

# Cessna T-41D Mescalero of Hellenic Air Force Academy for FS2K2



## GENERAL

The Cessna's T-41D Mescalero is the military version of the well known Cessna 172 series and it was produced when the USAF chose to order 170 of the aircraft in July 1964. In August 1966, the US Army also ordered a version with the 210hp D-360D, which is known as the T-41B. The USAF again ordered the Cessna R172E for use at its academy as the T-41C. Finally, the T-41D Mescalero was supplied to various Air Forces under the MAP scheme. A total number of 855 T-41s aircraft were built: 259 T-41As, 255 T-41Bs, 72 T-41C, and 269 T-41D between 1963 and 1983. Various Air Forces have also acquired the standard Cessna's model 172 as a basic trainer.

The T-41D Mescalero is equipped with modern avionics and other equipment consistent with military missions, including GPS systems in all the aircraft. The T-41D's were fully upgraded with the newest avionics, paint and the addition of a constant speed propeller in August of 1996. Also equipped with the 180hp Continental O-360 engine.

## T-41D IN HELLENIC AIR FORCE SERVICE

The T-41D Mescalero replaced the old Harvards back in 1968. Equipped with all these characteristics a trainer should have, the T-41D Mescalero used to help the young Air Force Academy cadets to receive their first flight training. Thousands of young "wannabe" aviators had their first "air" feeling in this popular little aeroplane. A great many others were eliminated from the programme at this early stage because they could not demonstrate the necessary co-ordination and aptitude soon enough. A total number of 20 T-41Ds Mescalero used to fly for Hellenic Air Force Academy, signed in 360th Sqdr. of 120th Educational Wing at Tatoi Air Base. Hellenic Air Force cadets flown the T-41D for a total flight time about 40 hrs, in order to gain their "wings".



The s/n 69-7200 presented at this FS2K2 repaint was the first aircraft the author had his first solo with.

## CREDITS

- This is a Microsoft's FS2K2 default C172 aircraft repaint. Thanks for downloading this repaint.
- Hellenic Air Force Academy T-41D Mescalero repaint, improved flight dynamics, screenshots and aircraft's flight manual and procedures by **Nick Karatzides** [pathfinder@mail.gr](mailto:pathfinder@mail.gr)
- Aircraft infos & data by Cessna Co. and Hellenic Air Force.

## INSTALATION

- Create a folder into **C:\Program Files\Microsoft Games\FS2002\Aircraft** and name it "T-41D Mescalero Hellenic Air Force Academy".
- Open the "T-41D effects" folder, then COPY & PASTE its contents into destination **C:\Program Files\Microsoft Games\FS2002\Effects**. Overwrite any existing FS2K2 "fx" files with the same name if it is needed so. This will NOT harm your FS2002 system for other aircrafts! If you do not want to overwrite the existing FS2K2 "fx" files, backup them first.
- Finally COPY & PASTE all the other folders & files into destination **C:\Program Files\Microsoft Games\FS2002\Aircraft\T-41D Mescalero Hellenic Air Force Academy**.

Anyway, after a successful installation, you are now OK to start your FS2K2 and go flying. To select this aircraft, you'll find it under the manufacturer's name of "Cessna" into the "Select Aircraft" menu of FS2K2. Read carefully the following pages to learn about aircraft's specifications and how you can fly this aircraft in FS2K2 successfully.

## RELATED LINKS

[http://www.haf.gr/gea\\_gr/ekpaidef/si/index.htm](http://www.haf.gr/gea_gr/ekpaidef/si/index.htm)  
<http://www.haf.gr>  
[http://www.airwar.ru/enc\\_e/other/t41.html](http://www.airwar.ru/enc_e/other/t41.html)  
<http://www.hri.org/nodes/grmil.html>  
<http://www.eexi.gr/spa/hafmuseum/museum.htm>

## NOTES

- This Cessna T-41D Mescalero aircraft contained in this **T-41D\_HAF\_v1.zip** is fully compatible with FS2K2
- This aircraft is not meant to be artistically brilliant, but to give a faithful as possible rendition of what it is like to fly this aircraft. It is also frame rate friendly.
- This Hellenic Air Force's Academy T-41D Mescalero repaint archive is for a **STRICTLY FREEWARE USE ONLY**. and NO COMMERCIAL GAIN BY ANYONE IS ACCEPTABLE. This repaint should NOT UNDER ANY CIRCUMSTANCES be uploaded and or displayed on payware FS sites or ANY of its associated subsidiaries. If it is, or available on any website offering this archive in return for money, any appropriate legal action will be undertaken using appropriate International copyright laws.
- The re-painter of this package is in no way liable for any damage it may cause from incorrect use (however unlikely that it may be).
- Questions & comments, bug reports etc can be made to my E-mail address [pathfinder@mail.gr](mailto:pathfinder@mail.gr)
- This Hellenic Air Force's T-41D Mescalero repaint should NOT be uploaded to ANY InterNet site without the repainter's confirmation.



# Cessna T-41D Mescalero

## flight manual for use in FS2K2

### GENERAL

This flight manual is made NOT to give you the knowledge to fly the real plane, but to be able to simulate a typical Cessna T41D behavior in a FS2K2 environment. No matter this Cessna T41D Mescalero model for FS2K2 is made and test to fly and behave as close to the real Cessna 172 flight envelope as can be (Microsoft says...), you must NOT attempt to use these informations included in this FS2K2 flight manual to fly an aircraft in real aviation situations!!!

### **WARNING**

**The author has NO responsibility if FS2K2 tactics explained in the present flight manual will be considered as real aviation tutorials and be the reason of an aviation accident, leathal injury or death. These information are for Microsoft Flight Simulator use ONLY**



### FLIGHT STAGES

The stages you're going to follow to fly this T-41D aircraft in FS2K2 does not contain subjects such as preperation of flight, exterior aircraft inspection etc. There is also the original Cessna's approved checklist contained in the [T-41D\\_HAF\\_v1.zip](#) you've downloaded from the InterNet, and you are free to folow if you'd like to have the feeling of aircraft's receiving, inspecting, starting on, take it to the sky, fly it, land it and finaly park it at the apron line...just as the real T-41D pilots do.

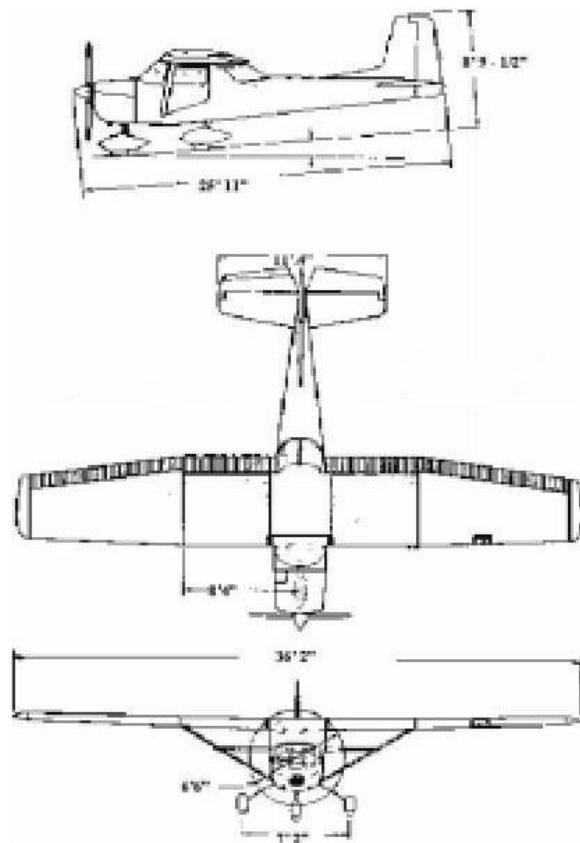
The stages you can follow in a FS2K2 situation and will be explained to you, are the following:

- Starting up the engines,
- Applying power,
- Taxiing to the line,
- Before take off preparations,
- Take off procedures,
- Enroute climbing,
- Fuel balance & aircraft trimming,
- Cruise,
- Descending,
- Landing,
- Go arround & emergency situations,
- Engine shutdown,
- Unusual situation flying,
- Engines & systems limitations.

## AIRCRAFT DATA & SPECIFICATIONS

The T-41D Mescalero, a short range, high winged trainer aircraft, is the military version of the Cessna 172. It is used primarily for flight testing, tactical navigation (TACAV) training, and orientation flights for pilot candidate screening. The T-41D is equipped with modern avionics and other equipment consistent with military missions. Including GPS systems in all the aircraft.

The T-41D model is used by Air Training Command for preliminary flight screening of Air Force pilot candidates before their entry into undergraduate pilot training. The Hellenic Air Force Academy acquired the T-41D in 1968 for use in its pilot indoctrination program, which allows cadets to experience in an aerial environment principles learned in other academic courses. Cadets in the program fly approximately 40 hours dual and solo, and receive their first Air Force flight check. A total of 20 were received by Hellenic Air Force. The Hellenic Air Force began replacing the T-41Ds with a more advanced aircraft capable of aerobatics beginning in 2001.



T-41D Mescalero specifications

Role:	Air Force Acedemy trainer
Manufacturer:	Cessna aircraft Co.
Engine:	1 x Continental piston engine (IO-360-DB)
Power:	210 Hp
Length:	26 ft 6 in / 8.72 m
Height:	8 ft 11 in / 2.72 m
Wing span:	36 ft 2 in / 10.92 m
Wings area:	16.16 sq. m
Weight:	1406 lbs / 638 kg empty 2300 lbs / 1043 kg normal TOW 2550 lbs / 1157 kg maximum TOW
Maximum speed:	158 KIAS / 293 km/h / 0.30 Mach
Cruising speed:	102 KIAS / 188 km/h
Maximum range:	600 nm / 1111 km at 10000 ft / 3048 m
Ceiling:	16000 ft / 4877 m
Armament:	None
Crew:	2 (student pilot and instructor pilot)
Date deployed:	1968



## COCKPIT PANEL & CONSOLES

This [T-41D\\_HAF\\_v1.zip](#) you've downloaded from the InterNet, is fully compatible with the FS2K2 default Cessna 172 panel which already contained in your. The most of the FS2K2 virtual pilot's actions on this panel, effects on this T-41D's aircraft model in FS2K2, just like as real pilot's actions on the real aviation. The panel consists by five (5) screens. To activate / de-activate each one of the following screens you must press **Shift + 2** or **Shift + 3** or **Shift + 4** or **Shift + 5**. Additionally you can use one of the following buttons on the panel to activate / de-activate each one of the screens.

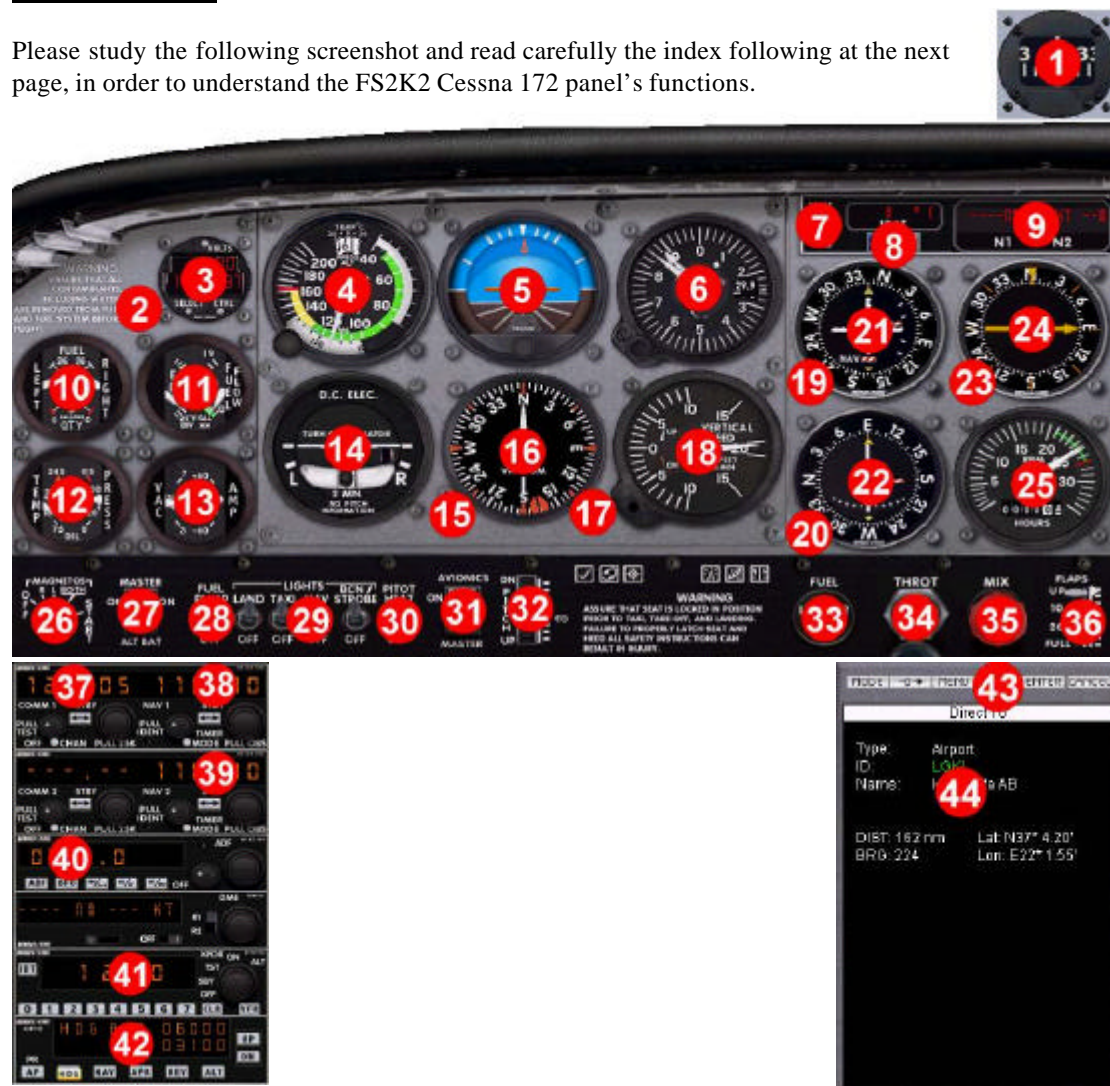


- The **Main panel** contains the most of the flight instruments,
- The **Radio stack** contains the auto pilot, the communication & navigation frequency panel, seen by pressing **Shift + 2** or by pressing the button **D**.
- The **GPS** seen by pressing **Shift + 3** or by pressing the button **E**.
- The **Annunciator panel** seen by pressing **Shift + 4**
- The **Compass** seen by pressing **Shift + 5** or by pressing the button **F**.

You can also use button **A** to display / hide the **Kneeboard**, button **B** to display / hide the **ATC window** and button **C** to display / hide the **Flight map**

## PANEL INDEX

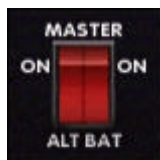
Please study the following screenshot and read carefully the index following at the next page, in order to understand the FS2K2 Cessna 172 panel's functions.



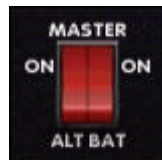
- |     |                               |     |                                  |
|-----|-------------------------------|-----|----------------------------------|
| 01) | Magnetic compass              | 23) | ADF select knob                  |
| 02) | A/P master switch             | 24) | ADF indicator                    |
| 03) | Digital clock                 | 25) | Engine RPM tachometer            |
| 04) | Airspeed indicator            | 26) | Engine ignition & magneto switch |
| 05) | Attitude indicator            | 27) | Master ALT / BAT switch          |
| 06) | Altimeter                     | 28) | Fuel pump switch                 |
| 07) | NAV / GPS mode switch         | 29) | Lights swithes                   |
| 08) | Marker lights                 | 30) | Pitot heating switch             |
| 09) | NAV1 / NAV2 DME               | 31) | Avionics master switch           |
| 10) | Fuel tank level indicator     | 32) | Elevator trimmer                 |
| 11) | Fuel flow indicator           | 33) | Fuel tank selector               |
| 12) | Oil temperature indicator     | 34) | Throttle                         |
| 13) | Ammeter                       | 35) | Mixture knob                     |
| 14) | Turn coordinator              | 36) | Flap lever                       |
| 15) | Heading indicator adjust knob | 37) | COM1 frequency                   |
| 16) | Heading indicator             | 38) | NAV1 frequency                   |
| 17) | Heading bug adjust knob       | 39) | NAV2 frequency                   |
| 18) | Vertical speed indicator      | 40) | ADF frequency                    |
| 19) | NAV1 OBS knob                 | 41) | Transponder frequency            |
| 20) | NAV2 OBS knob                 | 42) | Autopilot panel                  |
| 21) | VOR1 indicator                | 43) | GPS contol buttons               |
| 22) | VOR2 indicator                | 44) | GPS display                      |

## STARTING UP THE ENGINES

Starting the engines up is an easy procedure. First off all set your parking brakes ON. By clicking with your mouse on the **Master ALT / BAT switch (27)** and **Avionics master switch (31)** set the switches to ON position and check if the instruments are indicating normally. Before “feeling” your battery going “down”, you must start up your engine just to keep AC / DC power within limits.



Battery **OFF**



Battery **ON**



Avionics **OFF**



Avionics **ON**

So follow the engine start up procedures for your T-41D airplane, by clicking your mouse's left button on the **Fuel tank selector (33)** to **B** (both), position just like the following screenshots are showing. Setting the **Fuel tank selector (33)** to **L** (left), or **R** (right) position is also OK! After that, you must set the **Mixture knob (35)** to rich (full inside position).



You've just “open” engine's fuel valves. Here comes the difficult part! Please read carefully in order to understand and not have any problems with this situation. To turn on your engine you must click with your mouse on the **Engine ignition & magneto switch (26)** as it is shown at the screenshot to set the switch at **START** position and **keep your mouse left button pressed** until you'll hear the engine rotating. By keeping the mouse left button pressed on the switch you simulate the button key “ignition” action. After starting up the engine, release the mouse button to let the key switch come back at the “neutral” **BOTH** position.



Magnetos **OFF**



Magnetos **START**

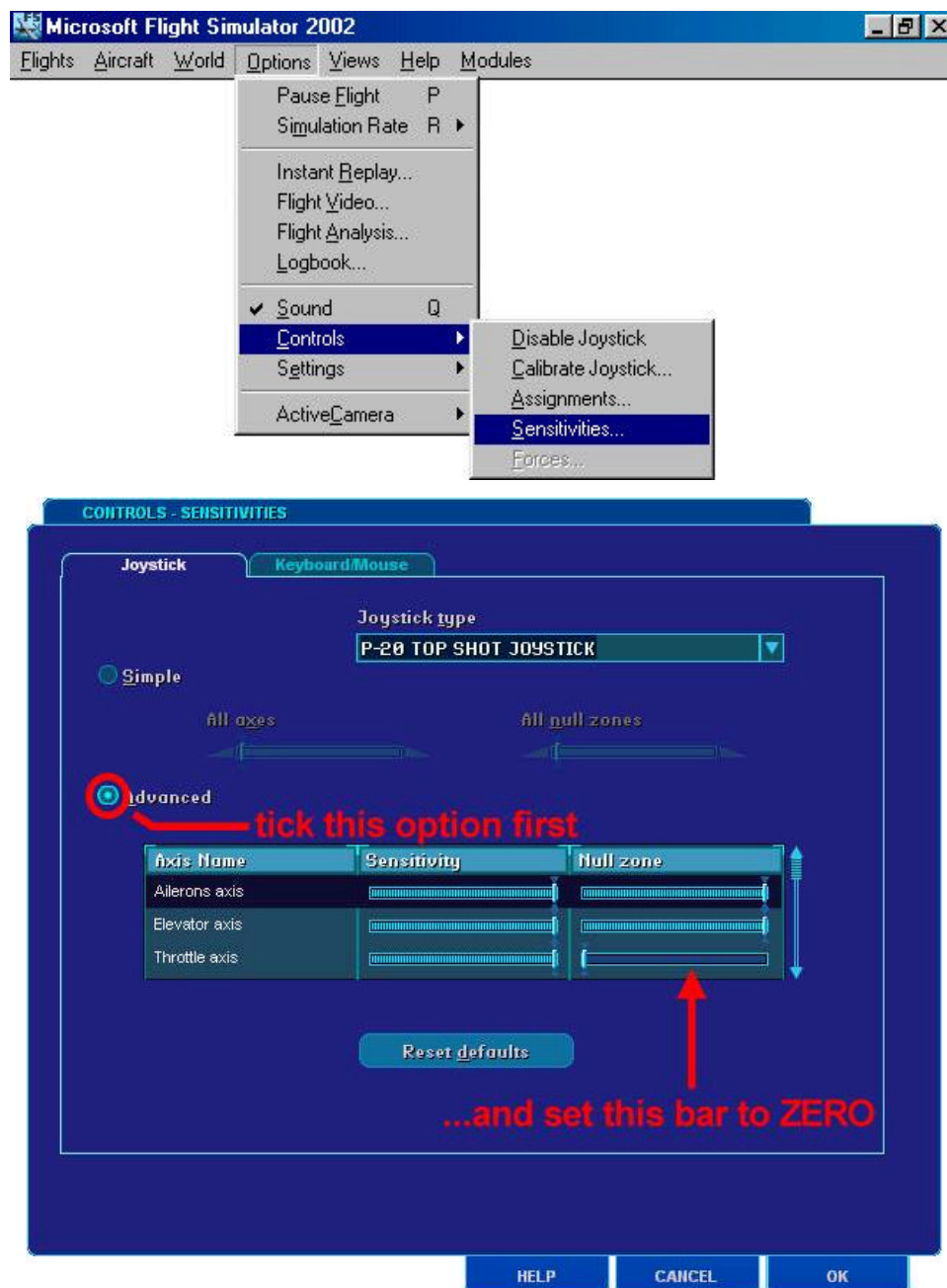
## APPLYING POWER

To set your throttles to **IDLE**, simply press **F1** button on your keyboard or press **F4** button for **MAX**.

### CAUTION

If you use a control stick or a flight yoke equipped with a throttle lever you **must** press the **F1** button on your keyboard to set your throttles to IDLE means 65% of total power (just to keep the engine rotating) and the **F4** button if you want to set your thrust power at MAX. If you just set your throttle lever at the "BACK" position you will **unfortunately** set your thrust power at 73% means 8% more thrust power which will be a problem while trying to descend. By the same way if you set your throttle lever at the "AFT" (front) position you will only set your thrust power at 92% means 8% less thrust power which will be a problem while trying to accelerate. **This is a known FS2K2 bug, so use **F1** and **F4** buttons as required!**

To overlay this problem you can do the following: On your FS main menu (top of the screen) click on **Options / Controls / Sensitivities** and set your bars as the following screenshot shows! You **MUST** have your throttle's axis **Null zone** bar setted to ZERO (full left)! This means that you can have thrust variety from **65%** to **100%** and not the wrong **73%** to **92%** !!!



## TAXIING

At this moment your engine is alive, your throttles are set to IDLE and your gear brakes are ON. Set your flap lever to FULL, reset your **Altimeter (6)**, neutralise your **Elevator trimmer (32)** by clicking on it and check the **Attitude indicator (5)** and **Turn coordinator (14)** for malfunctions.

Release the gear brakes and apply power by setting the throttles forward too gently and wait the engine to reply. Do NOT attempt violent throttle move if you do not want to damage your T-41! When taxiing, it is important that speed and use of brakes be held to a minimum and that all controls be utilized to maintain directional control and balance. Taxiing over loose gravel or cinders should be done at low engine speed to avoid adbrasion and stone damage to the propeller tips. While taxxing to the line, check the flight controls. The best taxi speed is between 15 and 20 Knots.

### CAUTION

Do not exceed this speed limit unless of an emergency situation.

## BEFORE TAKE OFF PREPARATIONS

Be sure that all the instruments are working within the limits. Line up and follow the checklist. Set your gear brakes **ON**. Test the engines by applying **MAX** to the throttle, let it 2-3 sec and retract it back to **IDLE** to ensure that the engine is rotating by the numbers. If the engine accelerates smoothly, the airplane is ready for take off.

The magneto check should be made at 1800 RPM as follows. Move ignition switch first to **R** (right) position and note RPM. Next move switch back to **BOTH** position to clear the other set of plugs. Then move switch to the **L** (left) position, note the RPM and return the switch to **BOTH** position. The RPM should NOT exceed 150 RPM on either magnetos. If there is a doubt concerning operation of the ignition system, RPM checks at higher engine speeds will usually confirm whether a deficiency exists. An adbnese of RPM drop may be an indication of faulty grouping of one side of the ignition system or should be cause for suspicion that the magneto timing is set in advance of the setting specified.

## TAKE OFF

T-41D's flaps position are the following: **UP**, **10°**, **20°**, and **FULL**. Normal and short field take offs are performed with flaps **UP**. Flap settings greater than **10°** are NOT approved for take off. Use of **10°** flaps is reserved for minimum ground runs or for take off from soft or rough fields. Use of flaps allows save use of slightly lower take off speeds than with flaps **UP**.

The lower speeds result in shortening the ground run and total distance over a 50 ft obstacle by approximately 10%. However, this advantage will be lost if flaps **UP** speeds are used, or in high altitude take offs in hot weather at maximum weight where climb would be marginal with **10°** flaps. Therefore, the use of **10°** flaps is NOT recommended for takeoff over an obstacle at high altitudes in hot weather.

Set the flap lever as required and set the throttle to **MAX**. Let the engine to reply and after 3-5 sec release the brakes. Approaching 59 KIAS (when using flaps **UP**) or 55 KIAS (when using flaps **10°**) is the right time to raise the nose **SMOOTHLY** to takeoff attitude. Maintain this attitude and allow the aircraft to fly off the ground, which will normally occur between 61 KIAS and 70 KIAS. Set the aircraft's nose up, as high as it is neccesary to establish and maintain a possitive climb rate. Raise wing flaps after any obstacles are cleared or aircraft is at safe altitute and airspeed.

## CLIMBING

Normal climbs are performed with flaps lever at **UP** position and **Throttle (34)** at full inside position and at speeds depending 5 to 10 KIAS higher than best rate of climb speeds for the best combination of performance and visibility. The **Mixture knob (35)** should be full rich (full inside position) below 3000 ft and may be leaned above 3000 ft for smoother operation or to obtain maximum RPM.



For maximum rate of climb, use the Cessna climb charts. Climb charts (used in real aviation and **NOT** in FlightSim) provide aircraft climb performance, which includes time, distance and fuel required to climb as well as estimated cruise-climb altitude & service ceiling for a various of drag indices. For this purpose, you can also use the following chart seen below:

WEIGHT Lbs	PRESS ALT ft	CLIMB SPEED KIAS	RATE OF CLIMB			
			-20° C	0° C	20° C	40° C
2300	Sea level	73	875	815	755	695
	2000	72	765	705	650	590
	4000	71	655	600	545	485
	6000	70	545	495	440	385
	8000	69	440	390	335	280
	10000	68	335	285	230	-
	12000	67	230	180	-	-

Power settings between **90%** and **95%** RPM will provide a comfortable climb rates between 65 KIAS to 68 KIAS for intermediate altitude level-offs. Maximum thrust instrument climbs require extremely high pitch angles and are not normally used for instrument departures. If condition require a maximum thrust climb, maintain a climb indication until approaching the recommended climb airspeed and then adjust pitch to maintain climb schedule. The best recommended climb rate is succeeded when maintain a 18 degree to 22 degree climb and 70 KIAS speed.

## CRUISE

Normal cruising is performed between 55% and 75% power. The engine RPM and corresponding fuel consumption for various altitudes can be determined by using the official Cessna power computer or cruising charts. These cruising charts (used in real aviation and **NOT** in FlightSim) provide aircraft cruising performance, which includes time, distance and fuel required to fly as well as estimated cruise-climb altitude & service ceiling for a various of drag indices. To perform the best cruise behavior you should maintain the engines RPM indications within the “green area” on the **Engine RPM tachometer (25)**.



## FUEL BALANCING AND TRIMING

Loading any internal stores may affect aircraft CG characteristics. Loading of fuel tanks has a negligible aerodynamic effect on longitudinal stability. As you might feel when you'll fly the T-41D in FS2K2, this model can be fully fuel loaded with total 52 gal (26 each tank). You can “load” each tank with fuel starting from 0% to 100%. This means that if you decide to load for example 25 gals in the left tank and 18 gals in the right tank you'll have balance problems that you should attempt to repair by trimming. When the main flight line will be established apply as much left or right trim as it is needed to center the aircraft's balance. As the fuel getting lower you should trim again as much as it is needed.

By the same way pitch trimming should be applied each time you'll try to climb or descend after established in the desired altitude. Fully trim actions take place on the LANDING phase of flight as it is shown and explained later. In the following chart FUEL QUANTITY (in US gal) is shown:

TANK	N.	Usable fuel all flight conditions	Additional usable fuel (Level flight)	Unusable fuel (Level flight)	TOTAL FUEL VOLUME EACH
Left	1	23 gal	2 ½ gal	½ gal	26 gal
Right	1	23 gal	2 ½ gal	½ gal	26 gal

SETTINGS - FUEL

Fuel weight Lbs/Gal: 6.000000

Fuel selector  
All

Type	%	Gallons	Pounds	Capacity (Gal)
Left	100	26	156	26
Right	100	26	156	26

Total:

52

312

Adjust your aircraft's fuel settings using this list of available tanks.

HELP

CANCEL

OK

## DESCENDING

After setting your NAVigation aids up to establish a heading to airport, you should follow up the descent charts. Maximum range descend charts determine fuel, time and distance required to descend from altitude at IDLE thrust. For use in FS2K2 you do not need to follow up these charts but you should make an effort to prevent overspeed! Use the throttle as required to reduce the cruising



speed and perform an as normal as can be succeeded descend. The best speed to perform a normal procedure descend is between 85 KIAS and 90 KIAS while VSI is established at -800 ft/min.

## LANDING

The official landing procedures should be used to land the T-41D in FS2K2 environment too. Normal landings approaches can be made with **Power ON** or **Power OFF** with any flap setting desired. Surface winds and air turbulence are usually the primer factors in determining the most comfortable approach speeds. Steep slips should be avoided with flap settings greater than 20° due to a slight tendency for the elevator to oscillate under certain combinations of airspeed, sideslip angle and center of gravity loadings.

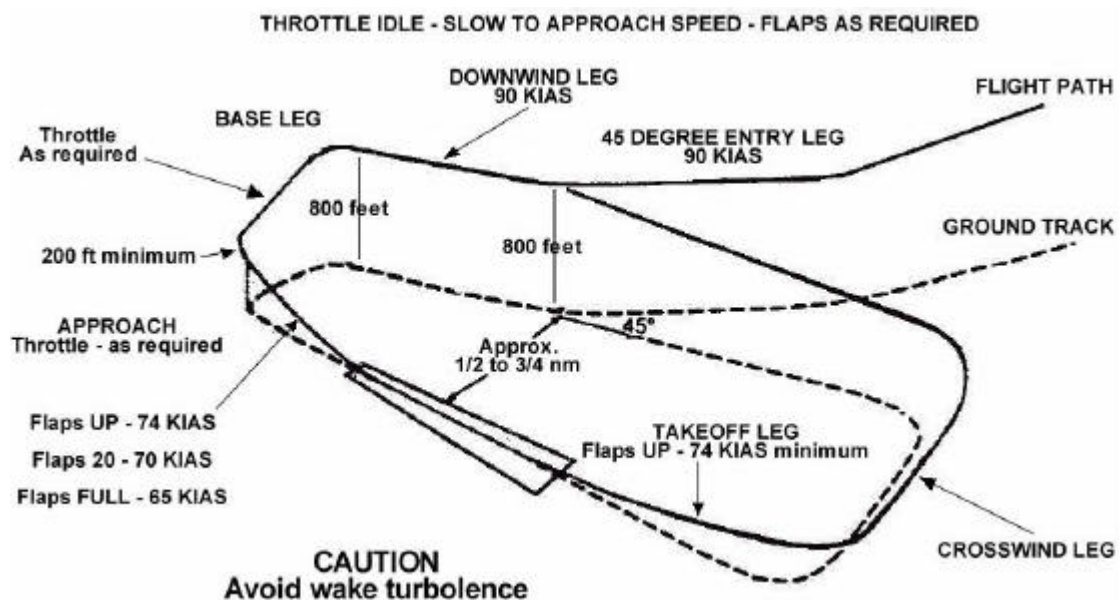
- Normal landing: The normal landing is accomplished from a rectangular pattern. Downwind should be 3/4 nm from the runway and flown at 800 ft AGL and 90 KIAS reduce power to idle on downwind abeam the 1/2 nm point on final and slow to approach speed in level flight. Normal configuration is 20° of flaps, lowered (below 85 KIAS) on downwind. Turn base leg immediately after establishing the 70 KIAS approach speed. Maintain 70 KIAS throughout base and final. Power should be added at any time that it is required to maintain a normal glidepath for the flap setting. Under most conditions, this is a **Power ON** approach.

During the final approach, adjust the aimpoint to arrive over the runway threshold at an altitude and airspeed which may permit a smooth reduction in power and gradual increase in pitch attitude for touchdown on the main wheels. Attempting to touch down at an excessive airspeed may result in a three-point or nosewheel-first landing which may cause porpoising or wheelbarrowing. After the touchdown, continue to hold sufficient backpressure to keep the nosewheel off the runway. Maintain direction control using nosewheel steering and differential braking as necessary.

- Flaps **UP** landing: Traffic patterns are similar to the normal landing except that flaps are not used. Approach speed is 74 KIAS. If wind conditions (i.e., tailwinds) result in a need to slip during subsequent noflap patterns, reduce bank angle during turn from downwind to base to allow for a longer final.
- Flaps **FULL** landing: The full flap landing permits a slightly steeper final approach and slower approach speed. The full flap pattern should be flown as the normal pattern except that downwind is displaced 1/2 nm from the runway. Power is reduce to idle abeam the 1/4 nm point on final, and flaps are lowered to full on final. Maintain 70 KIAS while the flaps are at **20°** and 65 KIAS once the flaps are lowered to **FULL** position. Additional spacing must be obtained on takeoff leg when planning a **FULL** flap landing.
- Crosswind landing: Use the wing low method, crab, or combination of both to maintain runway alignment during final approach. Touch down using the wing low method. Use aileron throughout the landing roll to counteract the effect of the crosswind. After touchdown, lower the nose smoothly to the runway as soon as possible and maintain directional control using nosewheel steering. To preclude wheel barrowing, avoid using forward control pressure at high speeds. In strong or gusty crosswinds, fly a flaps **UP** approach and add 5 KIAS to 10 KIAS to the flaps **UP** approach speed.

#### **NOTE**

As soon as you establish the final line for landing you should attempt your landing. To make a successful landing try to trim the aircraft in order to maintain a pitch angle by 5 degrees to 10 degrees. Land the aircraft by setting the throttle back to **IDLE** position or as back as needed to make it “glide” and finally touchdown as smooth as possible. You can increase / decrease the aircraft’s sink rate by setting the throttle at the “right place”.



Braking effectiveness increases as forward speed decreases. Use brakes as necessary to decelerate to a safe taxi speed before turning off the runway. If maximum braking is required, lower the nosewheel to the runway, raise the flaps (if used) and apply the brakes, constantly increasing pedal pressure as the aircraft's speed decreases.

#### **NOTE**

Holding the control wheel aft of neutral will decrease aircraft weight on the nosewheel and increase braking effectiveness.

## GO AROUND

If conditions make a landing or approach unsafe, make a go-around. Make the decision to go around as soon as possible. If touchdown is unavoidable, do not try to hold the aircraft off the runway, but continue to fly the aircraft to touchdown. If a touchdown is made, lower the nose slightly to a normal takeoff attitude and allow the aircraft to accelerate to takeoff. When a go-around is required at low altitude, proceed as follows:

- Throttle – **MAX** (full inside)
- Flap lever – **UP** position

Raise the flap lever to **20°** position as soon as conditions permit. Raise the flap lever to **UP** position after attaining a minimum speed of 74 KIAS.

### WARNING

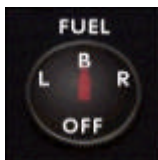
Avoid using excessive bank angles at low altitudes because stall speed increases as bank angle increases and sufficient altitude may not be available for recovery.



## ENGINES SHUT DOWN

After taxiing back to apron (taxiing procedures explained before) stop the aircraft, set PARKING BRAKES and follow the “Engine shut down” procedure. Retract the throttle back to **IDLE** by setting your flightyoke / joystick’s throttle lever “back” or by pressing the **F1** key on your keyboard and using the instrument engine switches, shut the engine down.

Click your mouse’s left button on the **Fuel tank selector (33)** to **OFF** position, just like the following screenshot is showing. Now you’ve just “close” engine’s fuel valves and normally the engine is not running. After the propeller is stopped, click with your mouse on the **Engine ignition & magneto switch (26)** as it is shown at the following screenshots to set the switch at the **OFF** position.



Fuel **BOTH**



Fuel **OFF**

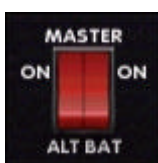


Magnetos **BOTH**

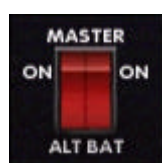


Magnetos **OFF**

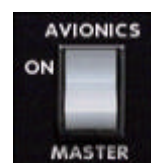
After engine shuts down you must switch off the **Fuel pump switch (28)**, the **Lights switches (29)**, the **Pitot heating switch (30)**, the **Master ALT / BAT switch (27)** and the **Avionics master switch (31)**.



Battery **ON**



Battery **OFF**



Avionics **ON**



Avionics **OFF**

## UNUSUAL SITUATION FLYING

### **Stalls:**

The stall characteristics of the aircraft are conventional in all configurations. Stall warning is provided by a stall warning horn between 5 KIAS and 10 KIAS above the stall, and in some instances, by a noticeable aircraft buffeting. In a **Power-ON** situation the aircraft may or may not buffet prior to stalling. If recovery is not initiated at this point, the nose will fall abruptly even if full aft elevator is held. One wing may drop before the other if the aircraft is in uncoordinated flight when it stalls. The factors that affect the stalling characteristics are weight, load factor, airspeed, flap setting, power setting, and coordination (slips or skids). Refer to the following charts for stall speeds. When the aircraft approaches a stall, the control surfaces lose some, if not all, of their effectiveness. As the angle of attack increases, the order in which the loss of control surface effectiveness occurs is ailerons, elevator, and rudder. During the recovery from a stall, the control surfaces will regain their effectiveness in reverse order. The aircraft is constructed so that the wing will stall progressively outward from the wing root to the wingtip. This is called “washout” and provides aileron control effectiveness as long as possible.

Most REARWARD center of gravity

Weight Lbs	Flap deflection	Angle of bank			
		0°	30°	45°	60°
		KIAS	KIAS	KIAS	KIAS
2300	UP	42	45	50	59
	10°	38	40	45	54
	FULL	36	38	43	51

Most FORWARD center of gravity

Weight Lbs	Flap deflection	Angle of bank			
		0°	30°	45°	60°
		KIAS	KIAS	KIAS	KIAS
2300	UP	47	51	56	66
	10°	44	47	52	62
	FULL	41	44	49	58

### **Spins:**

Intentional spins are approved in this airplane within certain restricted loadings. Spins with baggage loadings or occupied rear seats are not approved. It is recommended that, where feasible, entries be accomplished at high enough altitude that recoveries are completed 4000 ft or more above ground level. At least 1000 ft of altitude loss should be allowed for a 1-turn spin and recovery, while a 6-turn spin and recovery may require somewhat more than twice that amount. For example, the recommended entry altitude for a 6-turn spin would be 6000 ft above ground level. In any case, entries should be planned so



that recoveries are completed **well above** the minimum 1500 ft above ground level required by aviation regulations. Another reason for using high altitudes for practicing spins is that a greater field of view is provided which will assist in maintaining pilot orientation.

The normal entry is made with a **Power OFF** stall. As the stall is approached, the elevator control should be smoothly pulled to the full aft position. Just prior to reaching the stall “break”, rudder control in the desired direction of the spin rotation should be applied so that full rudder deflection is reached almost simultaneously with reaching full aft elevator. A slightly greater rate of deceleration than for normal stall entries, application of ailerons in the direction of the desired spin and use of power at the entry will assure more consistent and positive entries to the spin. As the airplane begins to spin, reduce the power to **IDLE** and return the ailerons to neutral. Both elevator and rudder controls should be held full with the spin until the spin recovery is initiated. An inadvertent relaxation of either of these controls could result in the development of a nose-down spiral.

Regardless of how many turns the spin is held or how it is entered, the following recovery technique should be used:

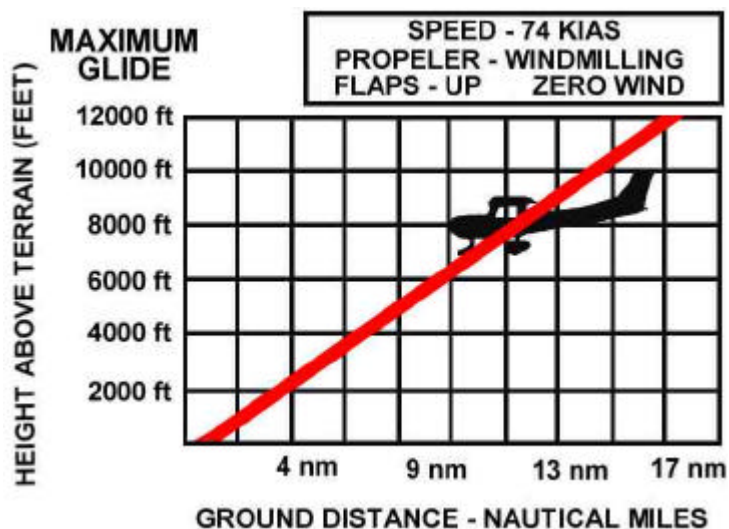
- Verify that the throttle is in **IDLE** position and ailerons are **NEUTRAL**.
- Apply and hold **FULL** rudder opposite to the direction of rotation.
- Just after the rudder reaches the stop, move the control yoke briskly **FORWARD** far enough to break the stall.
- Hold these control inputs until rotation stops.
- When rotation stops, set rudder to **NEUTRAL** and make a smooth recovery from the resulting dive.

The recovery technique should always be used and will result in the most expeditious recovery from any spin. Intentional spins with flaps extended are prohibited, since the high speeds which may occur during recovery are potentially damaging to the flap / wing structure.

#### Engine failure emergencies:

An engine failure may or may not give you any warning. Prior warning is normally in the form of a rough running engine, loss of oil pressure, sudden or uncontrollable rise in oil temperature, sudden rise in oil pressure, or fluctuating RPM. If a restart is warranted do the following:

- 1) Glide - **ESTABLISH**
  - Flaps **UP** - 74 KIAS,
  - Up to **20°** flaps - 70 KIAS,
  - Over **20°** flaps - 65 KIAS.
- 2) Mixture - **RICH**
- 3) Throttle - **IN HALF-WAY**
- 4) Fuel selector - **BOTH**
- 5) Fuel shutoff knob - **IN**
- 6) Ignition switch - **BOTH**
- 7) Master switch - **ON**
- 8) Auxiliary fuel pump switch - **LOW**
- 9) Ignition switch - **START**, if propeller is stopped or is rotating intermittently.
- 10) Mixture - **ADJUST** to maintain smooth engine operation.
- 11) If restart is unsuccessful – Try a forced landing.



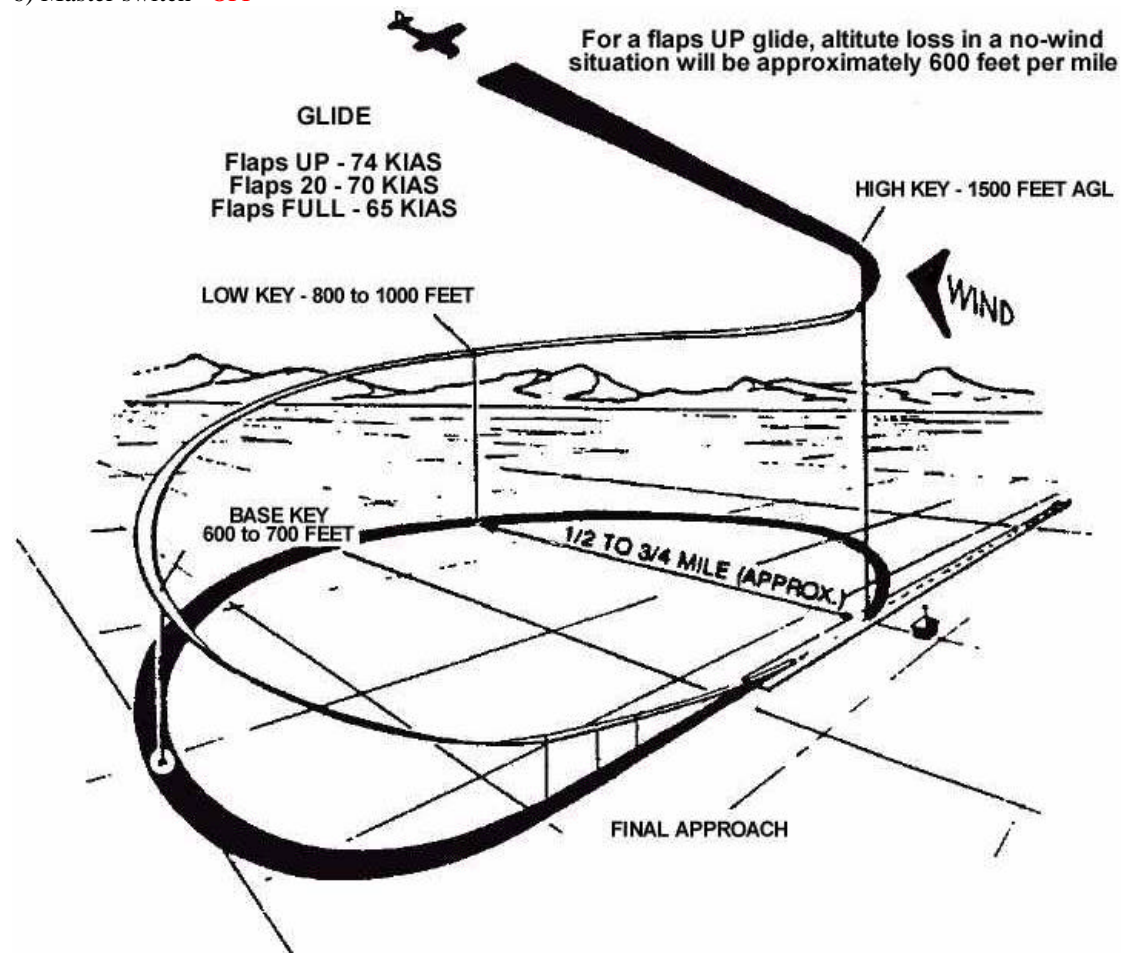
#### WARNING

**If engine does not start, do not waste time in futile attempts to restart the engine.  
Maintain the glide and make a forced landing**

### Forced landing:

In the event of an engine failure and airtasks are unsuccessful or not deemed advisable, proceed as follows on "typical force landing pattern" as shown at the following screenshot:

- 1) Glide - **ESTABLISH**
  - Flaps **UP** - 74 KIAS,
  - Up to **20°** flaps - 70 KIAS,
  - Over **20°** flaps - 65 KIAS.
- 2) Mixture - **FULL LEAN**
- 3) Fuel shutoff knob - **OFF**
- 4) Ignition switch - **OFF**
- 5) Flaps - **AS REQUIRED**
- 6) Master switch - **OFF**



### ENGINES & SYSTEMS LIMITATION

- Maximum speed limit (glide, dive or smooth air): 158 KIAS
- Flaps **FULL** maximum operating / damaging speed: 87 KIAS
- Maneuvering speed \*: 110 KIAS  
(\*) The speed at which you can use abrupt control travel without exceeding the design load limit.
- Prohibited maneuvers: Slips with over **30°** flaps extended and whip stalls.
- Minimum oil pressure: 25 PSI / Maximum oil pressure 100 PSI
- Engine: Shuts down when above 16000 ft.
- Nose wheel steering: Never turn the nose wheel more than **30°** either side of center, or structural nose gear damage could result.
- Load factor limit: +3.8 G / -1.52 G when flaps **UP** and +3.0 G when flaps **FULL**.

# Hellenic Air Force T-41D photos





