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PILOT'S NOTES FOR TIGER MOTH AIRCRAFT

Issued for the Information and Guidance of All Concerned

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Ant's Airplanes
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PART 1 - DESCRIPTIVE

1. Introduction

Thank you for downloading this aircraft. If you enjoy flying this aircraft then feel free to make a donation to the author at:

<http://anthony31fs.wordpress.com/aircraft/>

There is no obligation to donate and you may freely enjoy this aircraft.

Please take the time to read this document (particularly if you are unfamiliar with flying the Tiger Moth) as it explains many of the details particular to this aircraft.

This aircraft models a modern restored De Havilland Tiger Moth as made in Australia and therefore includes features that you may not find on original aircraft.

This model has been made to the best of my knowledge and abilities and is presented "as is" for your enjoyment. If you feel the need to count rivets by all means do so. Just don't bother telling me about it.

For support issues the best chance of getting a response is by emailing me at atrix31@hotmail.com

2. Installation

To install the aircraft simply click on the AntTMV11.exe file to run the installer program. This will install the aircraft into the SimObjects/Airplanes/Ants Tiger Moth folder and 3 effects files into the Effects folder. No changes are made to default files by the installer.

3. Uninstalling

You will have to manually uninstall this aircraft. Do this by deleting the following files and folders from your FSX installation:

FSX/SimObjects/Airplanes/Ants Tiger Moth
FSX/Effects/Ants_DH82_EngineStart.fx
FSX/Effects/Ants_DH82_PanelLight.fx
FSX/Effects/Ants_DH82_Smoke.fx

4. Features

- Native FSX SP2 model using bump and specular maps
- Custom smooth 3D gauges (only the GPS is a default gauge)
- Working Auto Slots
- Startup by pulling the prop
- Model loaded for better performance in multiplayer
- Wheel chocks, pitot cover and tie downs
- Passenger and Pilot can be hidden
- Joysticks can be hidden
- Luggage loads depending on payload
- Side slip and Spins (more or less)

5. Known Problems

- No Virtual Cockpit self shadowing
- Exterior model self shadowing glitch near wing tips
- Brakes. Original Tigers had no brakes at all. Some modern have a small parking brake fitted and a few others have toe brakes. I had intended to have a parking brake and no toe brakes but it seems FSX can't handle this. As you need a parking brake (the wheel chocks are for show only) I have had to include toe brakes.
- FSDS appears to place a 1mm resolution on models it produces therefore many of the knobs and dials are not as round as I would have

liked.

- Wheel chocks, tie downs, passenger and pilot visibility data is stored in the cowl flaps variable. If you use a key command to change the cowl flaps setting then you may see some strange things. Just return the cowl flaps to fully closed to reset.

6. General Data

Manufacturer: De Havilland Aircraft Co. (Aust)
Purpose: Elementary Trainer
Type: Single engine two seater fabric covered biplane

Wing Span: 29 ft 4 in
Length: 23 ft 11 in
Height: 8 ft 9 in
Track: 5 ft 3 in
Gross Wing Area: 239 sq ft
Airscrew Clearance: 24 in

Tare Weight: 1180 lb
Max Weight: 1825 lb
Max Weight
- aerobatics: 1770 lb

Airscrew: 2 bladed, wooden fixed pitch

Engine Maker: De Havilland Aircraft Ltd
Name: Gypsy Major
Series: 1 Type 1
No of Cylinders: 4 inline inverted
Cooling: Air
Octane of Fuel: 73
Oil: DTD 109
Take Off Power: 130 BHP 2350 rpm

7. Flying Controls

Dual controls are fitted and are interconnected between the cockpits. Solo flying must be carried out in the rear cockpit. The front control column may be removed for solo flying or when carrying passengers. Press Shift+3 to bring up the Animation Manager and click on Passenger Joystick to remove the control column. For better vision of the radios the rear control column may be removed from the virtual cockpit by clicking on the base of the column.

Longitudinal trimming is effected by spring loading the elevators. A lever is located on the left side of both cockpits.

8. Automatic Slots

Auto slots are fitted to the top wings and will automatically deploy at low speed. There is a locking lever located on the right hand side of the rear cockpit (the top of which may be obscured by the GPS).

Click on the lever to pull it back which will lock the slots and prevent them from opening. You should lock the slots when taxiing or attempting aerobatics.

9. Engine Controls

A throttle lever is mounted on the left hand side of each cockpit. Pull back to fully close the throttle, push forward to open the throttle. In addition, the rear cockpit has a mixture lever (red knob). Fully back = full rich. However, there is a hook which prevents the mixture lever being in front of the throttle lever. You cannot use the mixture lever to stop the engine (use the magentos to do this)

10. Instruments

Simple instruments to display airspeed, engine revolution, oil pressure, altitude and turn and slip are provided in both cockpits. A simple wind driven airspeed gauge is located on the forward left wing strut (note, airspeed is displayed in MPH).

A compass is also included. This features a locking lever to prevent accidentally turning the heading dial.

11. Additional Equipment

Additional equipment has been added to the rear cockpit to reflect the modern aircraft. Bendix/King Air KY196A comms and KT70 transponder are located between the pilots legs. Battery and generator controls are located on the panel to provide power for the radios.

A smoke switch will turn the smoker on and both cockpits feature independently switchable lights although as no landing, strobe or nav lights are fitted to the aircraft you should not try flying at night.

12. Animation Manager

The Animation Manager is a 2D panel popup which allows you to control certain animations. These include placing wheel chocks, tie downs, pitot cover, opening various doors as well as visibility of the pilot and passenger. You can also switch display of the GPS unit on or off.

You can also switch the pilot in the virtual cockpit on or off (the default is off). Useful if you fly from the passenger seat.

Note that when the wheel chocks are placed the parking brake will be set to on and when removed the parking brake will be released. However, this can be overridden by the parking brake key command.

13. Stowage Space

A storage compartment is located behind the cockpit. Use the exit 3 command and the Animation Manager (shift+3) to open and close the door.

If the payload is set to greater than 0 you will see some snacks there. The wheel chocks are also stored here although only visible if the payload is 0.

PART 2 - HANDLING

14. Preparation for Flight

Place the wheel chocks in front of the wheels by using the Animation Manager (shift+3). Set the handbrake on (note that the wheel chocks are visual only and do not affect the aircraft performance in any way). Make sure tiedowns are removed and pitot cover is removed (if left on the airspeed indicator will not work).

If a copilot is not flying in the front seat remove the passenger joystick.

15. Starting the Engine

This procedure is for flight simulation only.

The magnetos are located on the exterior of the aircraft on the left hand side below the windows. There are two duplicated sets, one for each cockpit. Cycle through the virtual cockpit views to get a good view of them.

- i. Check chocks and handbrake are ON. Battery and radios OFF
- ii. Turn magneto switches OFF, fuel cutoff ON and throttle CLOSED
- iii. Set throttle to nearly closed.
- iv. "Contact". Set front (left) magento ON (up).
- v. Switch to front on VC view and grab the prop and pull down. (note, prop rotates clockwise from front on view anti-clockwise from the pilot seat)

vi. Once started place rear magneto in ON position.

16. Warming Up

Engine will idle at about 600-700 rpm.

Set altimeter to correct altitude for airfield.

Oil pressure at 35lbs/ sq in at 1000 rpm.

Lock auto slots for Taxiing.

Check fuel gauge (on top of fuel tank between the two upper wings).

Check flight controls for free movement.

17. Running Up

Ensure handbrake is on.

Hold stick right back.

Open throttle to 1600 rpm and test magnetos independently (drop in rpm should not exceed 100 rpm)

Open throttle fully, rpm should be 1825 minimum, normal 2100.

Throttle back to idle of 600-700rpm.

18. Taxying

Ensure wheel chocks are removed.

Auto Slots locked (rearward position)

Think ahead. There are no brakes on a Tiger Moth and once rolling can take a while to stop.

19. Take Off

Prop torque will tend to turn the aircraft to the right (remember prop spins opposite to most other aircraft) so a bit of left rudder may required to keep aircraft straight.

Set elevator trim to neutral.

Auto slots unlocked (lever fully forward)

Full throttle for take off and initial climb. After 200-300 ft reduce to climb power.

20. Climbing

Climb speed is 60 knots (70 mph) at 200-300 ft reduce throttle to 2100 rpm and you will climb at 600 fpm (or use 58 knots at 2050 rpm).

21. Cruising

Straight and level flight is achieved at 1950 rpm with an airspeed of 65-70 knots (75-80 mph). Safe endurance should be 2 1/2 hours.

22. Stalling and Spinning

Stalling will occur around 35 knots. To recover from a stall push the control stick forward and apply full throttle.

Ensure auto slots are locked before spinning. To enter the spin from level flight close the throttle. As the airspeed slows try to maintain your

altitude. As the airspeed approaches 35 knots push the rudder in the direction of the spin (left turning spins seem to work much better than right turning, I don't know why, they just do) and pull back the control stick. Hold until established in the spin. To restore control apply opposite rudder.

23. Aerobatics

Ensure auto slots are locked before attempting any aerobatics

Typical entry speeds are as follows

Loop	100 knot	115 mph
Stall turn	78 knots	90 mph
Slow roll	95 knots	110 mph
Barrel roll	100 knots	115 mph
Half roll of the top of a loop	118 knots	135 mph
Half roll	82 knots	95 mph

24. Descending

Engine assisted descent is achieved with 1100-1200 rpm at 60 knots (68 mph) which will yield a descent rate of 500 fpm

For gliding without the engine use 58 knots (66 mph)

25. Approach and Landing

On downwind ensure you have enough fuel, mixture fully rich and auto slots unlocked (lever fully forward).

Approach at 58 knots (66 mph). Cross the fence at 50 knots and touchdown at 40 knots.

26. Stopping the Engine

You cannot use the mixture lever to stop the engine.

Switch off both magnetos and slowly open the throttle fully as the airscrew slows.

Return throttle to closed position.

Set fuel cutoff OFF (fully back).

Use the Animation Manager (shift+3) to add tiedowns, wheel chocks and pitot cover as well as remove the pilot and passenger.

27. Flying Notes

These notes provide some tips on how to fly this Tiger.

- The prop rotates opposite to most aircraft. ie anti clockwise from the pilots viewpoint. You will therefore need to apply left rudder to maintain a straight line for takeoff.
- Windmill start. If the prop stops spinning in flight go into a dive. Ensure magnetos are on and fuel is on. At about 110 knots the prop will start spinning again and the engine should restart. Pull out of the dive before you become a pancake.
- There are no flaps to slow you down on approach. Sideslipping will bleed about 10 knots off your airspeed but you should plan your approach otherwise you may arrive too fast.
- Try 3 point landings at around 40 knots.

PART 3 - OPERATING DATA

28. Engine Limitations

Full throttle (5 min limit)	2350 rpm
Minimum Take off	1825 rpm
Maximum Climbing	2100 rpm
Maximum Cruising	2100 rpm
Normal Cruising	1900 - 2050 rpm

29. Desired Operating Figures

- i. Warm up for 4 minutes 800-1000 rpm
Testing engine on chocks Full throttle for not more than 10
secs
- | | |
|----------------------|----------|
| Normal full throttle | 2100 rpm |
| Take off | 2100 rpm |
| Climbing | 2050 rpm |
| Cruising | 1950 rpm |
- ii. Oil Pressure 40-45 lbs/sq. in

30. Flying Limitations

Maximum Diving Speed	156 knots	(180 mph)
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31. Fuel Consumption

MPH	KNOTS	RPM	Gls/Hr	Endurance
75-80	65-70	1950	6-6.5	2.5 Hrs
80-85	70-74	2050	7-7.25	2.25 Hrs
85-90	74-78	2100	7.75-8	2

PART 4 - CREDITS

32. Copyright

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Repaints may be made and distributed for free only. Payware repaints using any original files (including those made using the paintkit) are expressly forbidden.

The sound files contained in the Sounds folder are based on sounds originally created by Donald Putnam and these sounds may be freely used and distributed.

33. Thank yous

Without the gracious assistance of the following people this aircraft would never have been completed and I am eternally grateful for the help provided.

Donald Putnam who very kindly allowed me to include his excellent Gypsy Major sounds.

John Clarke who provided invaluable information on the Tiger Moth aircraft. Squeeker as well for the information on the Jandakot Tigers.

Knut Meyer who provided further valuable information on the handling

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Special thanks to those wonderful repainters who are taking the Tiger Moth to the next level.

Thanks to all those people who make freeware aircraft, scenery, repaints and utilities. Thanks also to all those volunteers at flight simulation websites who keep the community alive.

34. Contact

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35. Links

anthony31fs.wordpress.com : Get all the latest news on Ant's Aussie Airports and Ant's Airplanes.

www.aussie.org : A great site with many Australian downloads (as well as a few non Australian ones) including well over a hundred freeware Australian airfields. Host for this aircraft with many extra repaints

www.vatsim.net : Online ATC services

www.vatpac.org : The Australian arm of vatsim

www.airservicesaustralia.com.au : Real world Australian aviation authority where you can download free airport charts.

www.avsim.com : Flightsim news, reviews, files and forum

www.flightsim.com : Flightsim news, reviews, files and forum

www.sim-outhouse.com : Military flightsim news, files and forum

www.fsdeveloper.com : Forum for flightsim development

www.cixvfrclub.org.uk : UK virtual flying club

PART 5 - DIAGRAMS

36. The Virtual Cockpit



37. Radio Stack



38. Animation Manager

Use shift+3 to call up this 2D panel which allows you to control the model animations. Click on the name of the animation to activate it.

