Switch - AS REQUIRED
5. Cabin Temperature/HTG - AS REQUIRED
6. Electrical Switches - ALL OFF
7. Cockpit Lighting - AS REQUIRED
8. Crossfeed Switch - CLOSED
9. Fuel Station Switch - OFF
10. All Fuel Pump Switches - OFF
11. Start Switch - OFF
12. Engine Condition Levers - STOP
13. NR Switch - 100%
14. PRI/PREV Switches - PRI
15. Backup Power Switch - OFF
16. Load Share Switch - TRQ
17. Internal Lighting - AS REQUIRED
18. Pilot Lighting - AS REQUIRED
19. Anti Ice Switch - OFF
20. Hoist Switch - OFF
21. Master Hook Switch - OFF
22. Hook Select Switch - AS REQUIRED
23. Emergency Hook Release All Switch - OFF AND GUARDED
24. Hydraulic Power Transfer Switch - OFF
25. Hydraulic Flight Control Switch - OFF

26. Fire Pull Handle - IN
27. VGI Switch - NORM
28. Cyclic Trim Switch - AUTO
29. AFCS System Switch - OFF

Power Startup

1. Battery Switch - ON
2. Caution Light Switch - TEST
3. APU Switch - RUN
4. APU Switch - START
5. APU Generator Switch - ON
6. Hydraulic Power Transfer Switch - ON
7. Parking Brake Lever - SET
8. FADEC Backup Power - ON
9. Engine Condition Levers - BOTH STOP
10. EAPS Fan Switch - BOTH ON
11. Troops Warning Switch - ON for 10 Seconds

Engine Startup

1. Left Main Fuel Pump Switch - ON
2. Fuel Crossfeed Switch - OPEN
3. Engine Condition Lever 1 - GRD
4. Start Engine 1 - ON until 10% N1
5. Engine 1 Instruments (within 45 sec) - N1 >50%, Engine Oil Pressure >5 psi
6. Engine Condition Lever 2 - GRD
7. Start Engine 2 - ON until 10% N1
8. Engine 2 Instruments (within 45 sec) - N1 >50%, Engine Oil Pressure >5 psi
9. Oil Transmission Pressure - 7 Psi or Above
10. Engine Condition Lever 1 - FLT
11. Engine Condition Lever 2 - FLT
12. Engine Generator 1 - ON
13. Engine Generator 2 - ON
14. APU Generator Switch - OFF
15. Hydraulic Power XFER 1 and 2 Switches - OFF
16. APU - OFF

Pre Taxi

1. Fuel Pumps - ALL ON
2. Parking Brake Lever - OFF

Taxi

1. Power Steering - SWIVEL

Takeoff

1. Parking Brake Lever - OFF
2. AFCS System Select Switch - BOTH
3. Cyclic Trim Switch - AUTO
4. Power Steering - LOCKED
5. Transponder - AS REQUIRED

Climb, Cruise and Descent

1. Ramp Area - CHECK
2. Fuel Consumption - CHECK

Before Landing

1. Rotor Check - CHECK
2. Torque Check - CHECK
3. Engine Check - CHECK
4. Transmission Check - CHECK
5. Fuel Consumption - CHECK
6. Caution Light Check - CHECK
7. Parking Brake Lever - AS REQUIRED
8. Power Steering - LOCKED
9. Landing Area - ALL CLEAR

After Landing

1. Flight Controls - NEUTRALIZE
2. Cyclic Trim Switch - GROUND
3. Power Steering - SWIVEL

Engine Shutoff/Aircraft Switchoff

1. Flight Controls - NEUTRALIZE
2. Parking Brake Lever - SET
3. HTG Switch - OFF

4. AFCS System Select Switch - OFF
5. APU Switch - START
6. APU Generator Switch - ON
7. Engine Generator 1 and 2 Switch - OFF
8. Hydraulic Power XFER 1 and 2 Switch - ON
9. Engine Condition Levers - BOTH GRD
10. Crossfeed Switch - CLOSED
11. Fuel Pump Switch - ALL OFF
12. Engine Condition Levers - BOTH STOP
13. EAPS Engine Fan - BOTH CLOSED
14. FADEC Backup Power Switch - OFF
15. APU Generator Switch - OFF
16. APU - OFF
17. Lights - ALL OFF
18. Battery Switch - OFF

Miltech Simulations CH47D

Other Procedures

- Cargo Load Operations - Internal
- Cargo Load Operations - External
- Firefighting Operations
- Mission Procedures

Miltech Simulations CH47D

Cargo Load Operations - Internal

Loading Procedure

The Electronic Flight Bag (EFB) is used to load and unload internal cargo to the aircraft.

1. Turn on the EFB screen by pressing the ▣ **HOME** Button
2. Navigate to the **LOAD** page
3. Select "Internal Loads"



Loads Page

4. Load/Unload cargo by pressing on the available options.
5. A single cargo load type (External or Internal) can be active at any given moment.
6. Selecting a different load type will unload the active option, and load the selected option.

7. Loading any external cargo load will automatically unload any internal cargo.

Included Internal Loads

- **Troops**
- **Medvac**
- **Special Ops Rhib**
- **Pallets**
- **Humvee**

Miltech Simulations CH47D

Cargo Load Operations - External

Caution

- **Beware of sling load limitations** - must fly at maximum 120kts and avoid violent maneuvers when carrying external loads.
- External Cargo dropping and loading are currently incompatible with our carrier products. We are actively looking for solutions to this issue.

Loading Procedure

The Electronic Flight Bag (EFB) is used to load and unload internal cargo to the aircraft.

1. Turn on the EFB screen by pressing the ▣ **HOME** Button
2. Navigate to the **LOAD** page
3. Select "External Loads"



Loads Page

4. Load/Unload cargo by pressing on the available options.
5. A single cargo load type (External or Internal) can be active at any given moment.
6. Selecting a different load type will unload the active option, and load the selected option.
7. **Select the correct Sling Mode on the overhead panel.** Sling mode depends on the type of load (Tandem or Mid).
8. The tablet will display a blinking red error message if the sling mode is not configured correctly.
9. If not configured correctly, the aircraft won't be able to pick up loads.



UH60 Load Selected. Note Red Blinking message to "Set Hook Mode to MIDDLE"



Overhead Panel - CARGO HOOK Panel. Note HOOK MODE SEL is set to MID

6. **The selected object will spawn near the aircraft - usually at 9 o'clock.** Takeoff and establish a hover.
7. Use the Tablet Radar to slowly approach the object:
8. Sustain a controlled hover. Altitude must be **at or slightly above the target altitude as indicated on the tablet.**
9. Approach the object slowly.
10. **Object (Red Dot) must be within the area marked by the green circle.** Keep altitude as close to the target as possible.
11. Sustain hover for a few seconds while the cargo is loaded.
12. Upon confirmation that cargo has been successfully loaded, apply collective and increase altitude.



Tablet Radar - Note the horizontal radar (Left side), with RED Dot representing the position of the object. Height radar on the left, with the target set at 40ft.

8. **Cargo will be automatically dropped upon crossing below 50ft.**
9. **The cargo sling may break in high G/violent maneuvers/overspeed.**
10. **Dropped cargo can be picked up again. However, you must increase the altitude >100ft before dropped cargo is available for pickup again.**

Included External Loads

- **[TANDEM] UAV Container**
- **[MID] Blackhawk Helicopter Fuselage**
- **[MID] Cargo Nets**
- **[TANDEM] Large Rhib**
- **[TANDEM] Humvee**
- **[MID] Water Bucket**

Note
Water can be manually deployed using TOGGLE WATER RUDDER

Miltech Simulations CH47D

Firefighting Operations

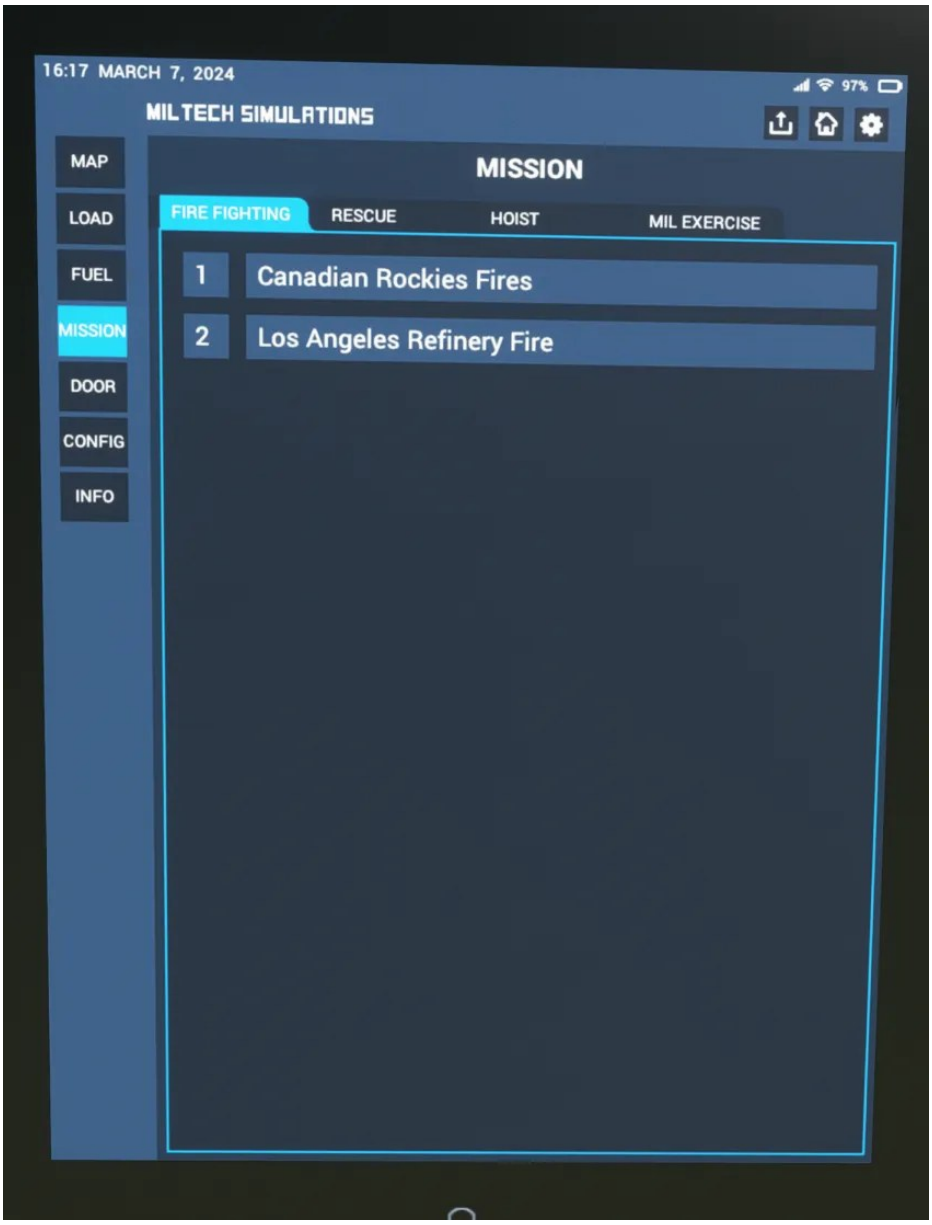
Caution

- Firefighting Operations are only accessible through Missions.
- **Crash detection must be OFF** for Missions to load correctly, as Crashes may interfere with our loading scripts.
- **Beware of sling load limitations** - must fly at maximum 120kts and avoid violent maneuvers when carrying external loads.

Firefighting is only available on missions. To start a firefighting mission:

Accessing Firefighting Missions

1. Launch a flight with the CH47D at any airport in the world.
2. Turn on the EFB screen by pressing the ▣ **HOME** Button
3. Navigate to the **MISSION** page



Mission Page

4. Select any mission from the list.
5. Wait a few minutes for the mission to load completely. The aircraft will be automatically relocated to the start location and all required mission objects will be loaded.

As the mission is started, you'll get a brief with mission details.

1. **Load the Water Bucket:**
2. Navigate to the EFB **LOAD** page
3. Select "External Loads"
4. Select Bucket
5. **Select the correct Sling Mode on the overhead panel.** Sling mode for the Bucket is "Mid" 5.

```
```



Overhead Panel - CARGO HOOK Panel. Note HOOK MODE SEL is set to MID

```

6. **The object will spawn near the aircraft - usually at 9 o'clock.** Takeoff and establish a hover.
7. Use the Tablet Radar to slowly approach the object:

1. Sustain a controlled hover. Altitude must be **at or slightly above the target altitude as indicated on the tablet.**
2. Approach the object slowly.
3. **Object (Red Dot) must be within the area marked by the green circle.** Keep altitude as close to the target as possible.
4. Sustain hover for a few seconds while the cargo is loaded.
5. Upon confirmation that cargo has been successfully loaded, apply collective and increase altitude.
```



Tablet Radar - Note the horizontal radar (Left side), with RED Dot representing the position of the object. Height radar on the left, with the target set at 40ft.

8. **Fly to the mission location** as per the Mission Brief.
9. Be careful or not doing any high-G maneuver, and control your speed. The bucket rope may break under violent flying conditions.
10. Upon arriving at the mission area, find the nearest body of water to fill your water bucket.
11. Slow down and come to a hover over the water.
12. Lower your altitude to 20ft for 3 seconds.
13. The bucket will automatically fill. No internal cockpit confirmation is available at this time.
14. **Fly to the location of the fires**

1. Approach the fires at an altitude of **no more than 350ft** above ground and speed of 20kts maximum.
2. Fly directly above the fires. The water will automatically deploy and extinguish the fire.
3. Repeat until all fire is fully extinguished.

Note
Water can be manually deployed using:
FS2020: TOGGLE WATER RUDDER
FS2024: TOGGLE PRIMER 4

Miltech Simulations CH47D

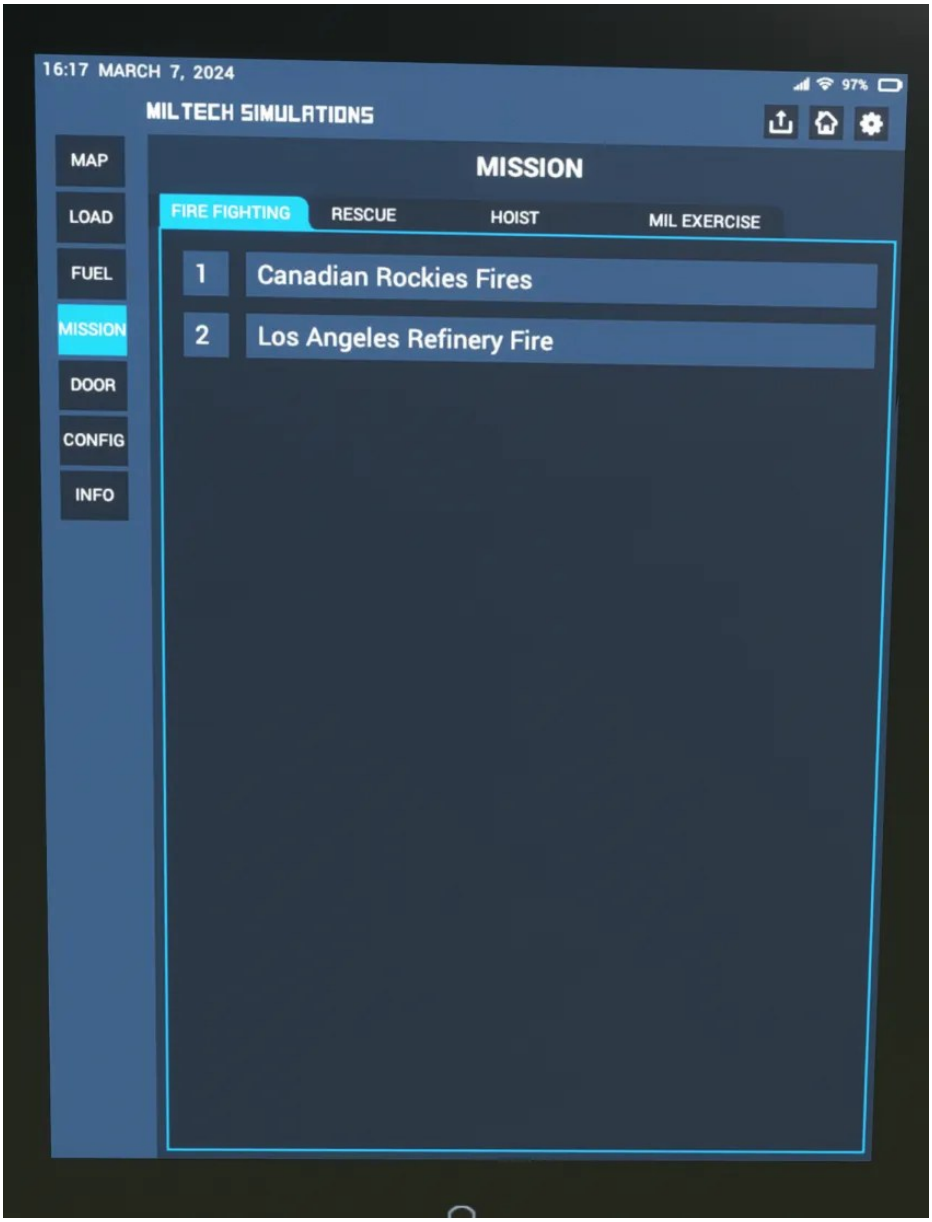
Mission Procedures

Caution

- **Crash detection must be OFF** for Missions to load correctly, as Crashes may interfere with our loading scripts.
- **Beware of sling load limitations** - must fly at maximum 120kts and avoid violent maneuvers when carrying external loads.

Accessing Missions

1. Launch a flight with the CH47D at any airport in the world.
2. Turn on the EFB screen by pressing the ▣ **HOME** Button
3. Navigate to the **MISSION** page



Mission Page

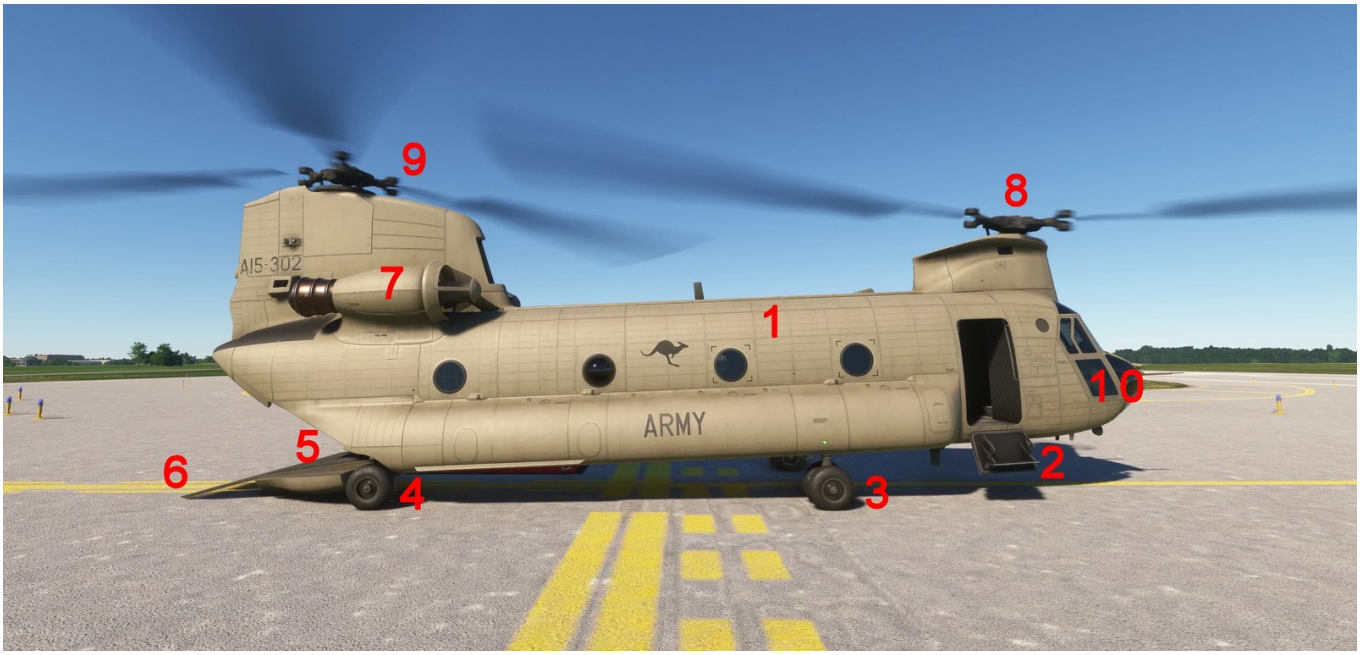
4. Select any mission from the list.
5. Wait a few minutes for the mission to load completely. The aircraft will be automatically relocated to the start location and all required mission objects will be loaded.

Included Missions

Missions List

Miltech Simulations CH47D

Overview - Exterior



External Overview

1. **Aircraft Fuselage**
2. **Front Side Door:** Consists of two parts - a sliding top half, and a bottom half with stairs. More information on how to operate the doors, read Electronic Flight Bag (EFB)
3. **Front Landing Gear:** Non-retractable, fixed
4. **Rear Landing Gear:** Non-retractable, can swivel
5. **Main Ramp:** Consists of two parts - a sliding top half, and a bottom half. More information on how to operate the doors, read Electronic Flight Bag (EFB)
6. **Ramp Slide:** More information on how to operate the doors, read Electronic Flight Bag (EFB)
7. **T55 Engine**
8. **Front Rotor:** Counterclockwise Rotation
9. **Back Rotor:** Clockwise Rotation
10. **Pilot Side Emergency Cockpit Door:** These doors are emergency use only, and therefore once jettisoned they cannot be closed unless you restart the flight.

Miltech Simulations CH47D

Overview - Cockpit



Cockpit Overview

1. **Overhead Panel:** Overhead Panel
2. **Main Instrument Panel:** Main Instrument Panel
3. **Center Console:** Center Console
4. **Cyclic:** It allows the pilot to tilt the rotor discs. By tilting the rotor discs, the pilot directs the helicopter's thrust, enabling forward, backward, lateral, and combined movement.
5. **Collective:** It controls the overall pitch angle of all the main rotor blades simultaneously. Increasing the collective pitch increases the lift generated by the rotor system, causing the helicopter to rise.
6. **Directional Pedals:** These pedals control the yaw (rotation around the vertical axis) of the helicopter. Pressing the left pedal increases the pitch of the aft rotor blades and reduces pitch on the forward rotor blades. Conversely, pressing the right pedal increases pitch on the forward rotor blades and decreases it on the aft rotor blades. This differential adjustment of blade pitch controls the torque balance and allows the pilot to turn the helicopter left or right.
7. **Electronic Flight Bag:** Electronic Flight Bag (EFB)
8. **Coilot Side Emergency Cockpit Door:** These doors are emergency use only, and therefore once jettisoned they cannot be closed unless you restart the flight.
9. **Pilot Side Emergency Cockpit Door:** These doors are emergency use only, and therefore once jettisoned they cannot be closed unless you restart the flight.

Miltech Simulations CH47D

Main Instrument Panel



Main Instrument Panel Overview

Center Instrument Panel

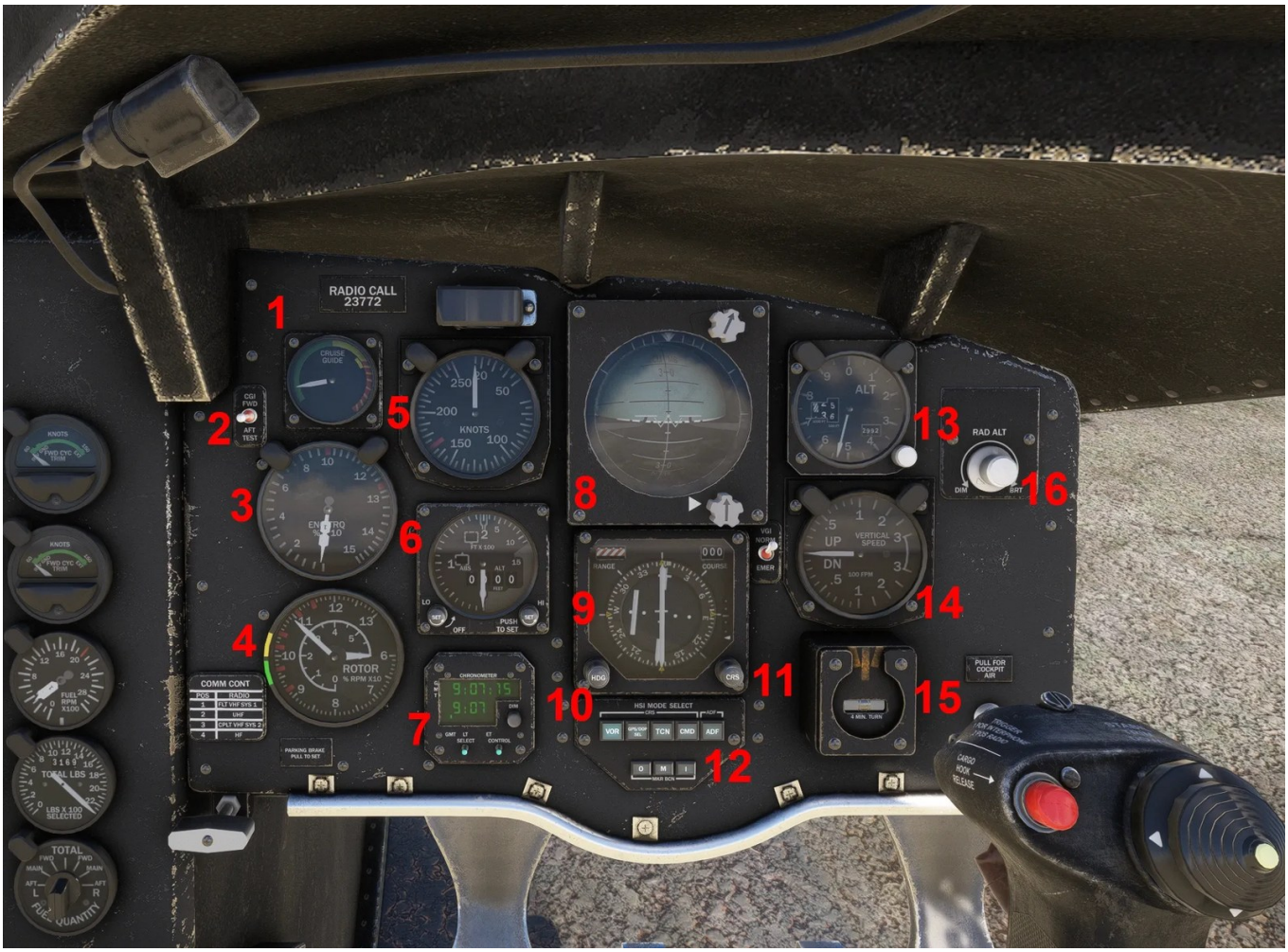


Center Instrument Panel

1. **Master Caution/Advisory Panel**
2. **Missile Alert Display** (INOP)
3. **FIRE PULL Handles** (INOP)
4. **↔ FIRE Test Switches** (INOP)
5. **↔ IFF/GPS Zeroize Switch** (INOP)
6. **Engine 1/Engine 2 N1:** Gas Producer Tachometer
7. **Power Turbine Inlet Temperature Indicator**
8. **Engine Oil Temperature Indicator**
9. **Engine Oil Pressure Indicator**
10. **Transmission Oil Pressure Indicator**

11. ◇ **Transmission Oil Pressure Selector:** selects system to display on #10
12. **Transmission Oil Temperature Indicator**
13. **Transmission Oil Temperature Indicator:** selects system to display on #12
14. **FWD Longitudinal Cyclic Trim Indicator**
15. **AFT Longitudinal Cyclic Trim Indicator**
16. **Fuel Flow Indicator**
17. **Fuel Quantity Indicator**
18. ◇ **Fuel Quantity Selector:** selects tank to display on #17
19. **Caution Light Test**
20. ◇ **VHF Antenna Selector** (INOP)
21. **Compass**

Pilot-Side Instrument Panel



Pilot-Side Instrument Panel

1. **Cruise Guide Indicator (CGI):** Gives the pilot a visual indication of the loads imposed on critical components. Needle should be kept in the green band, with only transient excursions into the yellow band.
2. **CGI Test:** Up for FWD Rotor System, down for AFT Rotor System.

3. **Torquemeter**
4. **Rotor Tachometer (RPM %).** Small needle measures from 0-50%, large needle from 50-130%
5. **Airspeed Indicator (Knots)**
6. **Radar Altimeter**
7. **Chronometer**
8. **Attitude Indicator**
9. **Horizontal Situation Indicator (HSI)**
10. ◇ **Heading Selector:** Affects both the heading (HSI heading bug) and Autopilot Heading Select.
11. ◇ **Course Selector**
12. **HSI Mode Select:** Selects source for navigation data (VOR, TACAN, ADF)
13. **Barometric Altimeter**
14. **Vertical Speed Indicator**
15. **Turn and Slip Indicator**
16. ◉ **Radar Altimeter Dimmer Knob**

Copilot-Side Instrument Panel



Copilot-side Instrument Panel

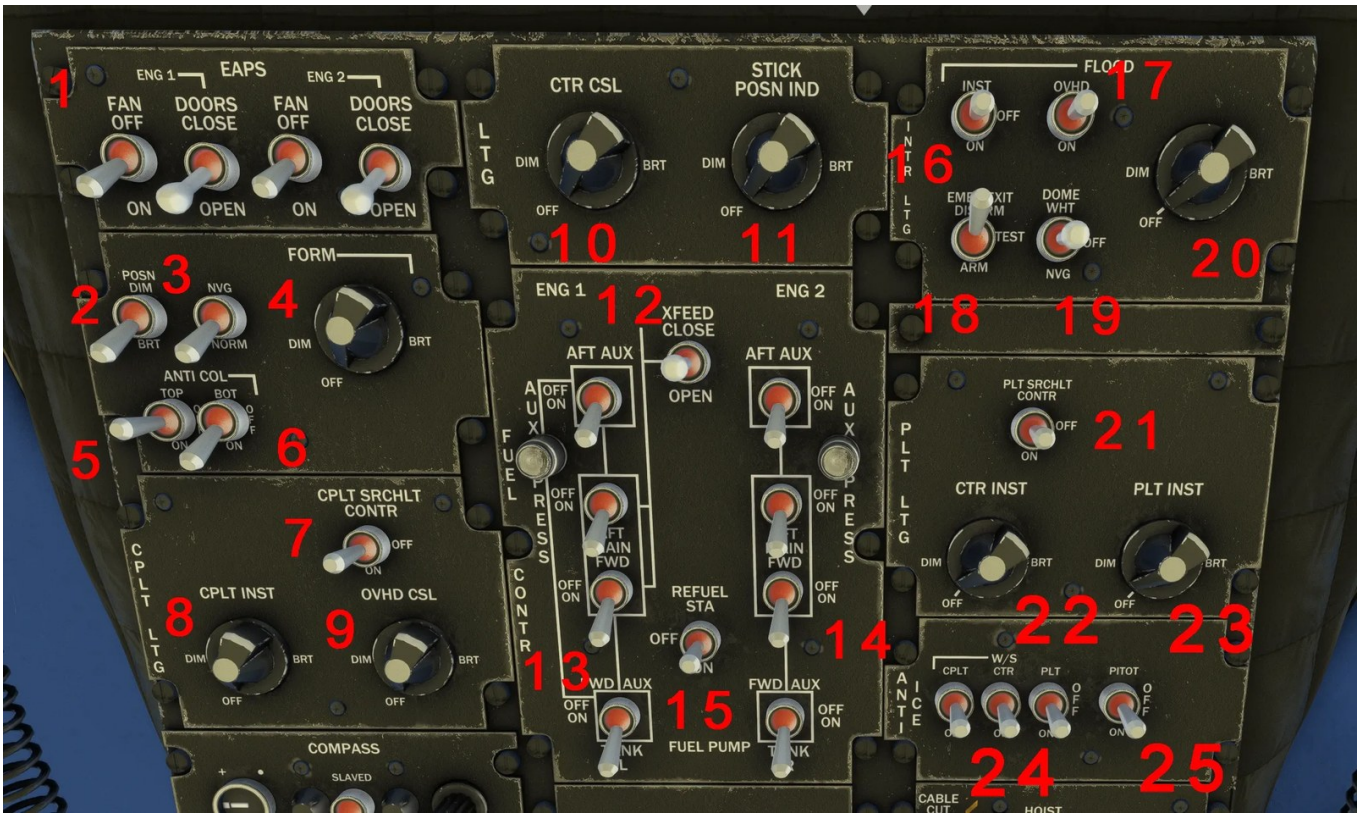
1. **Torquemeter**
2. **Rotor Tachometer (RPM %).** Small needle measures from 0-50%, large needle from 50-130%
3. **Airspeed Indicator (Knots)**
4. **Radar Altimeter**
5. **Chronometer**
6. **Attitude Indicator**
7. ◇ **Course Selector**
8. ◇ **Heading Selector:** Affects only the HSI heading bug
9. **HSI Mode Select:** Selects source for navigation data (VOR, TACAN, ADF)
10. **Barometric Altimeter**
11. **Vertical Speed Indicator**
12. **Turn and Slip Indicator**

13. ◉ **Radar Altimeter Dimmer Knob**

Miltech Simulations CH47D

Overhead Panel

Top Overhead Panel

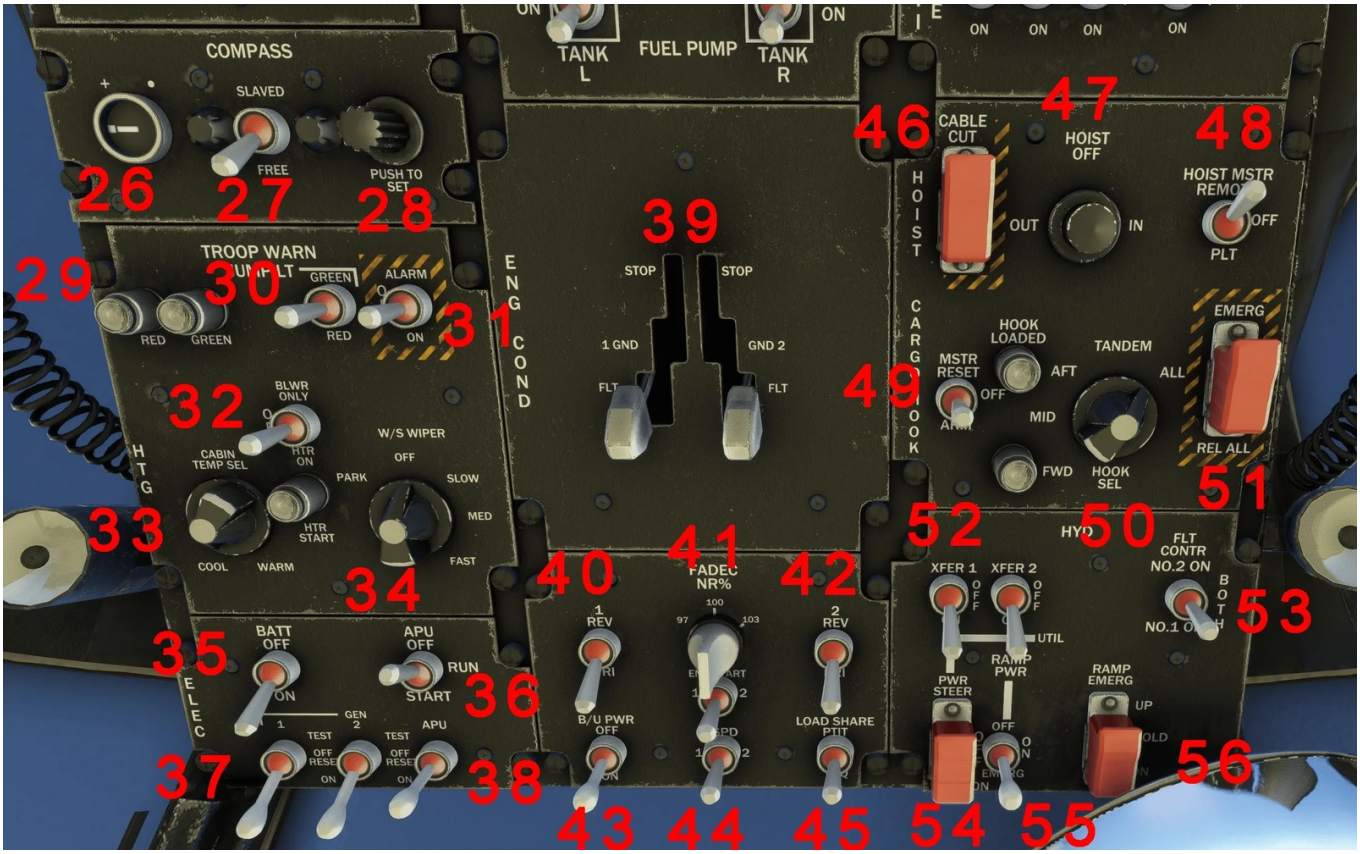


Top Overhead Panel Overview

1. **Engine Air Particle Separator (EAPS) Fans/Doors:** Turns fan on/Opens EAPS Doors on ENG1 and ENG2 when EAPS are installed (Electronic Flight Bag (EFB)). This has no impact on engine performance.
2. **Position Lights:** Three-way switch (DIM, OFF, BRT). Sets external Green/Red Position (Navigation) Lights on/off.
3. **Formation Lights:** Sets external Green Formation lights on (NVG)/off (NORM).
4. **Formation Lights Dimmer:** Controls the intensity of Formation Lights when Switch is NVG.
5. **Top Anticollision Lights:** Toggles flashing red Top Anticollision Light on/off.
6. **Bottom Anticollision Lights:** Toggles flashing red Top Anticollision Light on/off.
7. **Copilot Seach Lights:** Toggles Copilot side Search Light on/off. Search Lights are generally used as Landing Lights.
8. **Copilot Instrument Lights Dimmer:** Controls the intensity of light of the Copilot Instruments.
9. **Overhead Lights Dimmer:** Controls the intensity of the overhead panel green backlight.
10. **Center Console Lights:** Controls the intensity of the center panel green backlight.
11. **Stick Position Indicator Lights:** Controls the intensity of the stick position indicator (INOP, indicator not installed on this aircraft)
12. **Fuel Crossfeed Valve:** Opens/Closes the Crossfeed Valve connecting both fuel systems.

13. **Left Fuel Tank Pumps:** Controls the left-side fuel pumps (AFT AUX, two MAIN pumps, and FWD AUX)
14. **Right Fuel Tank Pumps:** Controls the right-side fuel pumps (AFT AUX, two MAIN pumps, and FWD AUX)
15. **Refueling Station:** Enables single Point Refueling (No Sim Function)
16. **Instrument Flood Lights:** Turns on/off Green Instrument Flood Lights, located just under the instrument sun visor. Brightness is controlled by dimmer knob (#20). Instrument flood lights will illuminate only if this switch is ON and the brightness knob is at a setting other than OFF.
17. **Overhead Flood Lights:** Turns on/off Green Instrument Overhead Lights. Brightness is controlled by dimmer knob (#20). Instrument flood lights will illuminate only if this switch is ON and the brightness knob is at a setting other than OFF.
18. **Emergency Lights:** Arms or disarms the emergency exit lights.
19. **Dome Lights:** Three-Way Switch (DOME WHT, OFF, NVG). Turns On/Off the Dome lights. DOME WHT uses the white lighting lamps in the cabin to illuminate the cockpit and cargo bay. NVG makes use of the green lighting only, illuminating the cockpit.
20. **Instrument/Overhead Flood Lights Dimmer:** Controls intensity of both Instrument and Overhead Flood lights. For this knob to function, one or both switches must be set to the ON position.
21. **Pilot Search Lights:** Toggles Pilot side Search Light on/off. Search Lights are generally used as Landing Lights.
22. **Center Instrument Lights Dimmer:** Controls the intensity of light of the Center Instruments.
23. **Pilot Instrument Lights Dimmer:** Controls the intensity of light of the Pilot Instruments.
24. **Windshield Antiice:** Controls the Windshield Antiice (Copilot/Center/Pilot)
25. **Pitot Antiice:** Controls the Pilot Antiice

Bottom Overhead Panel



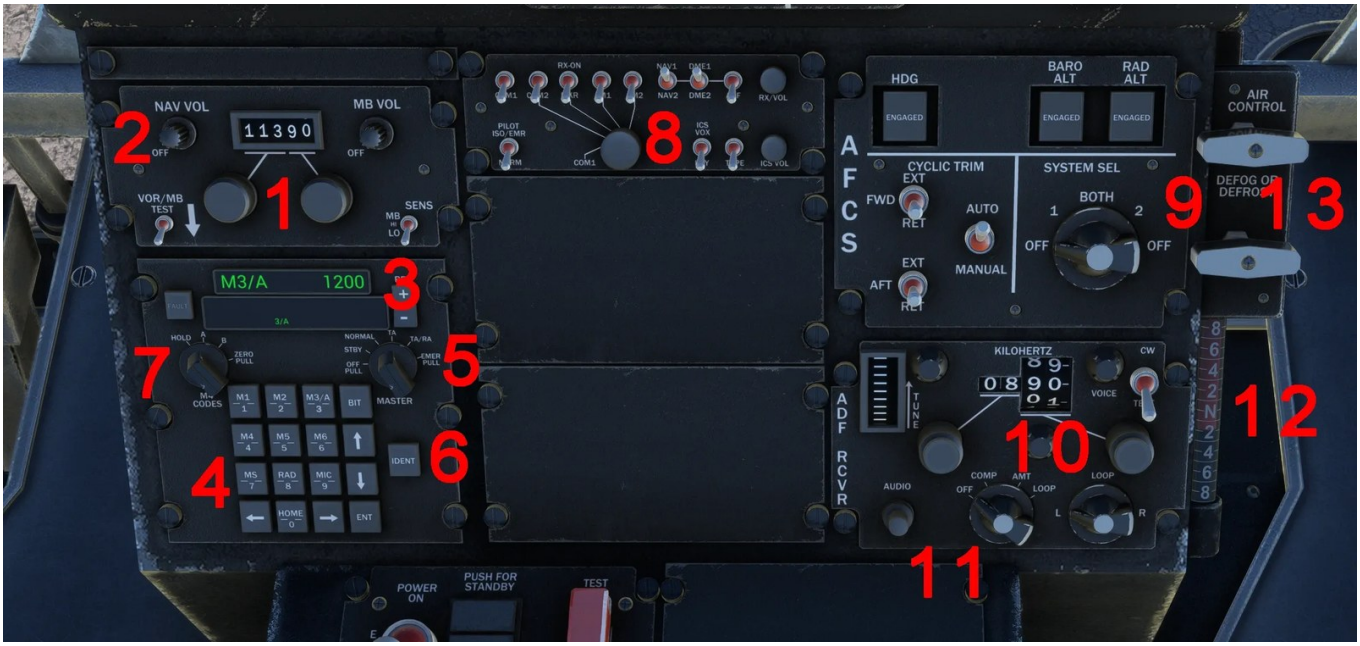
Bottom Overhead Panel Overview

26. **Compass Annunciator:** No Sim Function
27. ↔ **Compass Slaving Switch:** No Sim Function
28. ◉ **Compass Synchronizing Knob:** No Sim Function
29. **Red/Green Troop Warning Lights**
30. ↔ **Green/Red Troop Warking Lights Switch:** Three-Way Switch (Green/OFF/Red)
31. **Troop Alarm**
32. **Heat Blower:** Blower Only/Off/Heater On, No Sim Function
33. ◇ **Cabin Temperature Selector:** No Sim Function
34. ◇ **Windshield Wiper Selector:** Park/Off/Slow/Med/Fast
35. ↔ **Battery Switch**
36. ↔ **APU Switch:** Off/Run/Start
37. ↔ **Generator 1/2 Switches:** Three-way Position (Test/OFF/On)
38. ↔ **APU Generator Switch:** Three-way Position (Test/OFF/On)
39. **Engine 1/2 Condition Levers:** Stop/GRD/FLT. Stop cuts off fuel to the engines, shutting the engines down. GND position is meant to be used while on the ground (NOTE: **after SU15 is released**, GND POSITION will limit the engines to 53% RPM and rotor to 50% as per the real aircraft).
40. ↔ **FADEC Operation Switch 1:** FADECs can be operated in Primary (PRI) or revisionary (REV) mode. No Sim Function.
41. ◇ **FADEC NR% Selector:** Select the target rotor RPM between 97% and 103%
42. ↔ **FADEC Operation Switch 2:** FADECs can be operated in Primary (PRI) or revisionary (REV) mode. No Sim Function.
43. **Backup Power:** Enables the FADEC units to be powered from the aircraft battery.
44. ↔ **ENGINE START Switch:** Engages starter for engine 1/2.
45. **Load Share:** Selects between PTIT (turbine inlet temperature) or TRQ matching for sharing load between engines. No Sim Function.
46. **Hoist Cable Cut:** No Sim Function
47. ◉ **Hoist Control Knob:** No Sim Function
48. ↔ **Hoist Master Switch:** Remote/Off/Pilot, No Sim Function
49. ↔ **Hook Switch Master:** Reset/Off/ARM, No Sim Function
50. ◇ **Hook Mode Selector:** Selects the hook configuration used by external loads. Correct configuration selection (eg. Tandem/Mid) is required for external equipment to be loaded correctly. More information: Cargo Load Operations - External
51. **Hook Emergency Release:** No Sim Function
52. ↔ **Hydraulic Transfer Switch 1/2:** Provides hydraulic pressure to systems 1/2 when the engines are off.
53. ◇ **Flight Control Selector:** No Sim Function

54. **Power Steering Hydraulics:** No Sim Function
55. **Ramp Power:** No Sim Function
56. **Ramp Emergency:** No Sim Function

Miltech Simulations CH47D

Center Console



Canted Console Overview

1. ◇ **NAV/ILS Frequency Selector:** Left knob selects the first three digits, right knob selects the decimal digits. For NAV/ILS to engage, the correct Nav Mode must be selected on the HSI Mode Select. For more information, Main Instrument Panel
2. **NAV Volume**
3. **Transponder/IFF Unit**
4. **Transponder/IFF Input Keyboard**
5. **Transponder/IFF Mode:** OFF/STBY/Normal/TA/TA-RA
6. ▣ **IDENT Button**
7. **Transponder Code Mode:** Hold/A/B/Zero, No Sim Function
8. ◇ **COMM Receiver Selector:** No Sim Function
9. **AFCS System:** A two-degree of Freedom aircraft flight control system (Autopilot) will be available shortly after the release of SU15. More information here: AFCS System (Autopilot)
10. ◇ **ADF Frequency Selector:** The left knob selects the first two digits, the right knob selects the last two digits.
11. **ADF Mode:** OFF/COMP/AMT/LOOP
12. **Air Control/Defog Handles:** No Sim Function
13. **Longitudinal Stick Position Indicator**



Top Center Console Overview

14. **ALQ-156 Electronic Countermeasures Panel:** No Sim Function
15. **ARC-220 High Frequency (HF) Radio:** No Sim Function due to lack of support of HF Frequencies.
16. **Z-AVH Remote Control Unit:** No Sim Function, Display Only
17. **Comsec Mode:** No Sim Function, Display Only
18. **Comsec Power:** No Sim Function, Display Only
19. **APR-39 Radar Signal Detecting:** No Sim Function
20. ◇ **TACAN Frequency Selector:** Left knob selects first two values, middle selector selects rightmost numeric value, right knob selects X/Y. For TACAN to engage, the correct Nav Mode must be selected on the HSI Mode Select. For more information, Main Instrument Panel
21. ◇ **TACAN Mode Selector:** OFF/REC/TR/AA REC/AA TR
22. ◇ **ARC-164 UHF Frequency Selector:** No Sim Function due to lack of support of UHF Frequencies, Display Only

23. ◇ **UHF Mode Selector:** OFF/Main/Both, No Sim Function, Display Only
24. **UHF Preset:** No Sim Function, Display Only
25. **Pilot Interphone Control:** No Sim Function



Bottom Center Console Overview

26. **Copilot Interphone Control:** No Sim Function
27. **ARC-186 VHF Radio Set:** Use the first three knobs to select the frequency, and the last knob to select the decimal (Currently supporting only two decimals, 0.05Mhz).
28. ◉ **VHF Mode, Power Knobs:** Use to select VHF Mode (AM/FM/MAN) and Power (On/Off).
29. **Steering Control:** Three-Way Switch (Lock/Unlock/Steer). LOCK keeps the steering wheels locked in the centered position. UNLOCK lets the wheels freely swivel 360deg. STEER Steering angle is controlled through the steering knob (linked to Rudder Axis).
30. ◉ **Steering Knob:** Linked to Rudder Axis.
31. **ARC-201A VHF Radio Set:** No Sim Function, Display Only
32. **VHF Function:** No Sim Function, Display Only

33. **KY-58 Voice Security Equipment:** No Sim Function
34. **Aux Interphone Control:** No Sim Function

Miltech Simulations CH47D

Aircraft Systems

- GPS Systems
- AFCS System (Autopilot)

Miltech Simulations CH47D

GPS Systems

By default, the CH47D includes the Stock Aera GPS. This is a rather basic GPS system, that will allow you to create simple flight plans, "Direct-to" flights and access the map and navaids. Real operators of the CH47D use these types of systems in real life.

The Aera is by default hidden. To access it, go to the EFB - CONFIG Tab - "Enable Handheld GPS"



Aera GPS

The GPS screen may be difficult to see in small displays. The GPS Screen is undockable with the stock "Alt+Click" command.

PMS50's GTN750 GPS is also available as an optional module for PC (Soon Coming to Xbox). This GPS System is far more complex and it does allow for full flight planning. The base module is required, download from here: https://pms50.com/msfs/downloads/gtn750-basic/

Miltech Simulations CH47D

AFCS System (Autopilot)

Caution

AFCS IS NOT NATIVELY SUPPORTED BY MSFS - IMPLEMENTATION IS EXPERIMENTAL

Due to the limitations of AP Systems on MSFS, the current implementation of autopilot relies on a series of custom PID Controllers to manage the helicopter controls.

Known issues that will be improved overtime include:

- Tendency for the aircraft to cruise in a "crab" position with HDG mode engaged at high speeds. A "crab angle compensation controller" is in the works, however this adds a significant amount of complexity to the system and further testing is required.
- Under some conditions, the controllers may overreact to small heading changes.
- Under some conditions, the system may generate oscillations.
- Conflicts with Collective hardware if not set to IDLE when altitude modes are engaged.

Caution
A minimum 2% Deadzone in Cyclic and Pedal (In some cases up to 5% on old or inaccurate hardware) is required for AFCS to function correctly. Not enough deadzone will result in the input controllers and the system inputs conflicting with each other, leading to erratic or unexpected behavior.

System Overview

Miltech Simulations CH47D Features a three-degree of freedom Advanced Flight Control System (AFCS), designed to alleviate the load on the pilot during cruising, long flights and terrain-following flights. The system controls the aircraft in the vertical, roll and yaw axes - three modes are available: HDG Select, Baro ALT Hold and RAD ALT Hold.



AFCS Panel

1. **HDG SELECT:** Click here for more information
2. **BARO ALT HOLD:** Click here for more information
3. **RAD ALT HOLD:** Click here for more information
4. **System Select:** Selects the AFCS System the aircraft will use. Under normal conditions, BOTH will be selected for redundancy. HDG/BARO/RAD won´t engage unless the selector is at any position other than OFF.
5. **Cyclic Trim FWD**
6. **Cyclic Trim AFT**
7. ◇ **Cyclic Trim AUTO/MANUAL Selector**

HDG Select

HDG Select Provides automatic control of the aircraft heading, following the Selected Heading on the Pilot Side HSI.

- To engage, make sure that the AFCS SYSTEM SELECT is ON (either in the 1 / 2 / BOTH position). Only then press the HDG button to engage system.

- Upon pressing, the aircraft will automatically take over cyclic and pedal controls in order to follow and maintain the selected heading. Important to note that any cyclic or pedal input when HDG Select is engaged will ultimately conflict with the AFCS Commands.
- At airspeeds under 25 Knots, the aircraft will make exclusive use of pedals to yaw in place. Cyclic input is minimal and used exclusively to maintain the aircraft leveled during the turn. The pilot maintains full control over pitch and cyclic trim.
- At airspeeds above 25 knots, the aircraft will make use of pedal and cyclic to perform coordinated turns at speed. The pilot maintains full control over pitch and cyclic trim.
- The only source of HDG navigation data is the HDG Bug on the Pilot's side HSI. The AFCS will not follow any flight plans inputted via GPS, nor will follow other navaids.

BARO ALT Hold

BARO ALT Hold Provides automatic control of the aircraft's barometric altitude, keeping altitude stable at the moment of engagement. CH47D Does not feature an altitude select mode. Instead, the aircraft will aim to maintain the current altitude and a V/S of zero by adjusting the collective.

- To engage, make sure that the AFCS SYSTEM SELECT is ON (either in the 1 / 2 / BOTH position). Only then press the BARO Alt button to engage system.
- Only engage BARO ALT when the vertical speed is close to zero (eg. aircraft is on stable flight). This avoids aggressive corrections by the aircraft upon engaging.
- After engaging, **move your HARDWARE COLLECTIVE AXIS TO THE MINIMUM** (eg. if using a throttle quadrant, move to IDLE position). This will avoid hardware conflicting with the controller script, leaving complete collective authority to the automatic system.
- To change altitude, disengage the system, manually fly to the desired altitude and then reengage.
- Engaging BARO ALT Hold mode will disengage Radio ALT Hold automatically, and viceversa.

RAD Alt Hold

RAD ALT Hold Provides automatic control of the aircraft's altitude, following the terrain to mantain a constant altitude above the ground following the radio altimeter. The aircraft will aim to maintain the Radio Altitude at the moment of engagement.

- To engage, make sure that the AFCS SYSTEM SELECT is ON (either in the 1 / 2 / BOTH position). Only then press the RAD Alt button to engage system.
- Only engage RAD ALT when the vertical speed is close to zero (eg. aircraft is on stable flight). This avoids aggressive corrections by the aircraft upon engaging.
- After engaging, **move your HARDWARE COLLECTIVE AXIS TO THE MINIMUM** (eg. if using a throttle quadrant, move to IDLE position). This will avoid hardware conflicting with the controller script, leaving complete collective authority to the automatic system.
- To change altitude, disengage the system, manually fly to the desired altitude and then reengage.
- Beware that Radio ALT Hold has a high sampling rate, and as such the system may perform aggressive corrections on unstable terrain. The aircraft will also react to ground obstacles, such as buildings and vegetation, as these are detected by the radio altimeter.
- Engaging Rad ALT Hold mode will disengage BARO ALT Hold automatically, and viceversa.

Controlling Airspeed

The CH47D lacks a mode for airspeed or pitch control. Instead, the pilot shall use the Rotor Longitudinal Pitch to adjust and control the aircraft's pitch. Doing so will also allow speed control when the altitude modes are engaged.

- Make sure your hardware is setup for helicopter control - assign two buttons to control the Rotor Longitudinal Pitch as explained in the Recommended Hardware Configuration
- With either ALT Mode engaged (BARO or RAD), applying rotor trim DOWN will decrease the pitch and accelerate the aircraft forward. The AP system will increase collective to compensate and keep the V/S constant. Increasing Pitch will decelerate the aircraft, and the aircraft will automatically react by decreasing collective to keep V/S constant.

Controlling Vertical Speed

The CH47D lacks a mode for vertical speed control. Therefore, pilots must manually fly any maneuvers that require changes in altitude and vertical speed control.

Control Matrix

Mode Selected	ROLL	PITCH	YAW	COLLECTIVE	SPEED
HDG HOLD					
BARO ALT		/			/
RAD ALT		/			/
HDG + BARO		/			/
HDG + RAD		/			/

:white_check_mark: = Controlled by AFCS System

:joystick: = Pilot Controlled

:level_slider: = Controllable by using Rotor Longitudinal Pitch

Control Bindings

All three modes (HDG HOLD, BARO ALT HOLD and RAD ALT HOLD) can be easily keybinded using default MSFS events (TOGGLE AUTOPILOT HEADING HOLD, TOGGLE AUTOPILOT ALTITUDE HOLD, TOGGLE AUTOPILOT RADIO ALTITUDE HOLD respectively).

AFCS System Selector can be keybinded using LVARs. Beware that the modes above will not engage unless an AFCS System is selected (1/2/Both)

More information: Keybinds Guide

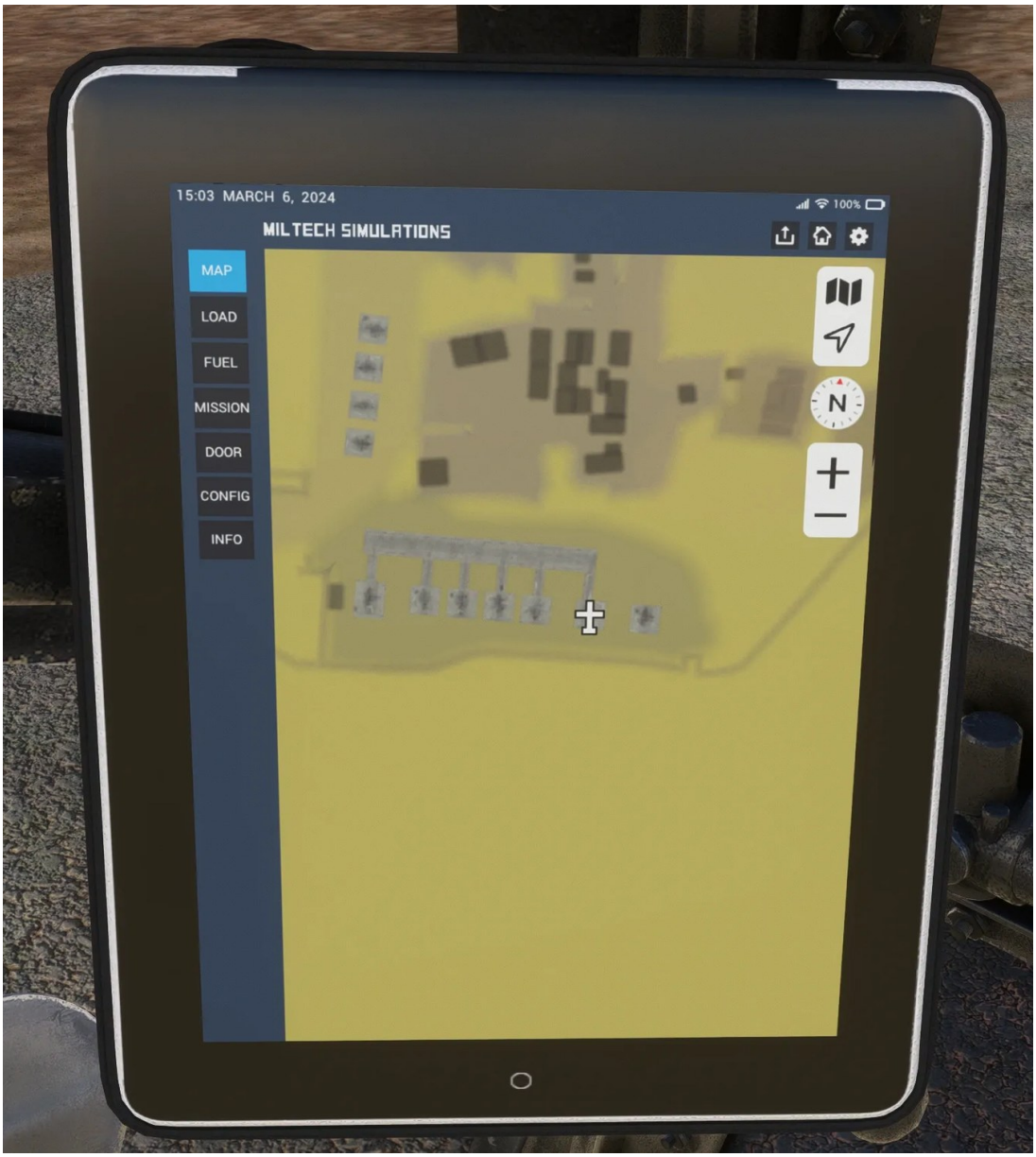
Miltech Simulations CH47D

Electronic Flight Bag (EFB)

An Electronic Flight Bag (EFB) is a digital device, generally a Tablet, that provides the pilot with additional information. On Miltech Simulations CH47D, the EFB is the main way of interacting with the aircraft - from operating doors, launching missions, and loading cargo.

MAP

Displays a generic terrain OR satellite map on the tablet.



EFB Map Page

LOAD

Allows loading and unloading of cargo, both in the inner cargo bay and externally. More details here: Cargo Load Capabilities



EFB Load Screen

1. ◇ **EFB Page Selector**
2. **Internal Loads:** Displays complete list of internal loads available on the load selector. (More info: Cargo Load Capabilities)
3. **External Loads:** Displays complete list of external loads available on the load selector. (More info: Cargo Load Capabilities)
4. ◇ **Load Selector:** Display lists of loads available, depending on which option (internal/external) is selected. Clicking on any load will spawn it, either inside the cargo bay (internal) or near the aircraft (external).

Upon Selecting any of the external load options:



EFB Load Screen - External Load Selected

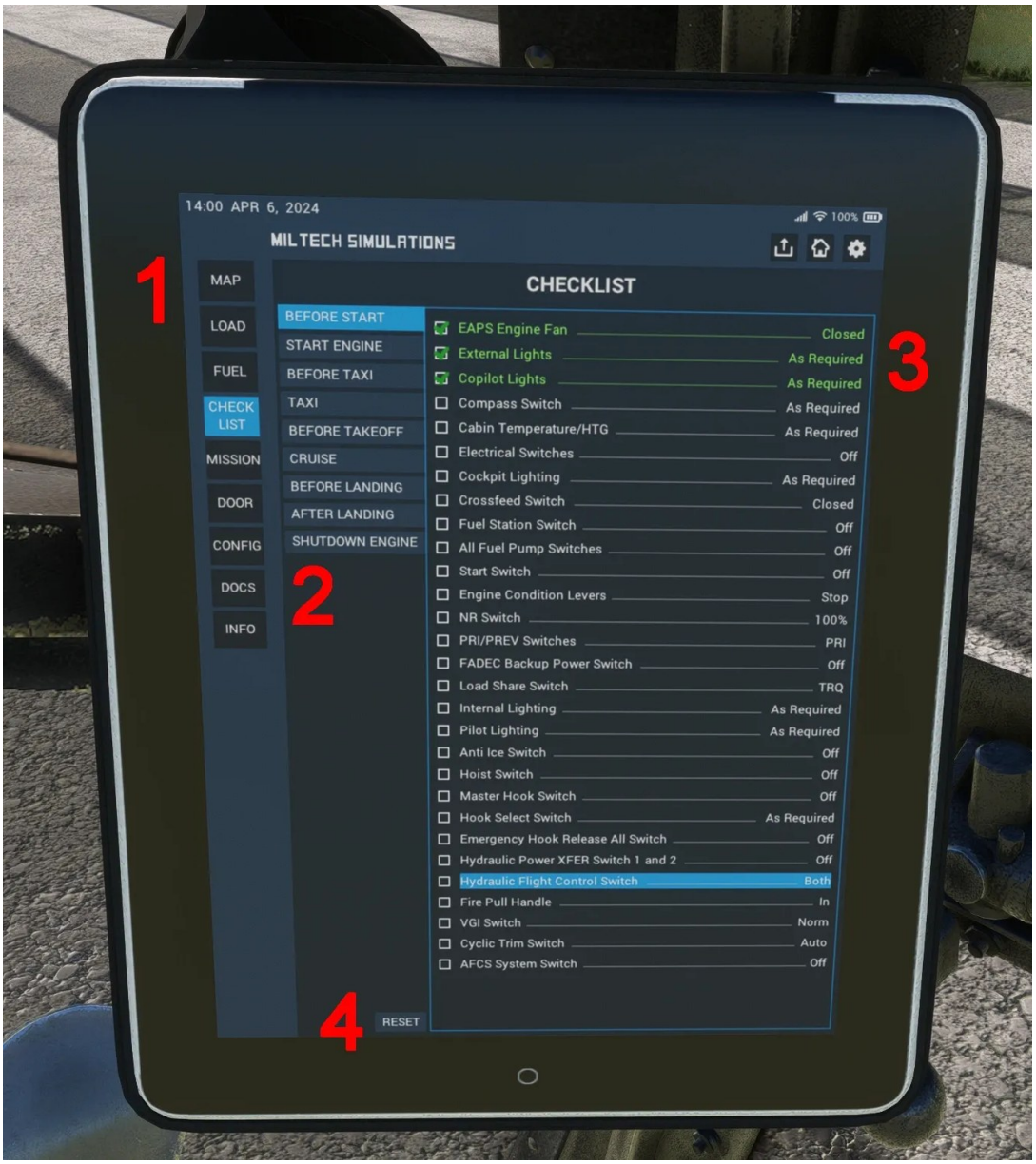
5. **External Load Selected,** in this example the RHIB Boat.
6. **External Load Radar & Target:** Upon selecting an external load, the object will spawn near the aircraft (usually at 9-o-clock). The radar screen allows the user to easily navigate the aircraft to the hover point directly above the load. The user must then slowly and carefully fly the aircraft until the red dot (target) is fully inside the green ring, and hover in position for a few seconds.
7. **Altitude above Ground Radar:** To safely operate the aircraft in hover and successfully pick up the loads, the user must consider the altitude above ground. The range for picking up loads is from 15-45 feet above ground. A white arrow on the right side of the scale indicates the ideal pickup altitude ("target altitude"). Ideally, you are at, or slightly above, the target altitude. Loads will be automatically released upon crossing below 50ft.
8. **Hoist/Sling Status:** Displays the status of the sling loads. Will display a countdown from 5-0 when the aircraft is in hover position within the pickup limits, after which it will display "Hooked". Will display "Released" upon release of the loads due to crossing below 50ft. Will display "Broken" if the maximum G value has been broken or in violent maneuvers.

9. **Hook Mode:** Displays the required hook mode to be selected on the overhead panel for successful pick up of the loads. If the Hook Mode is not selected correctly, a red blinking warning will be displayed.

> Caution
> **Beware of sling load limitations** - must fly at maximum 120kts and avoid violent maneuvers when carrying external loads.

CHECKLIST

Displays the aircraft checklist right on the EFB Tablet for ease of access.

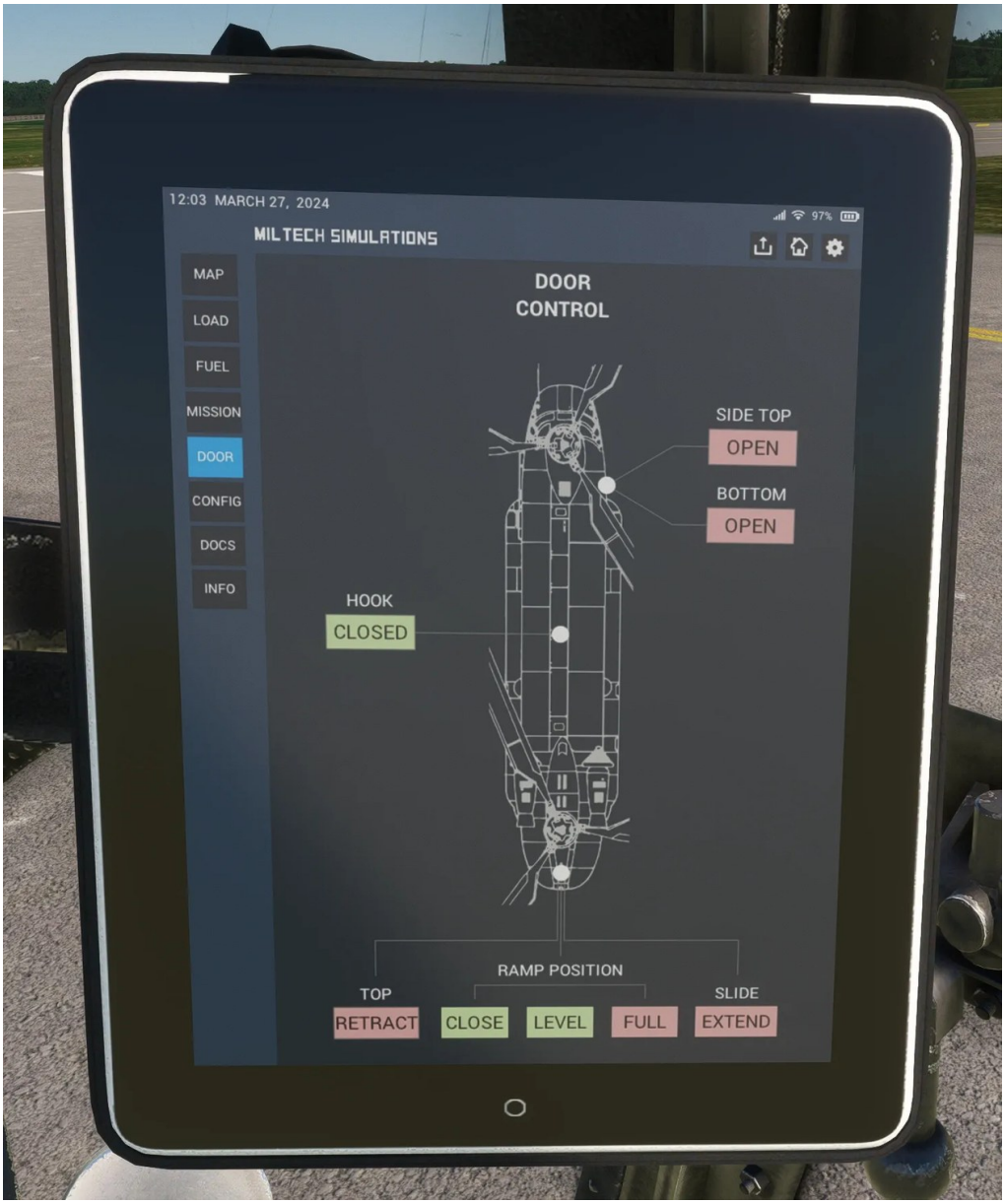


EFB Checklist Screen

1. ◇ **EFB Page Selector**
2. ◇ **Checklist Page/Category Selector**
3. **Checklist Items:** Clicking will check the items. "Resets" unchecks all items.
4. ▣ **Reset Button:** Unchecks all checklist items

DOOR

Enables operation of all dors available in the aircraft:



EFB Door Page

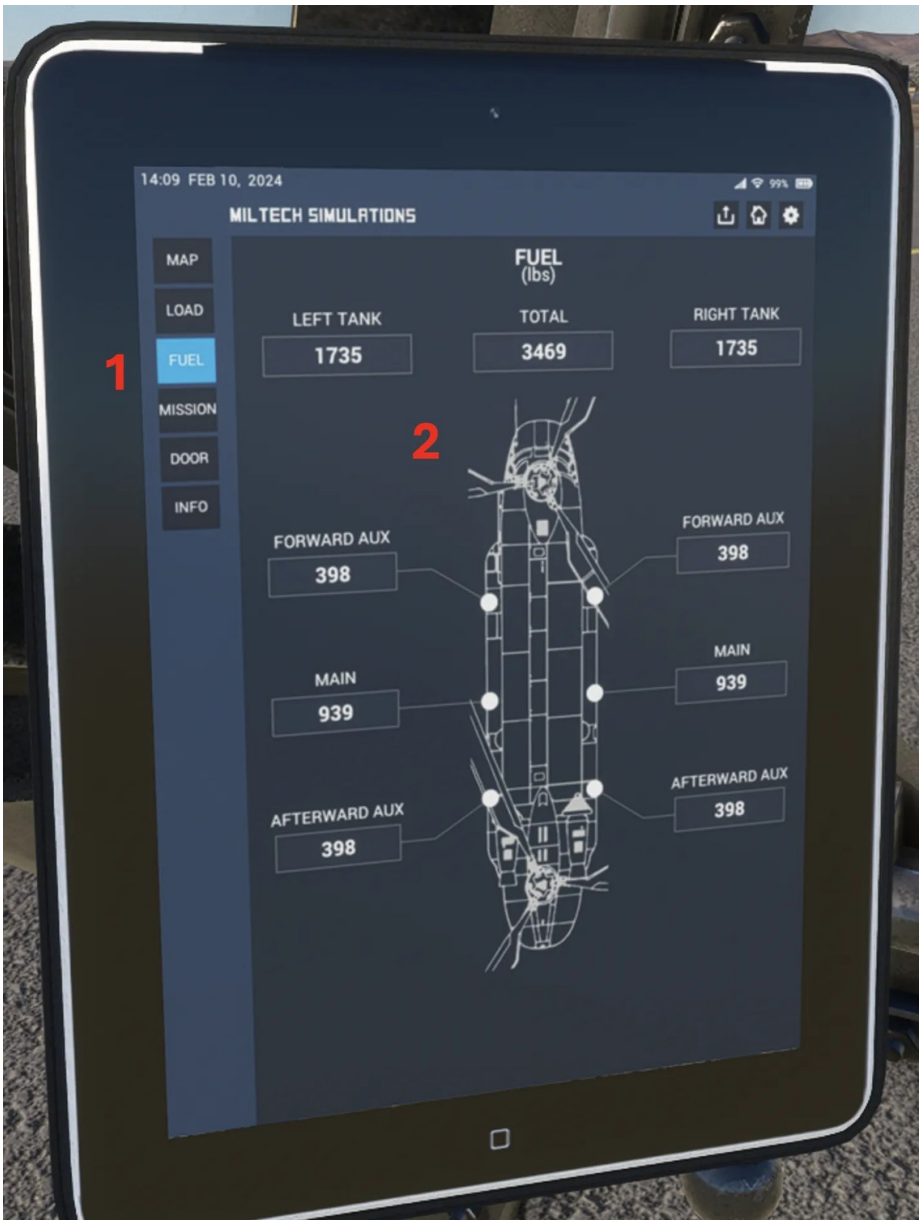
- **Main Side Door**
- On the ground, both the top and bottom sections of the exit open for full access.
- In-flight or upon takeoff, only the top sliding portion opens.
- **Hoist Door**
- Can be operated manually. Opens automatically upon selection of "Mid" Hoist mode. More information in Cargo Load Capabilities
- **Ramp Door**
- Both the top side and bottom side of the ramp can be operated independently.
- On the ground, ramp is fully lowered.
- In-flight or upon takeoff, ramp is raised to "Flight Position" automatically.

- Slide can be extended only if Ramp is lowered and Top is open.

> Caution
> Cockpit Doors (Pilot and Copilot) are for emergency use only, and therefore once jettisoned they cannot be closed unless you restart the flight. To jettison Pilot/Copilot cockpit doors, click on the yellow/black Striped Handle.

FUEL

Displays fuel quantity per tank.



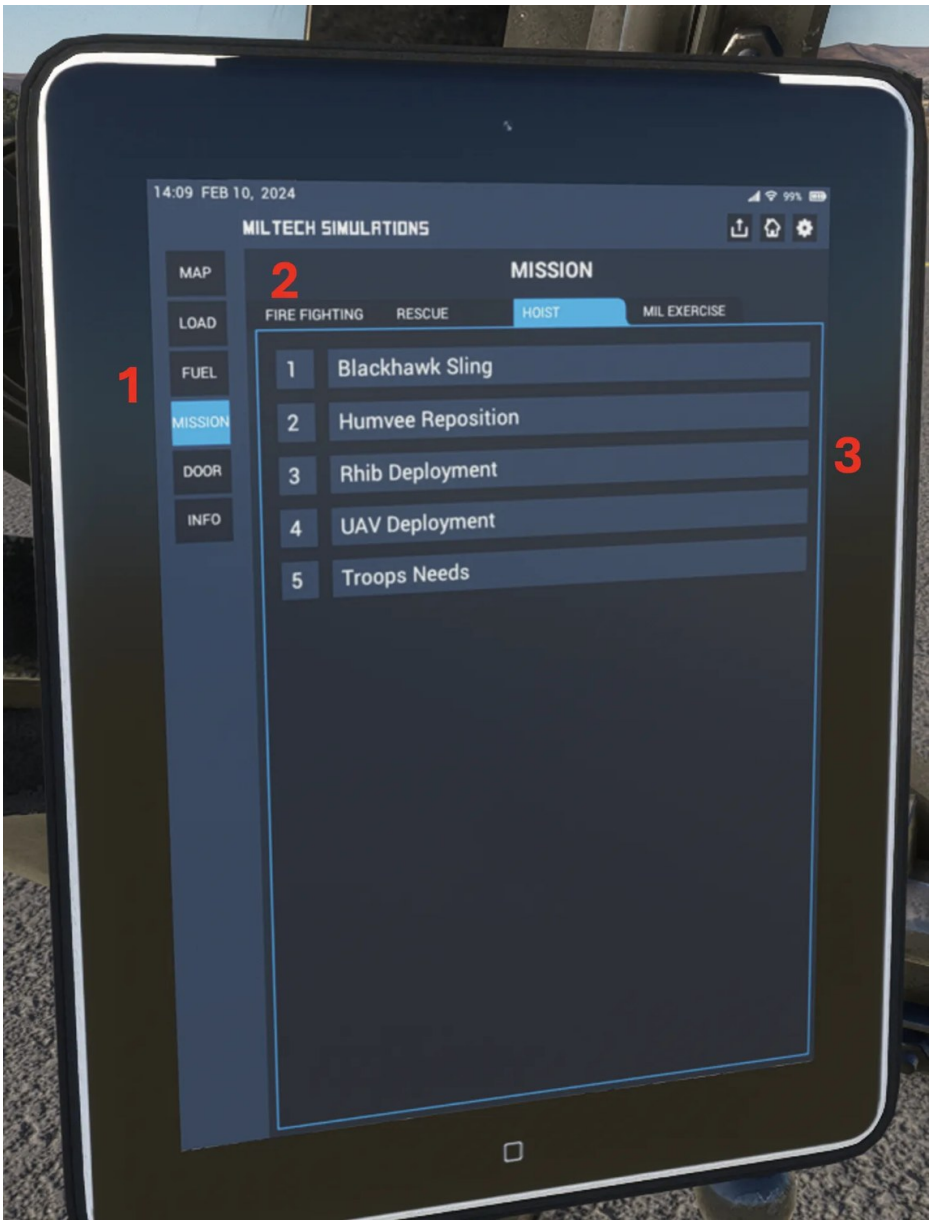
EFB Fuel Screen

1. ◇ **EFB Page Selector**
2. **Fuel Tank Displays.** Fuel quantities can be modified upon clicking any of the fuel tank displays.

MISSION

> Caution
> **Crash detection must be OFF** for Missions to load correctly, as Crashes may interfere with our loading scripts.

Enables access to Mission-Based Content. More Information: Missions

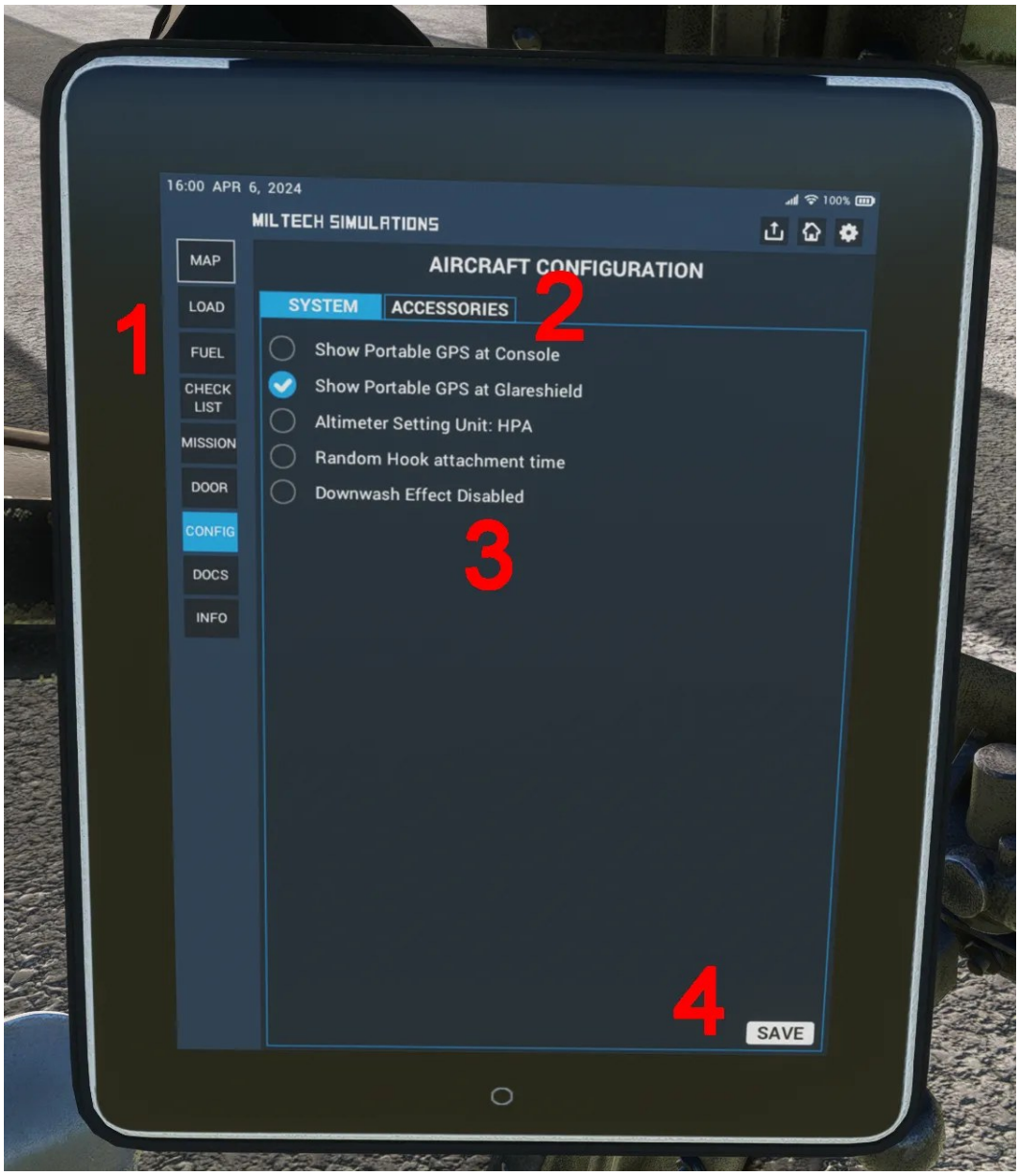


EFB Mission Screen

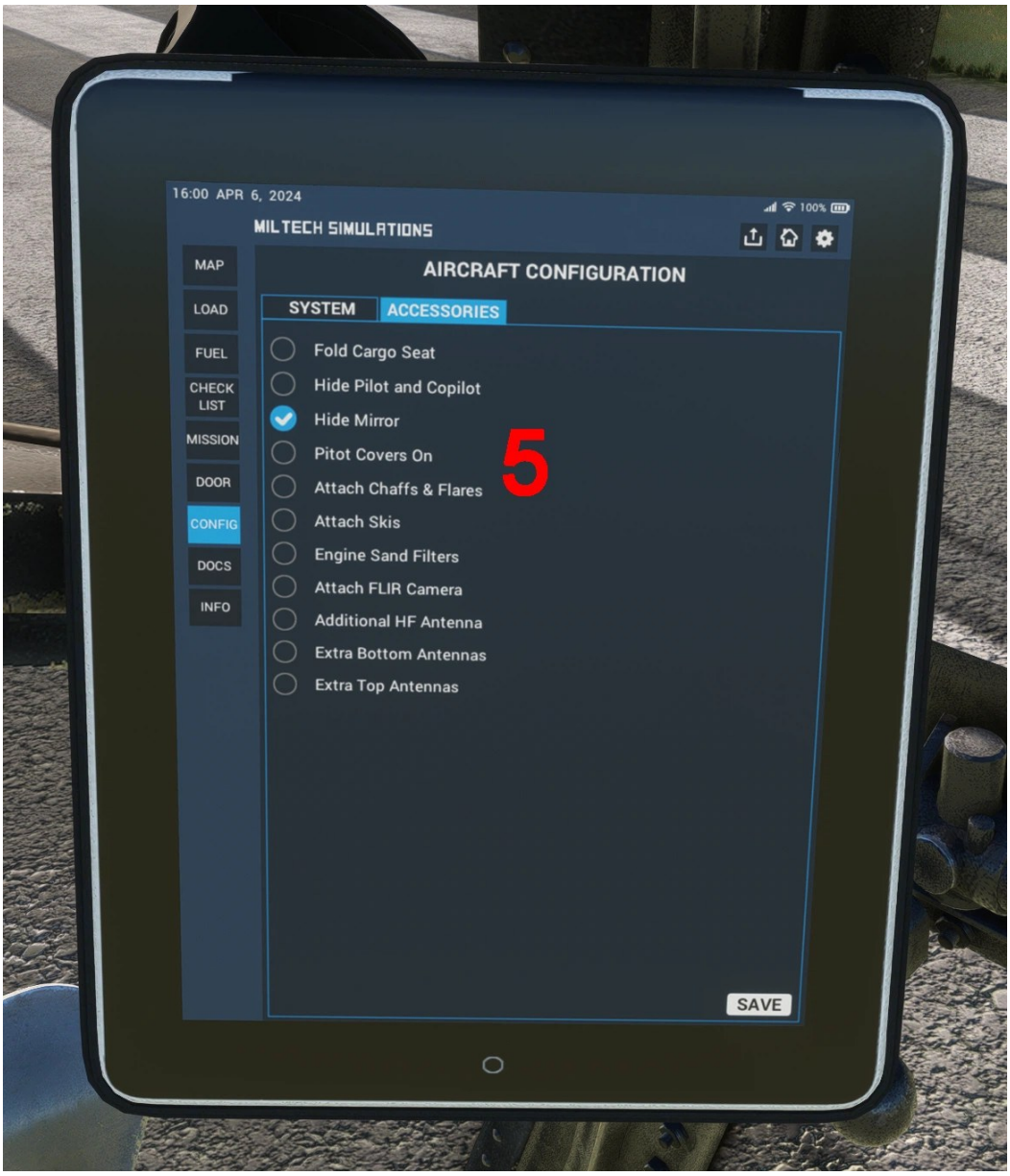
1. ◇ **EFB Page Selector**
2. ◇ **Mission Type Selector**
3. ◇ **Mission List Selector**

CONFIG

Allows configuration of the aircraft:



EFB Config Screen - System



EFB Config Screen - Accessories

1. ◇ **EFB Page Selector**
2. ◇ **Category Selector:** Select between System Config (GPS, Instrumentation, Effects) and Accessories Config (Seats, Pilot Models, External Antennas and Accessories)
3. **System Configuration Options List**

FUTURE UPDATE: Support for other GPS: GTN750 4. ▣ **Save Button:** Will save all your config options (in both System and Accessories Pages). Saved Options will be automatically loaded the next time you launch the aircraft. 5. **Accessories Configuration Options List**

Miltech Simulations CH47D

Cargo Load Capabilities

> Caution
> External Cargo dropping and loading are currently incompatible with our carrier products. We are actively looking for solutions to this issue.

The CH47D is a highly versatile support helicopter, designed to carry heavy cargo loads and transport troops from land and sea into the battlefield. Whether in remote locations, or challenging terrains such as deserts and mountains, the CH47D excels in its role.

Our rendition of the CH47D Features full cargo-loading and carrying capabilities, both in the internal cargo bay, and externally using sling loads.

Internal Cargo Configuration

Internal Cargo Configuration

CLICK HERE FOR HOW TO LOAD INTERNAL CARGO

The spacious cabin can be used for carrying troops, vehicles, supplies, and equipment. This rendition of the CH47D includes:

- **Troops:** Depiction of a generic troop load being transported inside the helicopter.
- **Medvac:** Depiction of a generic Medical Evacuation setup, with two injured patients escorted by a special military medical team.
- **Special Ops Rhib:** Depiction of a Special Ops Rigid-Hull Inflatable Boat that can be deployed to (or rescued from) a combat field directly from the helicopter.
- **Pallets:** Depiction of a generic Pallet Setup for humanitarian aid, supply transport or heavy cargo transport.
- **Humvee:** Depiction of a heavy armored vehicle, transported inside the cargo bay. A total of two humvees can be transported - one inside the helicopter and one externally.

Loading Procedure

The Electronic Flight Bag (EFB) is used to load and unload internal cargo to the aircraft.

1. Turn on the EFB screen by pressing the ▣ **HOME** Button
2. Navigate to the **LOAD** page
3. Select "Internal Loads"
4. Load/Unload cargo by pressing on the available options.
5. A single cargo load type (External or Internal) can be active at any given moment.
6. Selecting a different load type will unload the active option, and load the selected option.
7. Loading any external cargo load will automatically unload any internal cargo.

External Cargo Configuration

External Cargo Configuration

> Caution
> **Beware of sling load limitations** - must fly at maximum 120kts and avoid violent maneuvers when carrying external loads.

CLICK HERE FOR HOW TO LOAD EXTERNAL CARGO

For oversized or heavy cargo that cannot be carried inside the cabin, the CH47D uses an external load configuration. This involves attaching the cargo to the helicopter using a sling. Depicted in brackets is the sling load configuration used in each case. This rendition of the CH47D includes:

- **[TANDEM] UAV Container:** Depiction of a generic UAV Container, used to control unmanned aerial vehicles from the battlefield.
- **[MID] Blackhawk Helicopter Fuselage:** Depiction of a Blackhawk Helicopter fuselage for rescue or transport operations.
- **[MID] Cargo Nets:** Large cargo nets for Vertical Replenishment Operations.
- **[TANDEM] Large Rhib:** Depiction of an oversize Rigid-Hull Inflatable Boat for patrol or SEAL operations.
- **[TANDEM] Humvee:** Depiction of a heavy armored vehicle, transported as a sling-loaded cargo.
- **[MID] Water Bucket:** For firefighting operations.

Cargo Hooks

The CH47D features three Cargo Hooks:

- [1] Front Fixed Cargo Hook
- [2] Mid Retractable Cargo Hook
- [3] Aft Fixed Cargo Hook

Hoist Modes

Four configurations can be used for different cargo loads:

- Tandem, in which both the front and aft hooks are used. Eg. UAV Container, Large Rhib, Humvee.
- Mid, in which only the mid hook is used. Eg. Blackhawk, Cargo Nets, Water Bucket.
- Aft, in which only the aft hook is used [NOT DEPICTED ON THIS PRODUCT]
- Front, in which only the front hook is used [NOT DEPICTED ON THIS PRODUCT]

Regardless of the sling configuration, weight is always added directly to the aircraft's center of gravity. This is due to the limitations of dynamic weight loading on MSFS.

Hoist mode must be selected on the overhead panel before picking up external loads. Selection of the Mid Hoist Mode will additionally operate the Hoist Door automatically.

Loading Procedure

The Electronic Flight Bag (EFB) is used to load and unload internal cargo to the aircraft.

1. Turn on the EFB screen by pressing the ▣ **HOME** Button
2. Navigate to the **LOAD** page
3. Select "External Loads"
4. Load/Unload cargo by pressing on the available options.
5. A single cargo load type (External or Internal) can be active at any given moment.
6. Selecting a different load type will unload the active option, and load the selected option.
7. Select the correct Sling Mode on the overhead panel. Sling mode depends on the type of load (Tandem or Mid). The tablet will display a blinking red error message if the sling mode is not configured correctly.
8. **The selected object will spawn near the aircraft - usually at 9 o'clock.** Takeoff and establish a hover.
9. Use the Tablet Radar to slowly approach the object:
10. Sustain a controlled hover. Altitude must be **at or slightly above the target altitude as indicated on the tablet.**
11. Approach the object slowly.
12. **Object (Red Dot) must be within the area marked by the green circle.** Keep altitude as close to the target as possible.
13. Sustain hover for a few seconds while the cargo is loaded.
14. Upon confirmation that cargo has been successfully loaded, apply collective and increase altitude.
15. **Cargo will be automatically dropped upon crossing below 50ft.**
16. **The cargo sling may break in high G/violent maneuvers.**
17. **Dropped cargo can be picked up again. However, you must increase the altitude >100ft before dropped cargo is available for pickup again.**

Miltech Simulations CH47D

Missions

Caution
Crash detection must be OFF for Missions to load correctly, as Crashes may interfere with our loading scripts.

Miltech Simulations CH47D includes a growing number of missions, as well as custom scenery packs.

Missions are predefined flights, from one location to another, featuring custom sceneries in both the initial and final locations and activities to do along the way. Missions are only accessible through the Electronic Flight Bag (EFB) on free flight.

Missions are designed so the pilot follows a set of Mission Dispatch Instructions but must fully configure, execute, and perform the mission by themselves. This means that the pilot will not be assisted or guided through the mission, but rather must set the flight route as defined on the Dispatch Instructions to reach the final location. This also allows for creativity and free-flying after the mission has been completed.

Note
Missions are not fully compatible with multiplayer. Full multiplayer compatibility is not planned due to MSFS Limitations. All missions and scenarios featured in this product are either loosely based on real events or are entirely fictional. The content has been developed using only publicly available information. We have made every effort to ensure that the product is respectful and does not intend to harm anyone's sensibilities, as well as respect Microsoft’s policies. This product is designed for entertainment purposes only.

Accessing Missions

1. Launch a flight with the CH47D at any airport in the world.
2. Turn on the EFB screen by pressing the ▣ **HOME** Button
3. Navigate to the **MISSION** page
4. Select any mission from the list.
5. Wait a few minutes for the mission to load completely. The aircraft will be automatically relocated to the start location and all required mission objects will be loaded.

Included Missions

Firefighting Missions

Hoist Missions

Rescue Missions

Military Exercise Missions

Included Sceneries

Included Scenery Packages

Miltech Simulations CH47D

Firefighting Missions

Caution

- Firefighting Operations are only accessible through Missions.
- **Crash detection must be OFF** for Missions to load correctly, as Crashes may interfere with our loading scripts.
- **Beware of sling load limitations** - must fly at maximum 120kts and avoid violent maneuvers when carrying external loads.

MISSION 1: CANADIAN ROCKIES FIRES

For the past several years, the province of Alberta, Canada, has been affected by an ongoing, record-setting series of wildfires. These ongoing fires have turned large areas of untouched nature into burnt land, posing a significant threat to both natural habitats and human settlements. A CH47D has been dispatched to an uncontrolled wildfire near the town of Banff. The fire is occurring in a hard-to-reach area because of the mountainous landscape.

Distance to Target: 60nm

Expected Duration: 50 minutes

MISSION INSTRUCTIONS

- **LAUNCH MISSION**
- **Load** the Firefighting Bucket to your aircraft on the EFB - Load Tab.
- **Takeoff** from Springbank Airport - Air Tanker Base, heading 267° **towards waypoint SPRAE.** Use the Handheld GPS (EFB Config Tab) to enter the flight plan.
- Upon entering the Canmore Valley, **follow the river** visually towards **Banff Airfield (CYBA)**. Fires will be visible north of the airfield.
- **Assess** the scale and intensity of the fire.
- Proceed to **Lake Minnewanka** (Closest lake to the East of the Fires) to fill the Firefighting Bucket. Aircraft must be <20ft above ground for at least 3 seconds for the bucket to fill.
- **Fly directly above** the fires to extinguish. Water will be dropped automatically. Approach the fires at low speed.
- **Repeat** until all fires are extinguished.
- **Optional:** Return to Springbank Airport CYBW

MISSION 2: LOS ANGELES REFINERY FIRE

Los Angeles, known for its sprawling cityscape, is now facing a critical emergency. In this hypothetical scenario, a massive fire has erupted at the large refinery located just south of the city. A CH47D has been dispatched from John Wayne Airport to assist in extinguishing the fire.

Distance to Target: 30nm

Expected Duration: 35 minutes

MISSION INSTRUCTIONS

- **LAUNCH MISSION**
- **Load** the Firefighting Bucket to your aircraft on the EFB - Load Tab.
- **Takeoff** from John Wayne Airport, heading 290° **towards waypoint HAWWC.** Use the Handheld GPS (EFB Config Tab) to enter the flight plan.
- **Assess** the scale and intensity of the fire. Find the nearest body of water and fill your tanks. Aircraft must be <20ft above ground for at least 3 seconds for the bucket to fill.
- **Fly directly above** the fires to extinguish them. Water will be dropped automatically. Approach the fires at low speed.
- **Repeat** until all fires are extinguished.
- **Optional: Return to KSLI**

MISSION 3: LONDON FIRES

A massive fire has erupted in the heart of London, in a highly densely populated area. Due to the size of the flames and proximity to high-rise buildings, the city has reached out for help. A CH47D has been dispatched from RAF Odiham to assist and extinguish the fire before buildings are compromised.

Distance to Target: 35nm

Expected Duration: 35 minutes

MISSION INSTRUCTIONS

- **LAUNCH MISSION**
- **Load** the Firefighting Bucket to your aircraft on the EFB - Load Tab.
- **Takeoff** from RAF Odiham, heading **towards London City Airport EGLC.** Use the Handheld GPS (EFB Config Tab) to enter the flight plan.
- **Assess** the scale and intensity of the fire. Find the nearest body of water and fill your tanks. Aircraft must be <20ft above ground for at least 3 seconds for the bucket to fill.
- **Fly directly above** the fires to extinguish them. Water will be dropped automatically. Approach the fires at low speed.
- **Repeat** until all fires are extinguished.
- **Optional: Return to RAF Odiham**

Miltech Simulations CH47D

Hoist Missions

Caution

- **Crash detection must be OFF** for Missions to load correctly, as Crashes may interfere with our loading scripts.
- **Beware of sling load limitations** - must fly at maximum 120kts and avoid violent maneuvers when carrying external loads.

MISSION 1: OPERATION HORNS CALL [MILTECH SUPERCARRIER PRO REQUIRED]

An Independence-Class ship serving in the Operations Horns Call, an international mission to ensure maritime security and combat piracy, is in need of supplies. A CH47D has been dispatched from nearby Chabelley Airfield in a seaborne resupply mission, carrying everything from food and fuel to medical supplies and spare parts. Your task is to visually locate the ship, land on the deck and safely deliver the cargo. Miltech Supercarrier Pro product is required for this mission.

Distance to Target: 35nm

Expected Duration: 40 minutes

MISSION INSTRUCTIONS

- **LAUNCH MISSION**
- **Load** the Cargo Nets to your aircraft on the EFB - Load Tab.
- **Takeoff** from Chabelley Airfield, heading **towards waypoint KASOL.** Use the Handheld GPS (EFB Config Tab) to enter the flight plan.
- Upon reaching KASOL, visually search the area for the Independence Class ship.
- **Approach** the ship and hover above the deck to release the cargo.
- Return to Chabellay Airfield HDCH. Upon arriving at Chabellay, load the Pallets internal Cargo on the on the EFB - Load Tab.
- **Return to the ship,** heading towards waypoint KASOL and visually locating the ship.
- **Land on the deck** and deliver the pallet cargo.

MISSION 2: UAV DELIVERY

A cargo ship carrying sensitive military cargo has arrived at the port of Djibouti. A CH47D has been dispatched to pick up the sensitive cargo containers and deliver them to base as fast as possible.

Distance to Target: 10nm

Expected Duration: 20 minutes

MISSION INSTRUCTIONS

- **LAUNCH MISSION**

- **Takeoff** from Chabelley Airfield, heading **towards Port of Djibouti Helipad DJ01.** Use the Handheld GPS (EFB Config Tab) to enter the flight plan.
- Land on Port of Djibouti Helipad.
- **Load** the UAV Container to your aircraft on the EFB - Load Tab.
- Return to Chabellay Airfield HDCH. Upon arriving at Chabellay, drop off the UAV Container.
- **Optional: Return to the Port and repeat the mission. You can either carry another UAV Container or a Humvee.**

Miltech Simulations CH47D

Rescue Missions

Caution
Crash detection must be OFF for Missions to load correctly, as Crashes may interfere with our loading scripts.

MISSION 1: ALASKA ROADSIDE RESCUE

An infrastructure expansion project in a remote area of Alaska has resulted in an accident. A large-scale fire engulfed the equipment and vehicles. Fortunately, workers were able to extinguish the fires and suffered only minor injuries. Alaska State Troopers are on site, but the treacherous terrain makes traditional rescue efforts of those injured nearly impossible. A CH47D from Brayant Army Airfield has been dispatched to the scene.

Distance to Target: 75nm

Expected Duration: 75 minutes

MISSION INSTRUCTIONS

- **LAUNCH MISSION**
- **Takeoff** from Brayant Army Airfield, heading **towards waypoint WAPRU.** Use the Handheld GPS (EFB Config Tab) to enter the flight plan.
- Locate the accident zone. Find a good area to land
- **Load** the Injured Patients to your aircraft on the EFB - Load Tab.
- Return to Brayant Army Airfield for patient treatment.

Miltech Simulations CH47D

Military Exercise Missions

Caution
Crash detection must be OFF for Missions to load correctly, as Crashes may interfere with our loading scripts.

MISSION 1: EMBASSY EVACUATION EXERCISE

A squadron stationed at Camp Resilience Army Base in Jordan is preparing for a military exercise simulating the rescue of trapped personnel from a mock-up embassy at Camp Resilience Training Grounds. The squadron will provide air transport for a Special Ops team from the base to the training grounds.

Distance to Target: 25nm

Expected Duration: 30 minutes

MISSION INSTRUCTIONS

- **LAUNCH MISSION**
- **Load** the Troops to your aircraft on the EFB - Load Tab.
- **Takeoff** from Camp Resilience, heading **towards Training Grounds US03.** Use the Handheld GPS (EFB Config Tab) to enter the flight plan.
- Locate the mockup embassy building. Approach slowly and carefully land in the tight space.
- **Unload** the troops, and takeoff to monitor the surrounding area for potential threats.
- Return to the Training Grounds, and load your troops from the EFB - Load Tab.
- Fly back to Camp Resilience US01.

MISSION 2: KUWAIT TRAINING EXERCISE

A squadron stationed at Al Sahra Army Base in Kuwait is preparing for a military exercise simulating the transport of equipment and troops to the battlefield. The squadron will provide air transport for heavy equipment.

Distance to Target: 70nm

Expected Duration: 50 minutes

MISSION INSTRUCTIONS

- **LAUNCH MISSION**
- **Load** the Humvee from the EFB - Load Tab. You can either load it internally or externally as sling load.
- **Takeoff** from Al Sahra Army Base, heading **towards waypoint TULGO.** Use the Handheld GPS (EFB Config Tab) to enter the flight plan
- Continue flying towards Failaka Island.
- Visually locate the military exercise, where other CH47Ds have been transporting equipment
- Locate the military exercise, where other CH47Ds have been transporting equipment

- **Land** and unload the cargo.
- Optional: return to Al Sahra US02, repeat, and continue transporting equipment.

MISSION 3: QUEEN ELIZABETH TROOP TRANSPORT [MILTECH UK CARRIER STRIKE REQUIRED]

A team of high-rank officers from the Royal Navy have arrived to RAF Odinham to be transported to Queen Elizabeth Carrier, currently anchored just south of Portsmouth. Miltech UK Carrier Strike Product is required for this mission.

Distance to Target: 45nm

Expected Duration: 35 minutes

MISSION INSTRUCTIONS

- **LAUNCH MISSION**
- **Load** the Troops to your aircraft on the EFB - Load Tab.
- **Takeoff** from RAF Odinham, heading **towards** R081 Portsmouth Queen Elizabeth**.** Use the Handheld GPS (EFB Config Tab) to enter the flight plan.
- Locate the carrier, and land on the deck.
- **Unload** the Troops from your aircraft on the EFB - Load Tab.

Miltech Simulations CH47D

Included Scenery Packages

The CH47D Includes multiple scenery and scene packages to further enhance the mission system on MSFS.

Included Airport Sceneries

- **RAF Odiham:** (ICAO: EGVO) is a Royal Air Force base located in Hampshire, England. It's a vital hub for the RAF's CH47D helicopter force, providing support for operations worldwide.
- **Bryant Army Heliport:** (ICAO: PAFR) is a United States Army airfield located at Fort Richardson, near Anchorage, Alaska. This heliport serves as a base for various Army aviation units, supporting training maneuvers, logistical operations, and readiness needs within the Alaskan environment. This base is often used by CH47D operated by the Alaska National Guard.
- **Chabelley Airfield:** (ICAO: HDCH) is a military airfield located near Djibouti City, Djibouti. It is a mixed-use facility serving as a base for the Djibouti Air Force, as well as a crucial operational hub for the United States and French militaries in the Horn of Africa. This base sees a very diverse range of operations, from UAV, Large Cargo Transport, and Helicopter ops.

Included Scenes

- **"Camp Resilience" Fictional Military Compound, Jordan (And Nearby Training Facilities)** (ICAO: US01). Camp Resilience is a forward operating base established in the Jordanian desert, strategically positioned near the Iraq/Syria border. The base layout prioritizes functionality, consisting of modular structures and field tents. Camp Resilience serves as a crucible for CH47D operations. Aircrews endure intensive training regimes simulating the rigors of desert warfare, including sling-load operations, tactical insertions, and casualty evacuations under challenging conditions. To prepare crews for complex mission scenarios, the camp boasts specialized training facilities. These include simulated embassy compounds designed for practicing evacuations in confined, potentially hostile urban environments.
- **"Al Sahra Base" Fictional Military Compound, Kuwait (And Nearby Training Exercises)** (ICAO US02). Is an improvised military outpost in the Kuwaiti desert near the Iran border. The base is smaller than permanent installations, with basic buildings and landing pads built for fast setup. Hesco barriers and sandbags provide perimeter security. Al Sahra is primarily a CH47D helicopter base. The base's key role is desert training. The surrounding area is used for realistic missions - CH47D practice difficult takeoffs and landings in dust and heat, along with troop landings and extractions in challenging scenarios.

[NOT INCLUDED] Optional Products for Additional Content

- **Supercarrier Pro** (https://miltechsimulations.com/products/supercarrier-pro-for-msfs): Includes multiple aircraft carriers and vessels - such as CVN-78 Ford Class, CVN-69 Nimitz Class and LCS Independence Class ships.
- **UK Carrier Strike Group** (https://miltechsimulations.com/products/uk-carrier-strike-group): Includes UK Aircraft Carriers, such as the Queen Elizabeth and Prince of Wales.