MILTECH SIMULATIONS – MARYADI

MV-22B OSPREY TILTROTOR

QUICK START GUIDE

MICROSOFT FLIGHT SIMULATOR

VERSION 1.0.0

I. INTRODUCTORY NOTES

Thank you very much for purchasing Miltech Simulations – Maryadi MV-22B Osprey.

The MV-22B Osprey is a tiltrotor, VSTOL (Vertical/short takeoff and landing), multi-mission aircraft, developed to fill multi-service combat operational requirements. The MV-22B replaced Marine Corps assault helicopters in the medium lift category (CH-46E and CH-53D), contributing to the dominant maneuver of the Marine landing force, as well as supporting focused logistics in the days following commencement of an amphibious operation.

Miltech Simulations has partnered with Maryadi, who has been developing the Osprey for a long time. As product of such collaboration, we now present our rendition of the MV-22B Osprey for Microsoft Flight Simulator.

The MV-22B is a very complex and uncommon aircraft. We recommend that the users study the aircraft manual prior to flying the aircraft, due to the technicalities that make this aircraft unique. Our rendition of the MV-22B has been developed as accurately as possible (given that we had no access to the real aircraft) based on the publicly available flight manuals.

This Quick Start Guide is a brief summary of the most important need-to-knows and procedures to follow when initiating your first few flights on the Osprey. It is very important that the user reads through the “Important Need-to-know” section of this guide, as it provides valuable information to keep in mind while operating the aircraft.

We hope you enjoy the product,

Maryadi & Miltech Simulations.

II. GLOSSARY

APLN	Airplane Mode (Nacelles at 0 deg)
BFWS	Blade Fold/Wing Stow
CDU	Control Display Unit
CONV	Conversion (VTOL to APLN or viceversa – Nacelles at 1 – 86 deg)
CPLD	Coupled
ENAV	External Navigation
INAV	Internal Navigation
INOP	Inoperative
MFD	Multifunction Display
Ng	Gas Generator Speed
PFD	Primary Flight Display
SRCH PAT	Seach Pattern
STO(L)	Short Takeoff (and Landing) (Nacelles at 60 – 75 deg)
TCL	Thrust Control Lever
VTO(L)	Vertical Takeoff (and Landing) (Nacelles at 87 – 93 deg)

III. DISCLAIMER

This product was exclusively developed and distributed with entertainment and educational purposes. Any commercial, training, professional, or military use of this product is strictly prohibited and not endorsed by Miltech Simulations, Maryadi or any other company or individual related to this project.

This product does not represent a high-fidelity representation of the systems or flight dynamics of the MV-22B Osprey. This product has been developed exclusively with the use of publicly available resources, flight manuals, blueprints, videos and photos.

This product and its development team is not endorsed, related to, certified by or in any way connected to Bell Helicopter Textron, The Boeing Company, the US Air Force, Navy, Marine Corps, the Japanese Self Defense Army or any other company or military organization unless otherwise explicitly mentioned in section III (Credits) of this document.

The documentation included with this product is strictly restricted to Simulation Use Only, and represents the depth of systems, equipment, and dynamics of this product.

This product has been developed using the available resources. The scope is limited to “As realistic as practical”, and though some systems have been accurately developed, others have been greatly simplified. For that reason, the systems, performance, operations, and procedures shall be considered purely fictional and not representative of the real counterpart.

IV. IMPORTANT NEED-TO-KNOW

I. Nacelles

One of the unique characteristics of the MV-22B Osprey is the rotating nacelles, which increase/decrease in angle relative to the fuselage to allow for VTOL/STOL and transition over to regular flight.

Nacelles are manually moved using the following commands:

Increase Cowl Flap 4 - Move Nacelles up (increase angle)

Decrease Cowl Flap 4 - Move Nacelles down (decrease angle)

These must be mapped to a key on your keyboard, or button on your joystick. Creating a new controller profile unique to this aircraft is highly recommended. The indicator on the PFD (top left corner) shows the current angle of Nacelles, as well as the operational limits given your current airspeed or situation. In the air, Nacelle angle is given by a range depending on the airspeed of the aircraft. The safe range for nacelle operations is shown in the PFD with the green arch.

Note that an alert on the CDU, indicating to map these two buttons, will show up until the nacelles are moved up and down, and the aircraft registers that both commands are correctly mapped.

II. MSFS Realism & Flight Model Settings

Due to the uncommon flight dynamics of this aircraft, the Assist Realism Settings for Piloting and Aircraft Systems must be set to **"True to Life"**. This is due to the limited compatibility of VTOL aircraft with MSFS, requiring special code for the flight dynamics. The Flight Model (Options -> General -> Flight Model) must also be set to "MODERN".

III. Aircraft Flight Reality

The aircraft does, however, include its own Flight Assist configuration, which deactivates Vortex Ring State and Engine Limitations to ease flight. This option can be located in the CDU/ACFT Init/MENU 3/Flight Reality. Please keep in mind that all flights start on the "Hardest" flight reality setting. If you desire to deactivate VRS and Limitations, you must perform this change every time you start a flight.

IV. Vortex Ring State

In VTOL config (Nacelles between 80 and 97 degrees) and airspeed < 30 Knots, the aircraft will start to roll/stall uncontrollably when V/S (Vertical Speed) gets over 1500 ft/min.

This type of stall is common in helicopters and VTOL aircraft and requires special attention from the pilot when descending in VTOL mode. This can easily be avoided by controlling the descent speed and/or airspeed (avoid the "Red area" from the V/S Indicator).

Vortex Ring State simulation can be deactivated by switching "Flight Reality" to EASY on the CDU.

However, if you enter a Vortex Ring State at sufficient altitude, throttle up and reduce the nacelles angle to increase airspeed and gain lift. Throttling up without decreasing nacelle angle won't do much, as the rotors are unable to provide lift when in a Vortex Ring State.

V. Engine Start/Stop

Do not Start/Stop engines using the FS Auto-Start/Auto-Shutdown commands (CTRL+E / CTRL+SHIFT+F1). The complexity of this aircraft requires manual interaction with the overhead panel Starter Levels.

VI. Lights Command "L"

The "All Lights Toggle" command is disabled for use in this aircraft. Use the light knobs/switches on the overhead panel and CDU to turn on/off the lights.

VII. Engine Limitations

Engines can afford high RPM (> 98% Ng) for a maximum period of 60 seconds continuously. Any longer and the engines will be damaged and shut down. This simulates the real counterpart, which can stand limited amounts of time at high RPM. Engine limitations can be deactivated by switching "Flight Reality" to EASY on the CDU.

VIII. Flap Controls

The Osprey features a unique automatic flap system. Flaps are typically in "Auto" at all times. Flaps can be, however, manually operated as well. To manually operate Flaps, the user must first set the Flap Lever to 0, then operate the flaps with the regular controls.

IX. Use of the Autopilot

It is recommended that Autopilot and autothrottle is used during APLN mode only (Nacelles at 0 degrees). The autopilot does work and can be used during CONV (Conversion from VTOL to APLN), but functions are limited and the behavior can be unexpected. The CPLD "ARM" light illuminates when Autopilot is available.

X. Autohover

The Osprey features an Autohover function within the Autopilot system. Autohover only functions when radioaltimeter is between 40ft and 300ft and at stable speeds. The "ARM" light illuminates when Autohover is available. Autohover disengages with high wind speeds or sudden input on the controls.

XI. Pausing the Sim

Do not pause the sim at any time when Nacelles are in a position different to Zero Degrees (eg. the sim shall ONLY be paused IF nacelles are at Zero degrees).

VTOL flight requires custom-coded flight dynamics, as it is not natively supported by MSFS. Currently, the simulator pausing system does not work correctly with custom code, allowing variables to continue changing even when the simulator is paused. This ends up in an unrealistic simulator experience after resuming the flight. Note that when nacelles are at zero degrees, the custom code stops executing, and the default MSFS Flight Dynamics take control of the aircraft. Under these conditions, the simulator can be paused without affecting the aircraft behavior.

XII. Current Limitations

The aircraft presents a few limitations on the depth of systems. Some systems have not been modeled yet or require some further development. Such systems are, for example:

- Anti-Ice and Ice detection are INOP
- AutoNACs are INOP
- Fire Detection and Fire Suppression are INOP
- Entering Flightplans from the CDU is not possible at this time. This will be added on a future update. Flightplans can only be created through the World Map.
- Aerial Refueling is INOP, though the probe can be extended
- CDU has limited functionality
- Alarms are limited and may not represent the real aircraft. This is due to lack of available resources.

XIII. Controller Settings

As mentioned above, it is recommended that users of this aircraft create a unique Controller Profile for it. This applies to joysticks, yokes and Xbox Controllers.

The controller profile shall include allocating two buttons to Cowl Flap 4 Up/Down to operate the nacelles. It is recommended that you map your regular Flaps Up/Down buttons to Cowl Flap 4 Up/Down, since the Flaps of this aircraft operate automatically.

For those using an Xbox controller, it is recommended that you dampen the input of your controllers to your liking. The aircraft is very sensitive to input, especially during CONV mode, and the Xbox controller lacks the precision required to control the aircraft effectively.

V. BEFORE FLIGHT - SIM OPERATIONS REMARKS

Welcome to your first flight onboard the MV-22B Osprey!

Before you launch a flight, you must understand and follow the following steps:

I. **Your MSFS Assist Realism Settings must be set to True to Life**. This is a strict requirement for this aircraft to function properly.

II. **You must map two controller buttons/keyboard keys to "Increase Cowl Flap 4" and "Decrease Cowl Flap 4".** These two keys will control the angle of nacelles.

III. MSFS Sets the starting flight mode based on the type of starting location for the flight:

Parking: Cold and Dark

Taxiway: Ready to Fly

Runway: Ready to Fly

Flying: Ready to Fly

For this guide, we will be starting from a Parking location (Cold and Dark). This is also applicable to flights starting from Miltech's Carrier products.

IV. All flight plans are to be created using the built-in MSFS Flight Map before starting the flight. CDU Input is not available. Create your flight plan through the MSFS Flight Map now.

V. Fuel and payloads are to be changed through the built-in MSFS Menu. Range and Endurance are calculated automatically based on these numbers. To perform a VTOL Takeoff, Takeoff Weight must not be greater than 52.000lbs at sea level. Load your fuel and decide if you will be performing a VTOL or STOL takeoff and landing now.

VI. Launch the Sim!

VII. By default, the aircraft always starts in "Hard" Flight Mode. Under this mode, the aircraft is prone to Vertex Ring State and Engine Limitations that the pilot must take care of for a successful flight. Flight mode can be switched to "Easy" through the CDU to deactivate VRS and Limitations. Decide if you want to fly the aircraft in "Hard" Mode, or switch to "Easy" now.

VI. NORMAL PROCEDURES

Welcome to the cockpit of the MV-22B Osprey! If you're not used to Helicopters, it may feel like you're seated on the copilot seat. In helicopters (and tiltrotors) the captain sits on the right seat, unlike aircraft.

Take a few minutes to familiarize yourself with the cockpit. There are two screens in front of the pilot and copilot, which are your Multi-Function Displays (MFD). In between both seats, you'll find the Central Display Unit (CDU), with the two input keyboards. And above you, you'll find the Overhead Panel.

The aircraft is Cold and Dark. It's time to start the checklists now.

I. Pre – Start

1.	Landing Gear – Down	Center Console
2.	Flaps – AUTO	Center Console
3.	Displays – OFF	Main Panel
4.	Rotor Brake – OFF	Overhead
5.	Engine Control Levers (Silver, large levers) - Both OFF	Overhead
6.	APU – STOP	Overhead
7.	Primary Cockpit Lights – OFF	Overhead
8.	Emergency Egress – OFF	Overhead
9.	Secondary Cockpit Lighting – OFF	Overhead
10.	Cargo Hook Hoist Mode – OFF	Overhead
11.	Fuel Dump – OFF	Overhead
12.	Emergency Oxygen – OFF	Overhead
13.	Blade Unfold and Wing Unstow Procedure – As Required	Main Panel (MFD)

INFO - The Osprey can fold and stow its wings for Hangar/Carrier storage. This is known as "Blade Fold/Unfold and Wing Stow" (BFWS) and can be accessed through the Multi-Function Display. For more information on BFWS, go to "Other Procedures - Blade Fold/Unfold and Wing Stow"

II. Power Startup

1.	Battery – ON	Overhead
2.	APU - RUN/ENG check APU display is RUN	Overhead
3.	Turn ON ALL PFD/MFD/CDU Displays (Rotary Switch OFF/DAY/NIGHT)	Main Panel
4.	Exterior Lights as required	Center Console (CDU)

INFO – Exterior lights are operated through the CDU. Find and click on the "LTS" button on the keyboard of the CDU. To operate the lights, Master CTRL must be on (white with *). Turn on/off the exterior lights by pushing the buttons on the CDU.

5. Interior Lights as required — Overhead

III. Engine Startup

1. Start Engines:
   a. Set CDU on EICAS display (Click “EICAS” Button) — Center Console (CDU)
   b. Parking brake – ON — Center Console
   c. Rotor Brake – OFF — Overhead
   d. Rotor Lock – OFF (MFD/SYST/BFWS) — Main Panel (MFD)
   e. Fuel Quantity – CHECK — Main Panel (MFD)
   f. Nacelles – 90 Degrees — Main Panel (MFD)

INFO – Nacelles are operated with “Increase Cowl Flap 4” and “Decrease Cowl Flap 4”. **You must map two buttons of your controller, or keys on your keyboard to these commands.** Hold the mapped keys to increase of decrease nacelle angle. Note that an alert on the CDU, indicating to map these two buttons, will show up until the nacelles are moved up and down, and the aircraft registers that both commands are correctly mapped.

   g. Check aircraft is clear from obstacles
   h. Move ENG2 Control Lever to START position. — Overhead
   i. Proprotor – Observe ROTATE
   j. EICAS-NG – gaining % RPM after 30 sec — Center Console (CDU)
   k. ENG2 - Wait for Np stabilize at 70-72 % — Center Console (CDU)
   l. Switch respective Engine Control Lever – FLY — Overhead
   m. ENG1 - Lever to START position — Overhead
   n. ENG1 – Wait for Np stabilize at 70-72% — Center Console (CDU)
   o. Switch respective Engine Control Lever – FLY — Overhead

IV. Taxi

1. Disengage APU – STOP Position — Overhead
2. Engine Control Levers – Check both FLY — Overhead
3. Parking Brake – OFF — Center Console
4. Nacelles and Throttle as Required (minimum 60 Deg)
5. Speed under 20 Knots

V. Before Takeoff

1. Flaps – AUTO — Center Console
2. Fuel Quantity – CHECK — Main Panel (MFD)
3. Doors and Ramp – CLOSED — Overhead
4. Decide if takeoff will be VTOL or STOL
   I. VTOL – Maximum Takeoff Weight: 52.000 lbs
   II. STOL – Maximum Takeoff Weight 60.000 lbs
5. Contact tower for Takeoff Clearance. Radios are inputted in CDU — Center Console (CDU)

VI. Takeoff

VTOL

1. Check take-off Area- CLEAR from obstacles
2. Nacelles 87 – 92 Degrees
3. Check windspeed and direction – headwind / into the wind
4. Increase Thrust slowly and Take off VTOL – observe NG indication to avoid engine stress.

WARN – If maximum throttle is applied for a period longer than 45 seconds, the aircraft engines may fail due to overstress. Reduce throttle after takeoff to maintain engines on the “green area”. Engine Stress damage can be deactivated through the CDU (ACFT INIT/Flight Reality to EASY)

5. Establish hover at 20ft AGL

STOL

1. Taxi to runway (Take-off position) and check area is CLEAR from obstacles
2. Nacelles: as required, depending on available runway. Normally: 60 to 75 degrees
3. Take off STOL – observe NG indication to avoid engine stress.

WARN – If maximum throttle is applied for a period longer than 45 seconds, the aircraft engines may fail due to overstress. Reduce throttle after takeoff to maintain engines on the “green area”. Engine Stress damage can be deactivated through the CDU (ACFT INIT/Flight Reality to EASY)

VII. Airborne and Conversion

1. Observe aircraft attitude – LEVEL
2. Observe engine RPM% - GREEN — Center Console (CDU)
3. Landing Gear – UP — Center Console
4. Gain speed and gradually rotate nacelles forward – observe conversion corridor indication in the PFD (Conversion)

CAUT – Gradually rotate nacelles as speed is gained until Nacelles are at 0 deg. The conversion process must be flown manually (Autopilot is not recommended). Follow the conversion corridor (“Green arc”) from the nacelle angle indicator on the top left corner of the primary flight display.

5. Gain altitude as required
6. Above 130 knots nacelles can rotate to 0 degrees (APLN)
7. Set and activate Autopilot after CPLD turns green to ARM

VIII. Climb

1. Navigation Course – SET
2. Default Climb Rate – 1000 Feet/min

IX. Cruise

1. Ideal Cruise Altitude - 17,000ft
2. Ideal Cruising Indicated Airspeed – 180 KIAS

The Osprey is now cruising and enroute to its deployment mission. Continue monitoring the engines to avoid a flameout due to engine stress and start briefing for the descent.

X. Descent

1. Default Descent Rate – 1000 Feet/min. Always descend in “APLN” mode (nacelles 0 deg)
2. Keep Indicated Airspeed under 200 KIAS

XI. Conversion

1. Scrub Airspeed to begin Conversion
    a. Max Speed for Conversion: 200 KCAS
    b. Ideal Conversion: 150-170 KCAS at 5000ft (Radio Altimeter)
2. Limit Nacelles to <75 Degrees until 40 KCAS is reached (follow Conversion Corridor)
3. At Nacelle Angle >75 Degrees, beware of rate of descent is NO MORE than 1500ft/min. Otherwise, the risk of Vortex Ring State is high.

WARN – Vortex Ring State (VRS) is a type of aerodynamic stall that occurs in helicopters and tiltrotors as a result of a high descent rate and low airspeed. You must be careful when descending with Nacelles at an angle higher than 75 degrees and airspeed below 40 KCAS, as the risk of VRS is very high.

The aircraft will alert of a high Sink Rate, as well as the Vertical Speed Indicator illuminates red if the aircraft is in danger due to VRS. An ideal VTOL descent speed is 1000ft/min.

<u>If VRS occurs, move nacelles down and gain airspeed to retain lift, if altitude permits</u>

VRS can be deactivated through the CDU (ACFT INIT/Flight Reality to EASY)

NOTE: From 180 KCAS to 0 KCAS/Hover, conversion requires around 1800 meters in length. Distance requires varies depending on windspeed and thrust.

XII. Landing

VTOL

1. Observe Landing Spot is CLEAR
2. Observe wind speed and direction – head INTO the wind and avoid crosswind conditions
3. Adjust speed and Nacelle Angle
    a. Limit Nacelle Angle >75 Degrees for speeds under 40 KCAS
    b. At Nacelle Angle >75 Degrees, beware of rate of descent is no more than 1500ft/min

WARN – Vortex Ring State (VRS). Control the descent rate to avoid entering in a VRS

4. Landing Gear – EXTENDED — Center Console
5. Flaps – AUTO — Center Console
6. At 300ft AGL, level fuselage altitude and start turning Final
7. Under 200ft AGL, descent rate must be no more than 400ft/min
8. Move nacelles to 90deg (±5 Deg) and establish a stable a 30-40ft hover over the landing area
9. Reduce throttle slowly to lower the aircraft
10. Cut the throttle and apply breaks upon touchdown to avoid aircraft movement on the ground

STOL

1. Approach the runway as a conventional aircraft – Speed and nacelle angles as required (follow conversion corridor)
2. Observe landing path
3. Landing Gear – EXTENDED — Center Console
4. Flaps – AUTO or MANUAL as Required — Center Console
5. On Final Approach
    a. Nacelles at 60 Degrees
    b. Maintain speed between 50-80 Knots, as required according to weight
    c. Vertical Speed as Required
6. Land with Main Landing Gear first
7. Cut throttle, apply braking as Required
8. Increase Nacelle Angle as Required

XIII. Taxi

1. Nacelles and Throttle as Required (minimum 60 Deg)
2. Speed under 20 Knots
3. APU – As Required, RUN/ENG — Overhead

XIV. Engine Shutoff

1. Throttle Control Lever – Closed/IDLE
2. Nacelles – 90 Degree
3. Parking Brake – SET — Center Console
4. ENG1 and ENG2 Engine Control Levers – OFF — Overhead
5. Blade Fold and Wing Stow Procedure – As Required, see BFWS Procedure Checklist

XV. Cockpit Switchoff

1. External Lights – OFF — Center Console (CDU)
2. MFDs / CDU / EICAS – OFF — Main Panel (MFD)
3. RFIS / Standby Instruments – Min Brightness — Main Panel (MFD)
4. Cockpit Lighting – OFF — Overhead
5. APU – STOP — Overhead
6. BATTERY – OFF — Overhead

Congratulations! You have finished your first flight with our Osprey.

VII. OTHER PROCEDURES

I. Blade Fold/Unfold and Wing Stow (BFWS) Procedures

INFO - The Osprey can fold and stow its wings for Hangar/Carrier storage. This is known as “Blade Fold/Unfold and Wing Stow” (BFWS) and can be accessed through the Multi-Function Display.”

a. Flight Ready to Full Stow

1. Engine Control Levers – Check OFF
2. Nr – Check 0%
3. Rotor Brake – OFF
4. Battery – Check ON
5. APU – RUN/Engage
6. HYD Pressure – Check NORMAL
7. AREA – CLEAR
8. MFD -> SYST -> BFWS – SET
9. FLT RDY – Verify white with *
10. FULL STOW – Select
11. ROTOR LOCK – Select on MFD, verify white with *
12. Observe:
    a. NAC Positioned to 90 deg
    b. Proprotor blades index and lock
    c. Left and right blades fold
    d. Flaps position to 0 deg
    e. Nacelles lower
    f. Wing lockpin retraction
    g. Wing Stow
13. FULL STOW – Verify white with *

b. Full Stow to Flight Ready

1. Engine Control Levers – Check OFF
2. Nr – Check 0%
3. Rotor Brake – OFF
4. Battery – Check ON
5. APU – RUN/Engage
6. HYD Pressure – Check NORMAL
7. AREA – CLEAR
8. MFD -> SYST -> BFWS – SET
9. FULL STOW – Verify white with *
10. FLT RDY – Select
11. ROTOR LOCK – Select on MFD, verify white with *
12. Observe:
    a. Flaps positioned to 0 deg
    b. Wing lockpin retraction
    c. Wing unstow

d. NAC raise to 90 deg
e. Wing lockpin extension
f. Blades unfold

13. FLT RDY – Verify white with *
14. ROTOR LOCK – Deselect on MFD, verify green

a. Flight Ready to Fold Horizontal

1. Engine Control Levers – Check OFF
2. Nr – Check 0%
3. Rotor Brake – OFF
4. Battery – Check ON
5. APU – RUN/Engage
6. HYD Pressure – Check NORMAL
7. AREA – CLEAR
8. MFD -> SYST -> BFWS – SET
9. FLT RDY – Verify white with *
10. FOLD HORIZ – Select
11. ROTOR LOCK – Select on MFD, verify white with *
12. Observe:
    1. NAC Positioned to 90 deg
    2. Proprotor blades index and lock
    3. Left and right blades fold
    4. Flaps position to 0 deg
    5. Nacelles lower
13. FOLD HORIZ – Verify white with *

II. Single-Engine Operations (Engine Failure)

In the event of a Single-Engine Failure, the Osprey can maintain regular flight with degraded performance, via the gearbox driving both proprotors. This is fully simulated on this aircraft product, and it occurs automatically upon loss of one engine.

When flying with a single engine running, the pilot must never perform a VTOL Landing. Landing is exclusively restricted to STOL. Under single engine conditions, it is recommended to keep a cruise speed of 170 Knots at an altitude of 16,000ft. Beware of over stressing the engine (keep engine indications in Green)

Follow STOL checklist, and adjust nacelle angle, speed and thrust as required.

III. APPR using NAV1/NAV2 (ILS Approach – Glideslope and Localizer)

1. Start the procedure, flying on AP (APLN mode)
2. HeadingHold On, and the Heading Selector at a heading that deviates 20 – 50 degrees from the ILS Localizer heading.
3. Check that this heading takes you to a point where it crosses the Localizer about
4. 10 – 15 nautical miles out.

5. AltHold On, flying at 2500 – 3000 ft above the ground, at an airspeed of 180 – 200 knots (APLN mode).
6. Set the CRS for the NAV radio (usually NAV1, but could be NAV2) with the ILS, equal to the Localizer heading of the ILS.
7. At DME 20, activate ApprHold.
8. When the Localizer becomes Active, HeadingHold is auto-switched off and the AP intercepts and tracks the Localizer. This is at DME 10 – 15.
9. When the Glideslope needle becomes Active (you are flying “into” the Glideslope), AltHold is auto-switched off, and the AP intercepts and tracks the Glideslope.
10. Reduce speed as required and gradually move nacelles to 60 deg (STOL Positon)
11. Beware that the autopilot may behave oddly during Conversion. Use manual input as required
12. On final approach, take manual control. Nacelles at 60 deg and speed must be 50-80 Knots.

IV. In-Flight Refueling

The Osprey is capable of In-Flight Refueling. Unfortunately, this cannot be accurately modeled on MSFS at this time, as the “Refueler component” is missing in the sim. However, the refueling probe is fully animated, and refueling procedures can be somewhat simulated following a rather imaginative approach.

1. On APLN flight, and at stable speed and altitude:
    a. CDU – STAT – FUEL – PROBE Extend
    b. Wait for probe to extend fully (visible from cockpit)
    c. Manually open the Fuel and Payload menu – Load Fuel
    d. Verify new Fuel Amount
    e. CDU – STAT- FUEL – PROBE Stow
2. Continue Flight normally.

V. Fuel Dumping

The Osprey is also capable of dumping fuel. Fuel dumping occurs at a very fast rate, and the pilot must be careful to not dump more fuel than intended. Fuel dumping is fully simulated on this product.

1. Fuel dumping limited to 6000ft AGL and above, except during an emergency.
2. Airspeed - 80KCAS or Higher
3. Rate of Descent, 1000ft/min max, Rate of Climb, No limit
4. Nacelles – 0 deg to 75 deg
5. Landing Gear – Retracted
6. All Cabin Doors – Closed
7. Fuel Dump – Select
8. Feed Tank will not be dumped, the system automatically secures that a minimum amount of fuel is left in the tanks.