F4F-4-WILDCAT-V-1-0-0

INTRODUCTION 1

SPECIFICATIONS 2

VIRTUAL COCKPIT 3

FEATURES 4

CHECKLIST 5

KEYBINDS 6

F.A.Q. 7

CREDITS 8

GOTFRIENDS FLIGHT MANUAL

GRUMMAN F4F-4

WILDCAT

THIS PUBLICATION IS MADE FOR MICROSOFT FLIGHT SIMULATOR AND SHOULD NOT BE USED AS A REAL WORLD SUBSTITUTE

ISSUED BY GOT FRIENDS DEVELOPMENT GROUP AND UNDER THE DIRECTION OF MICROSOFT FLIGHT SIMULATOR MARKETPLACE GUIDELINES.

1.0.0. (Version)

20 Sept. 2023

Chapter 1: Introduction

Background: Renowned for its ruggedness and adaptability, the F4F-4 Wildcat played a vital role in the Pacific Theater, defending American carriers and proving itself a formidable opponent against Japanese aircraft. With its exceptional durability and combat capabilities, the Wildcat earned its place as a crucial asset for the U.S. Navy during the war, contributing significantly to Allied victory in the Pacific. Our digital preservation efforts for this iconic American Warbird spanned two years of research and development to provide you the best possible recreation for Microsoft Flight Simulator 2020 and beyond.

Development: Initially, development started in late 2021, with the project on track for completion sometime in the year 2022. As it usually goes, other releases took priority but in time this approach allowed each member to revisit the project from time to time, slowly remastering it into what you have here today; a complete overhaul of visuals, sounds, animations, systems and flight modeling. These advances have made this project the most comprehensive F4F-4 Wildcat to release in any flight simulator to date.

Overview: Our team's goal for this specific Warbird was to represent the "best of" Wildcat based on the F4F-4 late Grumman / early Eastern Division iterations. Featuring one of the last generations of Pratt & Whitney R-1830-90/92 "Twin Wasp" 1'200HP (895kw) two row 14-cylinder engine, two stage supercharger, carrier appropriate folding wings, simulated tailhook, catapult launch, interactive payloads, aerobatic smoke, and so much more. Apart from being heavily designed around the F4F-4, you will find a handful of iconic American F4F-3 and FM2 liveries, as well as the British "Martlet" liveries included with the product to best represent some of the heroes that were brave enough to fly all variants of the Wildcat across its many generations.

DISCLAIMER:
Our version of the F4F-4 Wildcat is jam packed with features, some of which are PC only such as Weaponry (x6 M2 50.Cal Browning Machine Guns), and Droppable Ordinance (x2 100 lb AN20 General purpose bombs). It's worth noting, these features have launched as website exclusive options, with a replacement package to be released in tandem for Marketplace owners on PC. Please note these items are not available for Xbox Series S/X users on Marketplace as the product must be in compliance with the ESRB rating of Microsoft Flight Simulator.

IMPORTANT: Got Friends do not endorse the use of these features if used in poor taste. Please be responsible with any media you create and view the guidelines of the platform you wish to share on prior to upload. Got Friends will not be held responsible for any action taken against your online accounts should you violate the rules of publishing on various social spaces. In other words: Have fun with the weapons but use your better judgment on what is / isn't appropriate during your use of these features!

Chapter 2: Specifications

Aircraft Specifications:

Crew:	1 Person (220 lbs / 100 kg Maximum)
Length	28 ft 9 in (8.76 m)
Wingspan	38 ft 0 in (11.58 m)
Wing area	260 sq ft (24 m2)
Empty weight	4,907 lb (2,226 kg)
Gross weight	Weight 7,423 lb (3,367 kg)
Maximum speed	318 mph (512 km/h) at 19,400 ft (5,900 m)
Fuel Capacity	1 x 117 gal main, 1 x 27 gal emergency, 2 x 50 gal wing droptanks
Naval Capability	Crew operated folding wings, tailhook and locking tailwheel
Armament	Six .50 caliber M2 Browning machine guns with 450 rounds per gun in the wings; two optional 100 lb AN-M30 bombs

Engine Specifications:

Powerplant	Pratt & Whitney R-1830-90/92 “Twin Wasp” 1’200HP (895kw)
Cylinders	14 cylinders total, two rows 2x7 staggered
Supercharger	2 Stage Simulated, automatically engaged at 5000 ft and 14000 ft respectively
RPM Range	0-2900 RPM, rated for 2700 RPM at take off
Max Rated Drive	Never exceed 3050 RMP, with supercharger in the neutral position
Starter type	Simulated Mag / Manual Primer start with optional Fuel Pump

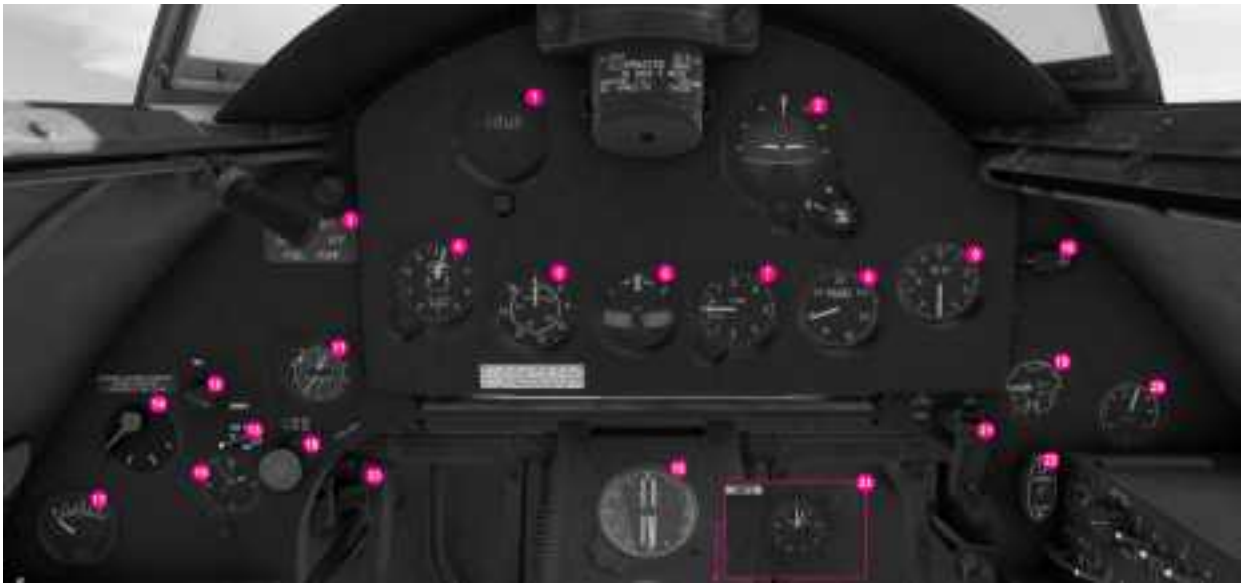
V-Speeds:

VS	59 kts / 109 kph
VSO	69 kts / 128 kph
VC	219 kts / 406 kph
VNE	430 kts / 796 kph
VFE	130 kts / 241 kph
VY	125 kts / 232 kph
VTO	70 kts / 130 kph
VREF	73 kts / 135 kph

Chapter 3: Virtual Cockpit

Performance Specifications:Main Instrument Panel:

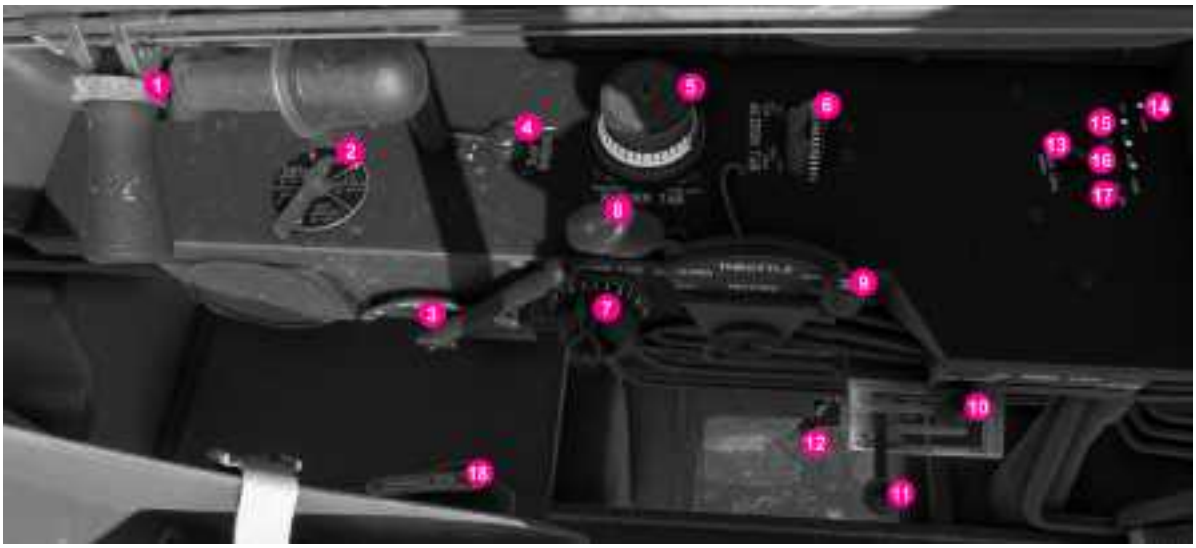
1. **Magnetic Compass:** Displays current bearing in degrees, can be calibrated
2. **Attitude Indicator:** Displays current pitch and bank, can be caged
3. **Emergency Fuel Pump:** Switch toggle for battery operated fuel injection
4. **Altimeter:** Displays altitude in feet and barometer in inches of mercury. Bottom left knob adjusts the altimeter
5. **Airspeed Indicator:** Indicated airspeed in knots
6. **Turn Coordinator:** Displays aircraft's bank and slip
7. **Vertical Speed Indicator:** Displays rate of climb/descent in feet per minute
8. **Manifold Gauge:** Indicates current engine manifold pressure
9. **Tachometer:** Indicates current engine RPM, small number in box indicates face value in "thousands"
10. **Pitot Heat:** Switch toggle for pitot heat
11. **Hobbs Counter:** Indicates flight time in 1 hour, 10 hour and 100 hour
12. **Gunsight Brightness Knob:** Adjusts gunsight light intensity
13. **Gunsight Selector:** Toggle switch for gunsight, off on and alternate reticle
14. **Magneto Selector:** Selector between left, right, and both magnetos
15. **Chronometer:** Standard clock displaying sim time in Hours, Minutes, Seconds. Sim time can be adjusted on-the-fly with adjustment knob
16. **Propeller Lever:** Lever that controls propeller pitch
17. **CHT Gauge:** Displays Cylinder Head Temperature in degrees Celsius
18. **Heading Indicator:** Displays current heading, with a bearing bug that can be adjusted using bottom left knob for further navigation aid
19. **Engine Monitoring Gauge:** Monitors current engine temperature, pressure
20. **Fuel Gauge:** Displays total remaining fuel load between all fuel systems (main, auxiliary, and drop tanks)
21. **Cowl Flaps Lever:** Rotating lever to open (clockwise), close (counter clockwise) cowling flaps
22. **Engine Primer:** Push/Pull lever that primes the engine. Slows down with back-pressure once adequate priming has been achieved.
23. **Windshield De Icer:** Pull toggle lever for Windshield De-Ice
24. **G-Meter:** Measures positive and negative g-forces on the airframe, can be reset



Chapter 3: Virtual Cockpit

Virtual Cockpit - Left Shelf:

1. **Tailhook Lever:** Lever that deploys (pulled aft) or retracts (pushed forward) the tailhook for carrier landings
2. **Fuel Selector:** Rotating selector knob that selects fuel sources left drop tank, right drop tank, main tank, or emergency fuel tank
3. **Supercharger Handle:** Automated engine supercharger that engages at 5000 ft and 14000 ft respectively. **Sim Limited / Not Interactable*
4. **Landing Flaps Lever:** Rotating lever that extends / retracts landing flaps
5. **Rudder Trim Dial:** Adjusts rudder trim tab, (clockwise, trims the aircraft right, counter-clockwise trims the aircraft left)
6. **Aileron Trim Dial:** Adjusts aileron trim tab. Clockwise trims the aircraft right, counter-clockwise trims the aircraft left)
7. **Elevator Trim Dial:** Adjusts the elevator trim tab to assist in pitch. (Counter clockwise trims the nose up, clockwise trims the nose down)
8. **Throttle Lever:** Adjusts manifold pressure in the engine, increasing (forward) or decreasing (aft) engine output
9. **Mixture Lever:** Adjusts mixture of fuel / air in the engine. Increasing (forward), or decreasing (aft) respectively
10. **Tailwheel Lever:** Locks (forward) or unlocks (aft) the tailwheel for ground handling operations
11. **Bomb Selection Lever:** Ordinance selection lever allowing the pilot to select left, right or salvo (both) bombs for release
12. **Bomb Safety Switch:** Master lever that drops selected ordinance / payload
13. **COTD Push Signal:** When pushed, illuminates selected recognition lights to other aircraft sending the "Code of the Day" signals for vintage IFF operations
14. **White Recognition Light:** Toggle switch for the white recognition light located near the tail of the aircraft, can be placed in signal mode for COTD operations
15. **Red Recognition Light:** Toggle switch for red recognition located at the belly of the aircraft, can be placed in signal mode for COTD operations
16. **Blue Recognition Light:** Toggle switch for blue recognition located at the belly of the aircraft, can be placed in signal mode for COTD operations
17. **Amber Recognition Light:** Toggle switch for amber recognition located at the belly of the aircraft, can be placed in signal mode for COTD operations
18. **Right Gun Charge:** Unjams and reloads left wing M2 Browning guns



Chapter 3: Virtual Cockpit

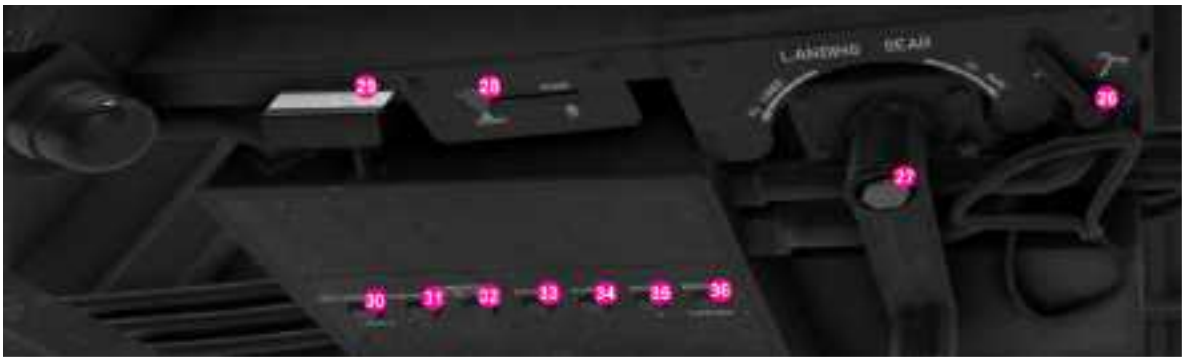
Virtual Cockpit - Right Shelf, Section A:

1. **Voltmeter Gauge:** Displays current battery voltage
2. **Volt - Ammeter Selector:** Cycles between Gen. Volts, Gen. Amps and Batt. Volts
3. **Electric Panel Brightness Knob:** Adjusts electric panel light intensity
4. **Landing Light Switch:** Extends (Illuminates) and Retracts the Landing Light
5. **Cockpit Lights Master Switch:** Turns on / off all in-cockpit lighting
6. **Section Light Switch:** Turns on / off Section Light, also has flash mode
7. **Generator Switch:** Turns on / off aircraft generator
8. **Section Light Brightness Switch:** Places the light in dim or bright modes
9. **Approach Lights:** Turns on / off aircraft approach lights, useful for taxi
10. **Master Battery Switch:** Turns on the aircraft master battery
11. **Wing Running Light Brightness Switch:** Places the lights in dim or bright modes
12. **Engine Starter Switch:** Hold switch to start engine combustion
13. **Tail Running Light Brightness Switch:** Places the light in dim or bright modes
14. **Formation Lights Switch:** Turns on / off Formation Lights, also has flash mode
15. **Gun Camera Switch:** This switch will take you to the on-board gun camera
16. **Formation Lights Brightness Switch:** Places the lights in dim or bright modes
17. **Payload Selector Switch (Starboard / Outer):** Loads right AN-M30 100 lb Bomb
18. **Payload Selector Switch (Port / Outer):** Loads left AN-M30 100 lb Bomb
19. **Payload Selector Switch (Starboard / Inner):** Loads right fuel drop tank
20. **Payload Selector Switch (Port / Inner):** Loads left fuel drop tank
21. **Generator Safety** Switch: Disconnects the generator from the electrical system
22. **Dashboard Light Brightness Knob:** Adjusts dashboard light intensity
23. **Cockpit Switch Light Brightness Knob:** Adjusts cockpit switch light intensities
24. **Pedestal Light Brightness Knob:** Adjusts pedestal light intensities
25. **Chartboard Light Brightness Knob:** Adjusts chartboard light intensities

Chapter 3: Virtual Cockpit

Virtual Cockpit - Right Shelf, Section B:

26. **Crank Mode Toggle:** Toggle switch between automated (forward) lever interactions or manual crank (aft) lever interactions. Automated allows one-click interactions of cowl flaps and landing gear systems while crank requires the user to manually interact with the handles using individual rotations to adjust their position.
27. **Landing Gear Handle:** Rotating handle, clockwise extending the gear, counter-clockwise retracting the landing gear
28. **Landing Gear Position Annunciator:** Traveling flag indicating if gear is in transition
29. **Landing Gear Flag:** Pop-Tab 'flag' indicating when the landing gear is down and locked (out), or retracted (in)
30. **Recognition Light Circuit Breaker:** Master fuse for recognition lights
31. **Gunsight Circuit Breaker:** Master fuse for collimated gunsight
32. **Emergency Fuel Circuit Breaker:** Master fuse for battery driven emergency fuel pump
33. **Pitot Heat Circuit Breaker:** Master fuse pitot heat
34. **COM1 Circuit Breaker:** Master fuse for COM1 radio equipment
35. **COM2 Circuit Breaker:** Master fuse for COM2 radio equipment
36. **Compass Circuit Breaker:** Master fuse for compass instrument



INTERACTION TIPS:
We highly recommend the use of in-sim UI tooltips to assist you in quickly learning the F4F-4 Wildcat. This is commonly known as the "LOCK" setting within Microsoft Flight Simulator's "Accessibility" tab. You can find it under the setting labeled "Cockpit Interactions".

Many of the interactions within the F4F-4 Virtual cockpit are best done through scroll wheel on PC, so if you're having trouble fiddling with clickspots, this may be a better method of interacting. Xbox Series S/X users can expect interactions to work fine using the "cursor mode" function as with all default Asobo aircraft.

Chapter 3: Virtual Cockpit

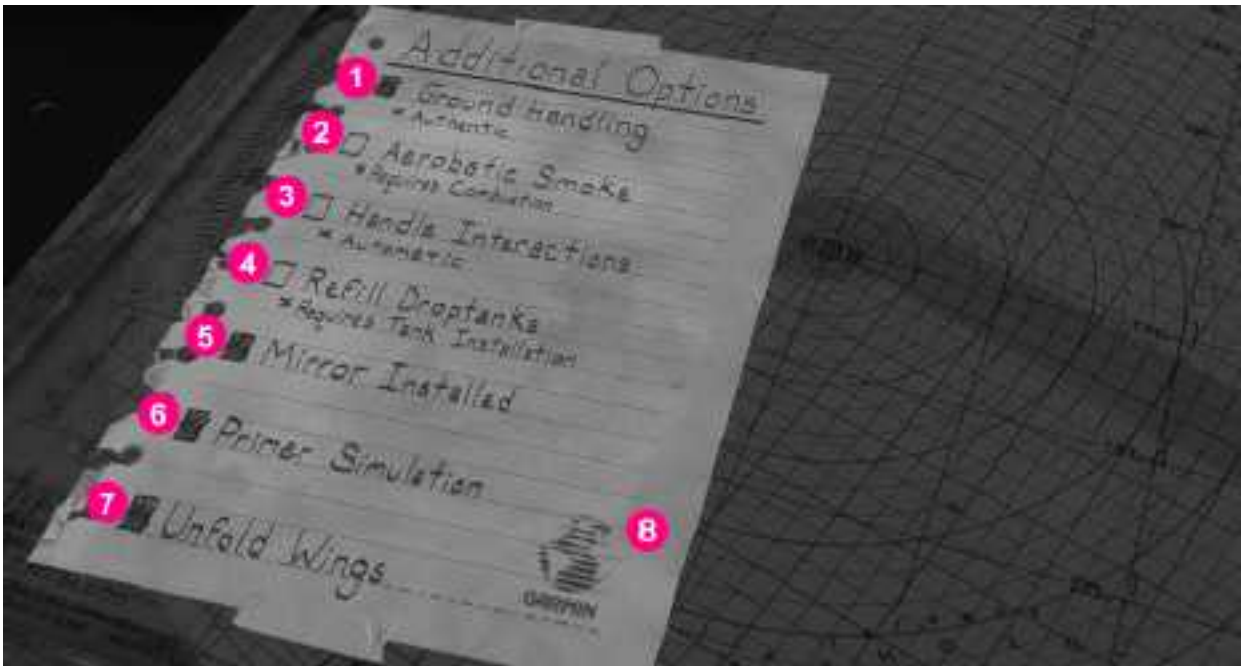
Virtual Cockpit - Right Shelf, Section C:

37. **Wing Fold Switch:** Toggle switch for simulated crew wing folding / unfolding for carrier operations. You must be on the ground, stopped, with flaps be retracted to use this feature. Feature does not work if you have crashed the aircraft
38. **Aerobatic Smoke Switch:** Toggle switch for simulated aerobatic smoke. Engine must be running to use this feature
39. **Catapult Switch:** Toggle switch for simulated carrier "catapult" launch. Click switch, and in 3 seconds, you will be launched forward for a catapult-like assisted takeoff
40. **COM1 Radio:** Communications radio that is capable of monitoring modern frequencies. Large Knob adjusts frequency left of the decimal, small knob adjusts frequency right of the decimal
41. **COM2 Radio:** Communications radio that is capable of monitoring modern frequencies. Large Knob adjusts frequency left of the decimal, small knob adjusts frequency right of the decimal
42. **Transponder:** Mode C transponder capable of standby, altitude reporting, ident. Each vertical dial adjusts its respective individual digit from left to right. Central button allows you to Identify yourself to ATC
43. **Radio Monitor Selector:** Three way selector that monitors audio from COM1, COM2, or BOTH radios
44. **Radio Volume Knob:** Adjusts the overall output volume of the current radio being monitored
45. **Headphone Tone Switch:** Toggle switch for simulated headphones / audio dampening to protect your ears during flight
46. **Left Drop Tank Release Switch:** Switchguard and switch to jettison the left drop tank during flight operation
47. **Right Drop Tank Release Switch:** Switchguard and switch to jettison the right drop tank during flight operation
48. **Molin Flare Switch:** Switchguard and switch to deploy the emergency Molin flare system for search and rescue
49. **SOS Signal Switch:** Sends emergency "Save Our Souls" morse signal
50. **Oxygen Valve Lever:** Opens Oxygen safety valve and begin's oxygen flow
51. **Oxygen Gauge:** Displays remaining current oxygen tank pressure
52. **Oxygen Regulator Lever:** Toggle between low and high oxygen pressure
53. **Canopy Release Handle:** Slides canopy open (aft) or closed (forward), this is a 5-Stage switch that can be opened during flight. However, this will induce additional drag on the aircraft.

Chapter 3: Virtual Cockpit

Virtual Cockpit - Plotting Board (tray under instrument panel):

1. **Ground Handling:** Allows the pilot to switch between simplified and authentic ground handling options. Authentic supports a more comprehensive tailwheel simulation requiring the pilot to keep on top of the aircraft during taxi, takeoff, and landings while simplified uses an assisted model that can be used for a more casual experience with additional rudder input.
2. **Aerobatic Smoke:** Allows the pilot to toggle aerobatic smoke. This effect requires the engine to be running, and can be seen by other F4F-4 users in Multiplayer.
3. **Handle Interactions:** Allows the pilot to switch between "automated" and "manual crank" lever modes. Automatic crank modes allow the user to press a hotkey or click cowl flaps and landing gear handles to deploy / retract with a single click. "manual crank" requires the pilot to make individual turns of the gear to simulate real world F4F-4 Wildcat use. This allows the pilot to crack open a cowl flap in fine increments, and or experience the Wildcat's unique 29 cranks to raise / lower the landing gear.
4. **Refill Drop Tanks:** An option to quickly refill the external 50 gal. wing drop tanks. Note this can only be done if drop tanks are installed.
5. **Mirror Selection:** Shows or Hides an optional rear view mirror
6. **Primer Simulation:** Allows the pilot to enable or disable advanced primer simulation. This will require the pilot to input adequate primer to be able to start the engine. Disabling it will use Asobo's default simplified simulation.
7. **Wing Fold:** Allows the pilot to fold / unfold the wings. Must be stationary on ground, flaps retracted. Will not allow you to unfold if you crashed the aircraft. Wings will extend automatically if moving above 20 knots.
8. **Garmin Toggle:** Installs Optional PMS50 GTN-650 in the Cockpit. Please see FAQ for more information.



IMPORTANT NOTICE:
Drop tanks are installed without fuel in them, so always be sure to top up and verify quantities prior to departure!

Chapter 4: Features

Feature List:

- High Fidelity Flight Model with NPS, CFD, and Soft Body Simulation
- Free-Castering Tailwheel with Authentic and Simplified Options
- Twelve 4K Liveries with Historical Relevance, and one Website-Exclusive Livery
- Complex Electrical System with Circuit Breakers
- Engine Vibration Effects on the Interior and Exterior
- Handle Interactions with Automatic and Hand-Cranked Modes
- Propeller Damage, Crash Damage, Visual Sparks, Smoke, and Heat
- In-Cockpit Map Tray with Additional Customization Options
- Collimated Gunsight with Two Reticle Options
- Tailhook Assisted Landing Built-In (Works on Any Surface)
- Simulated Launchbar for Assisted Launching Built-In (Works on Any Surface)
- Aircraft Carrier Support with Touching Cloud, Jay Shrike, and Supercarrier Pro
- High Fidelity WWISE Soundpack with Custom Engine and Foley Sounds
- Vintage Dial VHF Radio and Transponder Units (Vatsim Support)
- Multiplayer Animations (Canopy, Wingfolding, Weapons and Lights)
- Complex Primer Simulation with Optional Toggle to Disable Primer Requirements
- Dynamic Airframe Drag (Canopy Position, Fuel Tanks, Bombs and Cowl Flaps)
- Droppable Bombs with Real-Time Physics and Visual Explosions in the Environment
- Jettison Drop Tanks with Real-Time Physics and Fuel Dumping Visual Effects
- Gunfire with Nighttime Tracers and Visual Effects with Multiplayer Support
- Custom Gun Camera Overlay with Vintage Film Effects
- Headphone Simulation Built into the Aircraft
- Launchable Molin Signal (Flare) with Multiplayer Support
- Smoke Generator with Multiplayer Support
- 3D Modeled Engine, Rear Bay and Landing Gear Bay with Intricate Animations
- Start-Up Smoke, Combustion, Heat, Frost, Landing, Fly-By and Vortices Effects
- Realistic Interior Lighting System with Brightness Dimmer Controllers
- Support for PMS50's GTN-750 WTT with Optional Navigation and Autopilot
- Community Paintkit Available on our website (www.got-friends.com)
- Additional Free Community Liveries will be available on (www.flightsim.to)

DISCLAIMER:
All Weapons and their accompanying visual effects are not available through the in-game marketplace. These features are website only exclusives. Alternatively, we have a replacement package available on our website that will add this functionality to PC users only who have purchased the F4F-4 Wildcat on the in-game marketplace. These features will never be coming to the Xbox S/X Series as long as Microsoft continues to uphold their current ESRB rating and strict “no-weapons” guidelines.

DISCLAIMER:
Please abide by rules for simulated combat when using virtual pilot networks such as Vatsim / Pilot Edge. GotFriends will not be responsible for any action taken against your accounts on these networks should you violate their terms of service.

Chapter 5: Checklists

NOTICE: IN-GAME CHECKLIST ALSO INCLUDED!
This Checklist is designed for the end-user to help them get familiar with the standard operating procedures of the Wildcat in MSFS. We recommend keeping tooltips enabled in your sim UI settings as you get familiar with the cockpit. Switches that have more positions than on / off are best suited for mouse-scroll interactions.

Pre-Flight Checklist:

- **Wings:** UNFOLDED
- **Left Drop Tank:** AS REQUIRED
- **Right Drop Tank:** AS REQUIRED
- **Left Bomb:** AS REQUIRED
- **Right Bomb:** AS REQUIRED
- **Map Tray:** OPTIONS SELECTED
- **Weight and Balance:** VERIFIED
- **Battery Voltage:** CHECKED
- **Master Battery:** ON
- **Cockpit Lights:** AS REQUIRED
- **Panel Light Brightness:** AS REQUIRED
- **Cockpit Switch Light Brightness:** AS REQUIRED
- **Compass Light Brightness:** AS REQUIRED
- **Chartboard Light Brightness:** AS REQUIRED
- **Instrument Light Brightness:** AS REQUIRED
- **Circuit Breakers:** ALL BREAKERS SET
- **Generator Safety Switch:** ON
- **Landing Flaps:** UP POSITION
- **Elevator Trim Handle:** SET TO NEUTRAL
- **Rudder Trim Wheel:** SET TO NEUTRAL
- **Aileron Trim Wheel:** SET TO NEUTRAL
- **Tailwheel:** UNLOCKED
- **Artificial Horizon:** UNCAGED
- **Altimeter:** CALIBRATED
- **Control Surfaces:** FREE AND CORRECT

Before Engine Start Checklist:

- **Fuel Selector:** MAIN SELECTED
- **Emergency Fuel Pump Switch:** ON
- **Magnetos:** BOTH
- **Throttle Lever:** INCREASED ABOVE 10%
- **Mixture:** FULL RICH
- **Propeller Lever:** PUSHED TO 100%
- **Primer:** PUMPED TO READY
- **Cowling Flaps:** AS REQUIRED
- **Section Light:** AS REQUIRED
- **Section Light Brightness:** AS REQUIRED
- **Approach Lights:** ON
- **Wing Running Lights Brightness:** AS REQUIRED
- **Tail Running Lights Brightness:** AS REQUIRED
- **Formation Lights:** AS REQUIRED
- **Formation Lights Brightness:** AS REQUIRED
- **Smoke Generator:** OFF

Chapter 5: Checklists

Engine Start:

- **Starter Switch:** HELD UNTIL ENGINE START
- **Generator Switch:** ON

Before Taxi:

- **Headphones:** AS REQUIRED
- **Pitot Heat:** AS REQUIRED
- **Propeller Lever:** AS REQUIRED
- **Parking Brakes:** CHOCKS REMOVED

Before Takeoff Checklist:

- **Landing Light:** ON
- **Propeller Lever:** PUSHED TO 100%
- **Canopy Position:** AS REQUIRED
- **Oxygen Valve:** AS REQUIRED
- **Oxygen Pressure:** AS REQUIRED
- **Tailwheel:** LOCKED
- **Throttle Lever:** INCREASED TO 100%

Cruise Checklist:

- **Landing Gear:** RAISED
- **Emergency Fuel Pump Switch:** OFF
- **Landing Light:** OFF
- **Approach Lights:** OFF ABOVE 10,000 FEET
- **Elevator Trim Handle:** AS REQUIRED
- **Rudder Trim Wheel:** AS REQUIRED
- **Aileron Trim Wheel:** AS REQUIRED
- **Gunsight:** AS REQUIRED
- **Gunsight Brightness:** AS REQUIRED
- **Windshield De-Ice:** AS REQUIRED

Approach Checklist:

- **Jettison Remaining Ordnance:** AS REQUIRED
- **Landing Light:** ON
- **Approach Lights:** ON
- **Elevator Trim Handle:** SET TO NEUTRAL
- **Rudder Trim Wheel:** SET TO NEUTRAL
- **Aileron Trim Wheel:** SET TO NEUTRAL
- **Tailwheel:** LOCKED
- **Landing Flaps:** DOWN POSITION
- **Landing Gear:** LOWERED
- **Tailhook:** AS REQUIRED

Chapter 5: Checklists

Shutdown and Secure Checklist:

- **Tailhook:** RETRACTED
- **Landing Flaps:** UP POSITION
- **Tailwheel:** UNLOCKED
- **Landing Light:** OFF
- **Smoke Generator:** OFF
- **Landing Flaps:** VERIFY RETRACTED
- **Magnetos:** OFF
- **Fuel Selector:** OFF
- **Propeller Lever:** PULLED TO 0%
- **Generator Switch:** OFF
- **Parking Brakes:** CHOCKS INSERTED
- **Tailwheel:** LOCKED
- **Oxygen Valve:** OFF
- **Windshield De-Ice:** OFF
- **Gunsight:** OFF
- **Emergency Fuel Pump Switch:** OFF
- **Pitot Heat:** OFF
- **Section Light:** OFF
- **Approach Lights:** OFF
- **Formation Lights:** OFF
- **Formation Lights Brightness:** OFF
- **Cowling Flaps:** CLOSED
- **Master Battery:** OFF
- **Wings:** FOLDED
- **Canopy Position:** OPEN

Chapter 6: Keybinds

KEYBIND	FUNCTION
TOGGLE ANTI ICE	Drops Left Drop Tank, Press Again - Drops Right Drop Tank
SET PEDESTAL LIGHTS	Fires Guns when Held Down - Stops Firing when Released
TOGGLE CABIN LIGHTS	Drops Selected Bomb. Use Lever to Select other Bomb, then you can Toggle Cabin Lights again to Drop 2nd Bomb
TOGGLE STROBES	Hotkey for Smoke Generator
TOGGLE GLARESHIELD LIGHTS	Hotkey for Molin Signal (Flare) Launch
TOGGLE LAUNCH BAR SWITCH	Starts 3 Second Countdown for Assisted Launch
TOGGLE TAIL HOOK HANDLE	Deploys/Retracts Tailhook for Assisted Landings
TOGGLE PARKING BRAKES	Removes/Installs Chocks (This Item has been removed from the Map Tray Options List)
TOGGLE TAXI LIGHT	Hotkey for Approach Lights
TOGGLE LANDING LIGHT	Hotkey for Landing Light
TOGGLE MASTER BATTERY	Hotkey for Master Battery
TOGGLE MASTER ALTERNATOR	Hotkey for Generator
TOGGLE TAIL WHEEL LOCK	Hotkey for Tail Wheel Lock
TOGGLE BEACON LIGHT	Remove from Hardware / This Causes Conflictions

DISCLAIMER:
These keybinds are recommended and are not required for the use of these features. Everything can be accessed via click spots in the virtual cockpit. We highly recommend saving these settings as a separate profile for the best possible sim experience in the F4F-4 Wildcat. Generally, if you have flight sim hardware with buttons you can bind to these (i.e triggers for guns), you'll have a much more enjoyable experience with the product. If your hardware uses physical switches, you may need to set "TOGGLE" keybinds listed above to either "SET", "ON", or "OFF". These settings should work with most hardware settings but may need to be adjusted and experimented with for complex hardware setups.

NOTICE:
If you are using physical On/Off Switches with your Hardware some of these hotkeys should be configured a different way. For example, you should have SET STROBES LIGHTS or even STROBES ON and STROBES OFF. It really depends on your hardware setup and you should take special care and testing while making the Wildcat its own Control Profile. If you need support please consider contacting us on our Discord linked below in the Credits Section of this Flight Manual.

Chapter 7: F.A.Q

Question: Engine wont start, and the starter just keeps spinning even though I followed the checklist?
Answer: You likely have advanced primer simulation enabled and need to prime the engine further. We highly recommend having "tooltips" enabled within your sim's UI settings as you learn how to operate the Wildcat. More often than not, you must prime the engine an additional 1-2 times after the tooltip shows "ready". If you do not have tooltips enabled, you can visually tell if you have primed enough when the primer handle animation slows down, indicating adequate 'back-pressure' within the chamber. If you wish to disable this advanced feature, you can click the map tray located under the instrument panel to see an options sheet that allows you to enable / disable primer simulation.

Question: I keep "ground-looping" on landing, what am I doing wrong?
Answer: Verify your tailwheel lock is set correctly prior to landing, and ensure you hold adequate back pressure on the stick throughout landing to keep the tailwheel firmly planted on the deck. Practice makes perfect! You can also toggle simplified and complex ground handling simulation by clicking the map tray located under the instrument panel to see an options sheet that allows you to adjust your ground handling difficulty.

Question: Pressing my hotkey for landing gear does not retract it?
Answer: It's likely your Wildcat leaver simulation is set to "crank" mode meaning individual turns of the landing gear handle are required to extend / retract the landing gear. You can also toggle automated and manual crank lever simulation modes by clicking the map tray located under the instrument panel. You will then see an options sheet that allows you to adjust this setting.

Question: I don't hear the engine sounds from the cockpit properly, but it sounds fine in the exterior cam?
Answer: It's likely you have "headphones" simulation enabled in the virtual cockpit that dampens audio to protect your ears during extended simulated flights. There is a leaver that toggles this near where your right thigh would be. Please reference the "virtual cockpit - right shelf" section of this document to see the specific location of this switch. Our headphone simulation is separate from that of Microsoft's simulation in their audio settings. Please also check there to disable their setting.

Question: My flares and or guns, or smoke keep going off?
Answer: It's likely one of your physical switches on your hardware are key mapped to one of the lights that govern the activation of these settings. Please reference the keybind section of this document to verify which item it is and consider temporarily unbinding, changing or creating a new profile to work around this issue. Also note, many of these 'keybound' features can be activated via click spots within the virtual cockpit, so it's not necessary to have everything bound; rather just optional for your convenience.

Question: How do I manipulate the supercharger handle in the F4F-4 Wildcat?
Answer: Due to sim limitations, our F4F-4 Wildcat has an automated simulated two-stage supercharger that kicks in at 5000 ft and 14'000 ft respectively. There is no need to manually adjust this leaver as it will automatically be taken care of when passing these altitudes. You can reference the handle position to see where it has been set as well as see this change reflected in your manifold pressure gauge as it increases.

Chapter 7: F.A.Q

Question: My hobbs counter in the aircraft does not match my flight log time?
Answer: The hobbs counter in the F4F-4 Wildcat specifically tracks engine hours. You may notice some discrepancy between your log book or external applications that track "flight hours". Also note that Microsoft Flight Simulator does not actively track hours while in dev mode. The gauge is otherwise accurate and should display your true engine time spent in the Wildcat.

Question: Will you be adding Autopilot & GPS support in the future?
Answer: Our F4F-4 Wildcat already has an additional option for an installed GTN-650. You can use PMS50's GTN-650 (PC ONLY). You must have their base addon installed. Grab their addon here, just be aware you will need to contact them for support should you need it. https://pms50.com/msfs/ Brightness Settings can be adjusted via the Cockpit Switch Brightness Knob.

Question: How do I open / close the canopy? Clicking and dragging does not work!
Answer: Canopy interactions are best done via scroll wheel interaction. Put your mouse cursor on the canopy handle located on the right rail (near where your right shoulder would be), and scroll your mouse wheel up / down to cycle between its 5 states. Xbox Series S/X users can interact with the canopy as they would with any other leaver by going into cursor mode, hovering over the handle and moving their analogue stick to interact with it.

Question: What are the best practices for bombing runs? I seemed to have lost sight.
Answer: Our droppable bombs and drop tanks are unique to this aircraft and use custom coding to separate those objects from our aircraft upon dropping them. Straight and level flight is the preferred drop method. We are constantly updating this module and you can expect better support in the future for unique tactics such as dive bombing.

Question: The Mirror looks blurry, can I make them look better?
Answer: Mirrors in MSFS aren't render targets but instead real time capture reflection probe based. As a result, you will see a low fidelity render of the world (Ground, Sky, Clouds, Water and Lights) around you, but will not see other aircraft, foliage or models rendered in mirror. You CAN however increase the fidelity of the mirrors render by editing your **User.cfg** file located

FOR WINDOWS STORE USERS:
\AppData\Local\Packages\Microsoft.FlightSimulator_8wekyb3d8bbwe\LocalCache

FOR STEAM USERS:
\AppData\Roaming\Microsoft Flight Simulator

Open the file with notepad, find the text "ReflectionProbe Size" and edit the default value from

"ReflectionProbe Size 256" to "ReflectionProbe Size 2048"

****ALTHOUGH RELATIVELY SAFE TO DO, PLEASE BACK THIS FILE UP PRIOR TO MAKING CHANGES. GOTFRIENDS AREN'T LIABLE IF SIM SETTINGS ARE RESET AS A RESULT OF EDITING THIS FILE****

Chapter 8: Credits

Got Friends' Team and Collaboration Partners:

- **Got Gravel:** Flight Model Expert, Electrical Systems and Custom Physics
- **Jonx:** Project Manager, Coding and Visual Effects Designer
- **twoseventyinc:** Texture Artist and Sound Engineer
- **Mykrode:** 3D Modeling Lead and additional Texturing Artist
- **Touching Cloud):** Droppable Payload Simulation Programming
    - Touching Cloud | Official Website

Notable Beta Testers:

- **RotorNut44:** Alpha / Beta tester, Scenery Partner
  Emerald Scenery Design | Scenery Addons For MSFS & P3D
- **Willy:** Twitch Partner, Beta tester, Got Friends Community Moderator
    - swjneufy - Twitch
- **TheDukeNewComb:** Twitch Partner, Alpha / Beta tester, Scenery Partner
    - TheDukeNewComb - Twitch
- **BurstixTV:** Twitch Partner, Beta tester
    - BurstixTV- Twitch
- **OohCando:** Twitch Partner, Beta tester
    - oohcando - Twitch
- **MortThe2nd:** Alpha / Beta Tester
- **ColonelFork:** Beta Tester
- **Jwinnicker:** Beta Tester
- **TwistedAviator:** Beta Tester, Pilot Reference
- **FrankiePoops:** Beta Tester, Social Media Scout
- **Airpac1:** Beta Tester, Community Liveries Ambassador

Got Friends Website:

Discover more Add-Ons, Information and Support at our website and online store!
Got Friends | Website | Store (got-friends.com)

Got Friends / Got Gravel Discord:

https://discord.gg/got-gravel

A special thank you to all of our supporters throughout our first Warbird experience!