

Northrop F-5A Freedom Fighter of Hellenic Air Force 343 sqdr for FS2K2



GENERAL

First of all I'd like to thank Denis da Silva for giving me the permission to repaint his wonderful F-5A original model. Thank you too, for downloading this aircraft repaint. The Northrop's F-5A Freedom Fighter used to be one of the most favorites and effective aircrafts ever built. This version has been specifically created as an honor to the 343rd Sqdr of Hellenic Air Force based in Thessaloniki, Greece where the author used to serve as an N/R/F-5A/B fighter pilot untill the early 2001.

CREDITS

- Original model and paint (Brazilian Air Force) by **Denis da Silva** denissilvaoliveira@ig.com.br & **Daniel da Silva** dsnirvana@ig.com.br
- Sound files via **Angelos Hatzikatakos** angelos.hatzikatakos@t-online.de Mirage F1CG HAF repaint of original **Kirk Olsson's** Mirage F-1C.
- Panel design, gauges cordination etc by the repainter **Nick Karatzides** pathfinder@mail.gr
- Hellenic Air Force "Aegean Blue" repaint, strobe & landing light effects on this model, flight dynamics (created and tested to the limits...), FS2K2 screenshots and checklist procedures by **Nick Karatzides** pathfinder@mail.gr

INSTALLATION

- Create a folder into C:\Program Files\Microsoft Games\FS2002\Aircraft and name it **F-5A Freedom Fighter Hellenic Air Force**.
- Open the "F-5A 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.
- Open the "F-5A gauges" folder, then COPY & PASTE its contents into destination **C:\Program Files\Microsoft Games\FS2002\Gauges**. Overwrite any existing FS2K2 "gau" 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 "gau" files, backup them first.
- Finally, COPY & PASTE all the other folders & files into **C:\Program Files\Microsoft Games\FS2002\Aircraft\F-5A Freedom Fighter Hellenic Air Force**.

Anyway, after a successfull 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 "Northrop" 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 succesfully.

RELATED LINKS

<http://philippos.mpa.gr/gr/other/343/index.html>
<http://philippos.mpa.gr/gr/other/343/start.html>
<http://www.hellasarmy.gr/f5a.htm>
<http://home.att.net/~jbaugher1/f5.htm>
http://home.att.net/~jbaugher1/f5_9.html
<http://www.fitertown.com/f5/>
<http://www.fitertown.com/f5/history.html>
<http://www.1000aircraftphotos.com/PRPhotos/NorthropF-5.htm>
<http://www.fas.org/man/dod-101/sys/ac/f-5.htm>
<http://www.eexi.gr/spa/aniv4.htm>
<http://www.eexi.gr/spa/aniv.htm>
<http://www.vogue-web.ch/phantom/haf.html>
http://www.mod.gr/fylladia/backup_bible/e_k4_4.htm
<http://www.aeroflight.co.uk/waf/greece/greekaf2.htm>
http://www.model-news.com/gebaut/f_5haf/MAGICFIV.html
<http://www.fas.org/man/dod-101/sys/ac/f5.wrl>

KNOWN BUGS

There are known “bug” is sues with this model, and I’ll explain them to you, as best I can:

- In real aviation there are two white combination landing - taxi lights, one under each side of the fuselage inboard of each engine nacelle area, retract with the main gear system and extend when the gears are fully extended. In this model there is not any connection between landing gear and landing - taxi lights. Gear UP or DWN, unfortunately does not have any effect on the lights. If you want to switch them off, you must turn the FS lights to OFF position by using the panel switches or keyboard buttons.
- No matter the “aircraft.cfg” and the aircraft’s “air” file made this way to damage the gears and the rudder when they are used over the aircraft’s flight envelope, it does not work all the times,...I’m still trying to fix that!

NOTES

- This F-5A Freedom Fighter contained in this **F-5A_HAF_v1.zip** package is a fully compatible aircraft with FS2K2.
- This aircraft package 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 “Aegean Blue” repaint archive is a **STRICLY FREEWARE 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
- This Hellenic Air Force “Aegean Blue” F-5A repaint (original model by Denis da Silva) should NOT be uploaded to ANY InterNet site without the repainter’s confirmation.

MY FUTURE PROJECTS

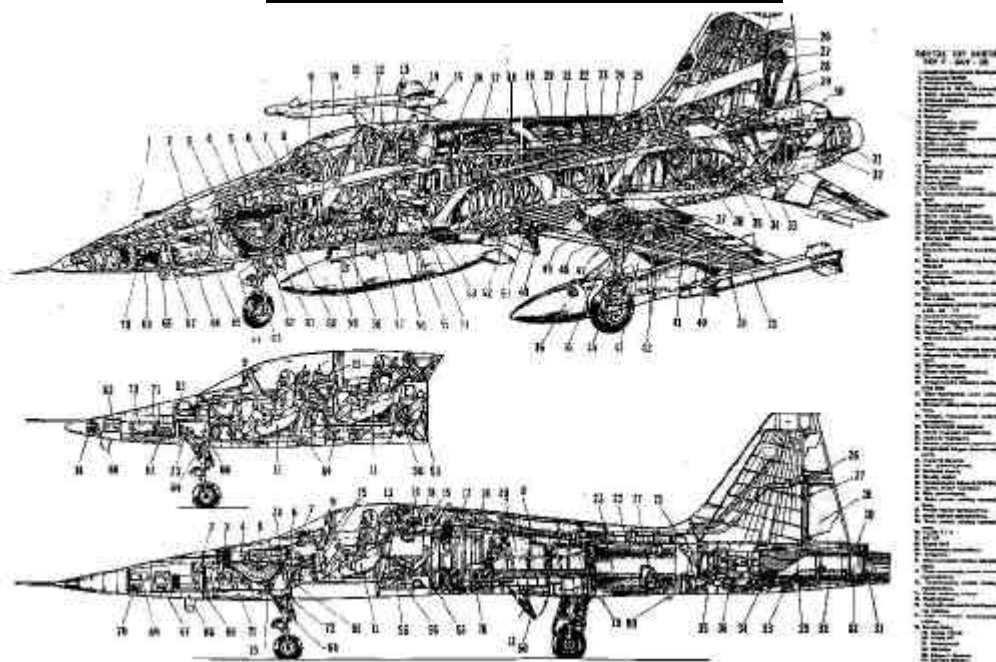
The next versions of the F-5A Freedom Fighter will be the “VietNam pattern” camouflaged textured aircraft such as the “F-5B” two-seater trainer. Also the NF-5A/B “Smoke grey” camouflage texture as it is served in HAF at mid ‘90ies! Please, feel free to send me your comments at: pathfinder@mail.gr

Northrop F-5A Freedom Fighter

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 F5A behavior in a FS2K2 enviroment. No matter this F5A model for FS2K2 is made and test to fly and behave as close to the real F-5A flight envelope as can be, you must **NOT** attempt to use this informations included in this FS2K2 flight manual to fly an other type aircraft in real aviation situations!!! **To tell you the truth you might find quite difficulties to fly this aircraft, but you have to know that it flies AS REAL AS CAN BE SIMULATED IN FS2K2!**



FLIGHT STAGES

The stages you're going to follow to fly this F-5A aircraft in FS2K2 does not contain subjects such as preperation of flight, exterior aircraft inspection etc. There is also the original Northrop approved checklist contained in the [F-5A_HAF_v1.zip](#) package 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 finally park it at the appron line...just as the real F-5 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,
- Climbing,
- Fuel balance & aircraft triming,
- Descending,
- Landing,
- Go arround & emergency situations,
- Engine shutdown,
- Unusual situation flying,
- Engines & systems limitations.



AIRCRAFT DATA & SPECIFICATIONS

The F-5A Freedom Fighter is a small, lightweight, low cost, easy-to-maintain supersonic fighter, well suited to the needs of friendly foreign countries who didn't need, couldn't afford, and couldn't maintain the bigger, more complex fighters in the US inventory. Development was begun by Northrop in the mid 1950's but for a time took back seat to the development of the related T-38 Talon trainer. In 1958 Northrop initiated building of a prototype of this small fighter, designated the N-156F. Two prototypes were built and flown, with a third partially constructed. The firm market for this airplane didn't develop until May of 1962 when the US Department of Defense selected the N-156F as the basis for the airplane to modernize the air forces of selected countries under the Military Assistance Program (MAP). The airplane was given the designation F-5A, with first flight of the prototype (a modified N-156F) on July 31, 1963.

Countries receiving the F-5A under MAP included Iran, South Korea, the Philippines, Turkey, **Greece**, and the Republic of China. Norway, Spain, and Canada made direct purchases of the airplane. The airplane was also modified by the USAF and evaluated in Vietnam with those airplanes dubbed as "Skoshi Tigers". Following more than 8 years of production, the last F-5A was delivered in June, 1972.

Optimized for the Air to Ground role, the F-5A had only a very limited Air to Air capability, and was not equipped with a fire control radar. The F-5B was the two seat version of the F-5A. It was generally similar to the single-seat F-5A but had two seats in tandem for dual fighter/trainer duties. The F-5 was originally designed as a daytime, Air to Air fighter, but it has also been extensively used as a ground-attack aircraft. Photoreconnaissance versions of the F-5 have also been produced. Armament for the air-to-air combat role consists of two 20 mm cannons and two Sidewinder missiles. Radius of a typical air combat mission with this armament and external fuel tanks is 375 miles, and average mission speed is 541 miles per hour. In the ground attack mode, about 7000 pounds of external ordnance may be carried.

Manufacturer:	Northrop
Country of origin:	USA
Type:	F-5A Freedom Fighter
Crew:	1 pilot
Height:	4.01 m or 13 ft 2 in
Length:	14.38 m or 47 ft 2 in
Wing span:	7.70 m or 25 ft 3 in
Wing area:	15.79 sq m or 169.98 sq ft
Weight empty:	3667 kg
Weight max T/O:	9377 kg or 20676 lbs
Powerplant:	2 x GE J85-GE-13 Turbojets
Max thrust at MIL:	2 x 12 KN or 2 x 2720 lbs
Max thrust at A/B:	2 x 18.5 KN or 2 x 4080 lbs
Max speed at 36000 ft:	1.4 Mach or 805 Knots
Max speed at sea level:	0.9 Mach or 557 Knots
Max range:	1375 nm or 2595 Km
Max operational altitude:	50500 ft or 15200 m
Max climb rate:	28700 ft/min or 8747 m/min
Cannon:	2 x M-39A2 20mm (280 rounds per gun)
Maximum ordnance:	6300 kg

COCKPIT PANEL & CONSOLES

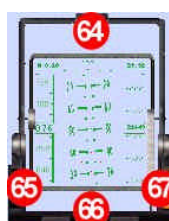
This [F-5A_HAF_v1.zip](#) package you've downloaded from the InterNet, contains a fully functioning panel which designed by photos and diagrams of the real one. The most of the FS2K2 virtual pilot's actions on this panel, effects on this F-5A's aircraft model in FS2K2, just like as real pilot's actions 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** **Shift + 2**.

- The **Main panel** contains the most of the flight instruments,
- The **Down panel** contains the rest of the flight instruments, seen by pressing **Shift + 2**
- The **NAV & COM console** also contains the Auto pilot system, seen by pressing **Shift + 3**
- The **Side consoles** contains the throttles, flap lever & more switches, seen by pressing **Shift + 4**
- The **Optical sight scope** (F-5A is **NOT** eqpd with HUD), switch ON / OFF by pressing **Shift + 5**

PANEL INDEX

Please read very carefully the following index in order to understand the panel's functions. Also, check out the included screenshots following at the next page showing the front panel, the side consoles, COM / NAV panel and the optical sight scope.

1) Gyro compass	35) Cabin temperature
2) Sight scope	36) Fuel selector switch
3) Master caution left	37) Armament position selector switches
4) Master caution right	38) Jettison selector
5) Master fire warning left	39) Moving control stick
6) G accelerometer	40) Canopy defog selector
7) Air speed Knot indicator	41) Anti ice / Pitot heating switches
8) Attitude indicator	42) Auxiliary Power Unit switch
9) Altimeter	43) Engine start buttons
10) Engine tachmeter indicators	44) Battery / Avionics master switches
11) Master fire warning right	45) Fuel shut off switches
12) Auto pilot switch	46) Air speed brakes lever
13) Flight director switch	47) Throttle quadrant
14) Flap position indicator	48) Flap lever
15) Angle Of Attack indicator	49) NAV #1 indicator
16) Oil pressure indicators	50) Engine data digital indicator
17) Hydraulic pressure indicators	51) NAV #1 DME indicator
18) Pitch trimmer digital indicator	52) NAV #2 DME indicator
19) Landing gear position indicator lights	53) Rudder trim knob
20) Gear brakes / Drag chute	54) Auto brake switch
21) HUD / Sight scope trim knob	55) COM frequency selector switch
22) Air speed Mach indicator	56) NAV #1 frequency selector switch
23) Bearing / Distance / Heading indicator	57) NAV #2 frequency selector switch
24) Vertical velocity indicator	58) ADF frequency selector switch
25) Nozzle position indicators	59) DME indicator
26) Exhaust gas indicators	60) XPDR frequency selector switch
27) Landing gear lever	61) Auto pilot selector switches
28) Clock	62) Caution annunciator light panel
29) Turn and slip indicator	63) Map case
30) Cabin radar altimeter	64) Mini direction compass
31) Fuel flow indicators	65) Pitch trimmer warning indicator
32) Fuel temp indicators	66) Master warning indicators
33) Taxi / Landing / Navigation lights switches	67) Stall warn / Chute / Air speed brakes indicators
34) Armament mode selector	



STARTING UP THE ENGINES

Starting up the engines with this “Starting up” procedure on your panel, you’re so close to the real F-5A starting up procedure! In real life, an F-5 pilot, after setting on the fuel pumps ON and after AC power & pressurised air is connected to the aircraft waits 5 to 10 sec to let the engine (only one each time) to start “rotating” at 10% RPM.

First off all set your parking brakes ON. By clicking with your mouse on **Battery / Avionics master switches (44)** you must activate the battery switches at the begining. Avionics activating is not necessary at this time. Before “feeling” your battery going “down”, you must start up at least on of your engines just to keep AC/DC power within limits. So start up your left Nr 1 engine first, by clicking your mouse on the left engine’s **Fuel shut switch (45)** to **ON** position, just like the screenshots are showing.

You’ve just “open” Nr 1 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 Nr 1 engine you must click with your mouse on the Nr 1 **Engine start button (43)** as it is shown at the screenshot to set the switch at **START** position and **keep your mouse left button pressed at least 15 sec to 20 sec** until you’ll hear the engine start rotating. By keeping the mouse left button pressed on the switch you simulate the start button “ignition” action. After starting up the left Nr 1 engine, release the mouse button to let the switch come back at the “neutral” position. To start up the right Nr 2 engine, you must follow the same procedure to set the right Nr 2 fuel pump and start up the engine.



APPLYING POWER

After starting up the engines select BOTH engines moving together by pressing **E+1+2** and maintain the throttles to IDLE. To set your throttles to IDLE, simply press the **F1** button on your keyboard.

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 Maximum / AfterBurner. 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!

You must **NOT** let the fuel flow reach at the maximum limit of 360 PPH or if it reaches shut the engines down and wait at least 2 min before attempting a new start. Also EGT indication should not exceed 925° C and the hydraulic pressure should be within 2800-3200 PSI limits.

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 (9)**, neutralise (set to zero) your **Pitch trimmer knob (18)** by clicking on it and check the **Attitude indicator (8)** and **Turn / slip indicator (29)** for mulfunctions.

Release the gear brakes and apply power by setting the throttles forward too gently and wait the engines to reply. Do NOT attemp violent throttle move if you do not want to damage your F-5! While taxiing to the line, check the flight controls. The best taxi speed is between 15 and 25 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/AB** to the throttle, let it 2-3 sec and retract it back to **IDLE** to ensure that the engines rotating by the numbers.

TAKE OFF

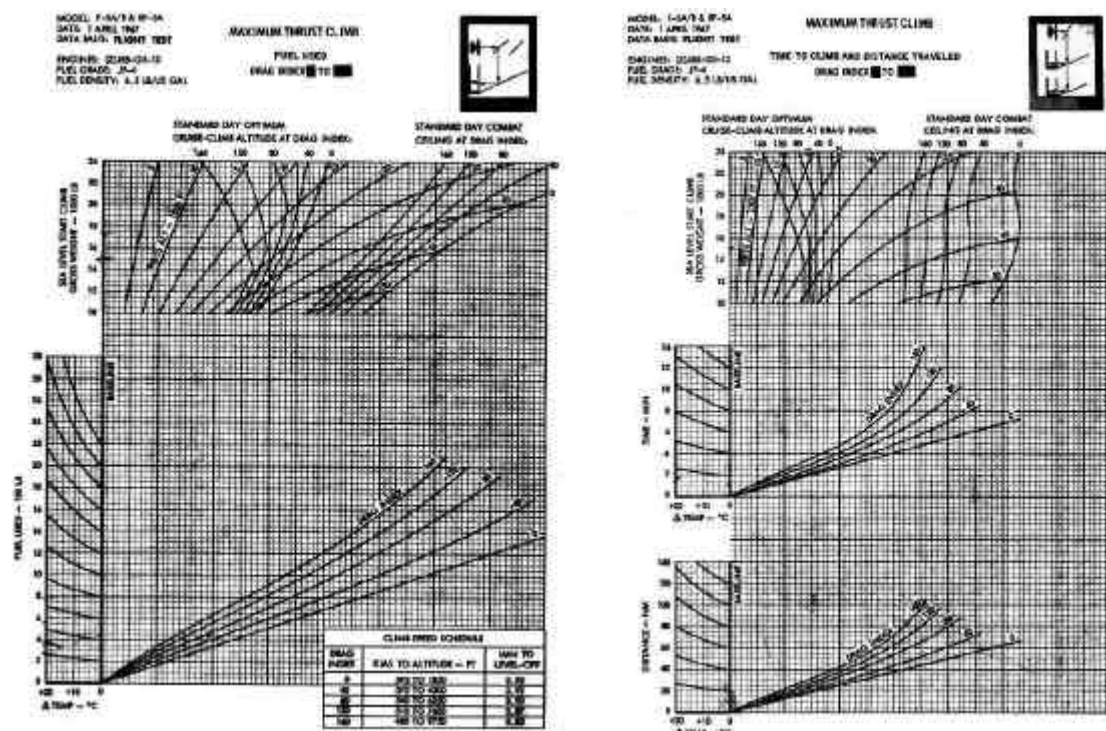
F-5A's flaps position are the following: **UP**, **FE** (60%) and **FULL**. Set the flap lever to FE or FULL position as required (F-5A is also able to take off with no flap aid in extreme situations). If you carry armament load it is noticed that you must set flap lever to FULL. Apply wheel brakes and set the throttles to **MAX/AB**. Let the engines to reply and after 3-5 sec release the brakes.

Approaching 165 KIAS to 168 KIAS is the right time to **GENTLY** set the aircraft's nose up, as high as it is necessary to establish and maintain a positive climb rate. At 120 ft, retract the landing gear. Raise wing flaps after gear has been retracted and the aircraft is at safe altitude and airspeed. The best angle to succeed that is 20-25 degrees. When your airspeed reaches 300 KIAS, retard the throttles to **MIL** and maintain a climb rate at least 1000 ft/sec until reaching recommended climb schedule.

CLIMBING

Power settings between 90% and 95% RPM will provide a comfortable climb rates at 300 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/mach and then adjust pitch to maintain climb schedule. The best recommended climb rate is succeeded when maintain a 35 degree climb and 260 KIAS to 280 KIAS speed.

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 & combat ceiling for various drag indices, of 0 to 480 for both maximum and military thrust. Data for single-engine maximum thrust climb for drag indices of 0 to 120 is additionally provided. The climb speed schedules are based on providing minimum time to climb with maximum thrust & maximum range with military thrust. For example: The following "Time, Fuel and Distance" chart presents the time, fuel and distance required to accelerate to best climb speed just after the take off.



FUEL BALANCING AND TRIMING

Loading of external stores may affect aircraft aerodynamic characteristics or CG, or both. Loading of centerline fuel tank has a negligible aerodynamic effect on longitudinal stability. Centerline stores (like this FS2K2 model loaded with a centerline fuel tank) cause a forward shift. The CG shift with outboard stores is negligible.

As you might feel when you'll fly the F-5A in FS2K2, this model can be fully fuel loaded with 150 gal at the centerline tank, 297 gal at the left main tank and 297 gal at the right main tank. This means that if you decide to load for example 250 gals in the left tank and 200 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 gets 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.

SETTINGS - FUEL

Fuel weight Lbs/Gal: 6.699219

Fuel selector: All

Type	%	Gallons	Pounds	Capacity (Gal)
Left	100	297	1990	297
Center	100	150	1005	150
Right	100	297	1990	297

Total: 744 4985

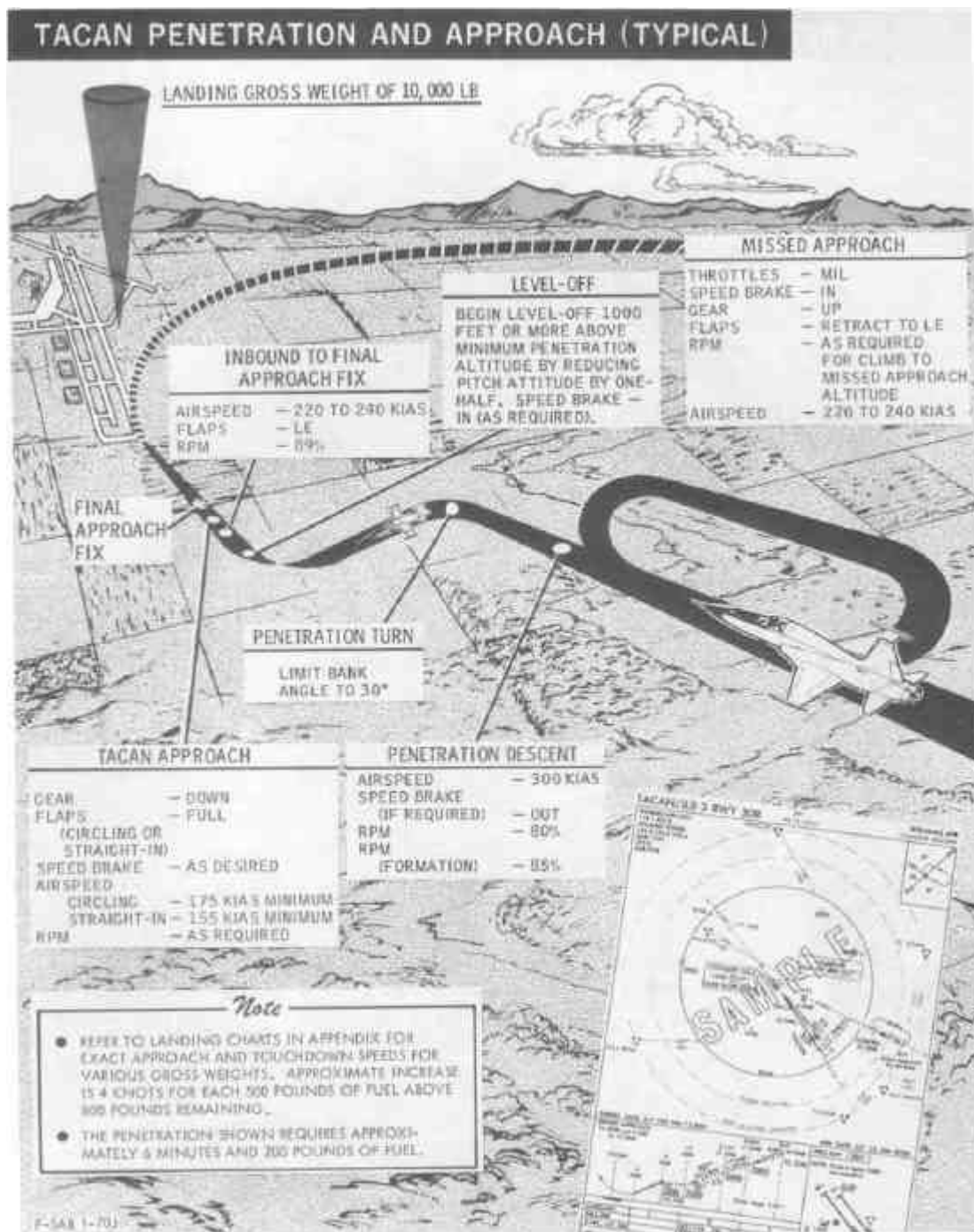
HELP CANCEL OK

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 aircraft's **Air speed brakes (46)** by hitting / button on your keyboard and extend or retract them as required to maintain the cruising speed in limits and perform as normal as can be descend. The best speed to perform a normal procedure descend is between 250 KIAS and 300 KIAS. If it is needed use airbrake all the time to slow down as much as possible to get into the aircraft's flight envelope.

WARNING

DO NOT use flap extension to drag the aircraft while descending
DO NOT raise the landing gears to slow down while descending



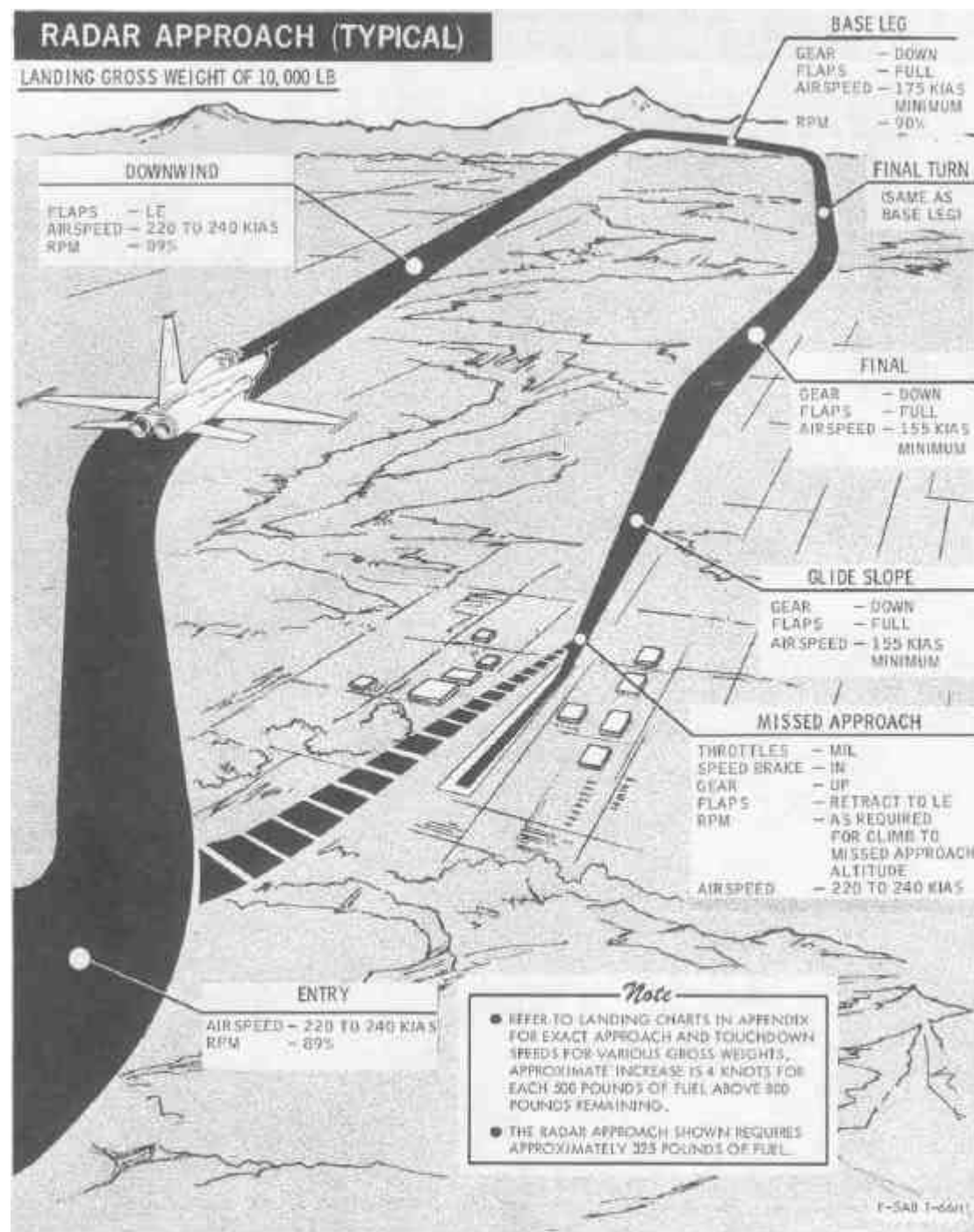
LANDING

Normal landing procedures should be used to land the F-5A in FS2K2 environment too. After you'll be established at the main heading line towards the desirable runway, maintain a descend glide path. Keep your airspeed between 220 KIAS and 240 KIAS while attempting to "enter" at the landing procedure. At 245 KIAS to 250 KIAS set your flap lever to **FE** position, raise down (extend) the gears (not above 240 KIAS) and finally set flap lever at the **FULL** position when your air speed is lower than 215 KIAS.

WARNING

Operate the gear lever to the **DWN** position to activate the main & the front landing gear but **DO NOT** activate the gears above 240 KIAS speed. If you raise gears above this speed, maybe will effect a serious damage and not have the opportunity to fix it! Even the gear system (maybe) will be raised, you cannot be sure for the proper gear locking no matter the three green lights on the instrument panel.

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 7 degrees to 12 degrees. Land the aircraft by setting the throttles back to IDLE 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 throttles at the “right place” or using the **Air speed brakes (46)** by hitting / button on your keyboard as required! I personally, prefer to control my sink rate by extending & retracting the air speed brakes



An easy way - trick to make a successful “final” approach and maintain in ideal glidepath for landing is to try to “aim” the desirable runway’s threshold inside the lower part of your **Optical sight scope (2)** as it is shown at the following main screenshot **AND ALSO** maintain a descent rate about -800 fpm to -1000 fpm by trying to keep the **Vertical velocity indicator (24)** needle, close to the red line as it is shown at the following night screenshot. You can “aim” the desirable runway’s threshold inside the lower part of your optical sight scope by using your elevator pitch (control stick or pitch trim) and the desirable rate by using properly the throttles and extending or retracting the airspeed brakes.



When your altitude will get lower than 200 ft –250 ft, pull **veeeery getly** back your control stick to establish a –600 fpm maximum sink rate and you must remain this until touchdown. Try to keep the **Vertical velocity indicator (24)** needle, **BELOW** the red line as it is shown at the following left screenshot. When altitude will get lower than 100 ft a red lamp on the **Cabin radar altimeter (30)** will start “blinking” to warn you for the remaining altitude before touchdown. You can pre-set a desired altitude for warning (example 100 ft) as shown at the following center screenshot. The landing should be made with **as low a sink rate as possible**. Maximum landing sink rate for an aircraft configured with less than 1900 lb internal fuel, no external stores, pylons optional and empty wingtip fuel tanks or GAR8 launchers is 600 ft/min for normal landings and 400 ft/min for crosswind landings. Maximum landing sink rate for all other configurations is 300 ft/min for normal landings and 200 ft/min for crosswind landings. The best landing speed is 175 KIAS as shown at the following right screenshot.



WARNING

You will **NEVER – NEVER – NEVER** make a safe landing if you try to touchdown when your sink rate is more than –750 fpm (red line on the VCI) and your airspeed is above 220 KIAS.

After touchdown, hold the nose as high as possible without becoming airborne, to obtain maximum aerodynamic braking. Hold this attitude until speed is reduced to 100 KIAS. After nosewheel is lowered, deploy drag chute. There is not any drag chute fx in FS2K2 yet, but you can simulate the parachute drag by activating the **Drag chute lever (20)** or pressing **Ctrl + .** buttons on your keyboard. When your speed gets lower than 35 KIAS to 30 KIAS release the drag chute and apply brakes **CAREFULLY**. Apply as much braking strength as needed to decelerate and avoid locking on brakes. Tire skidding on a wet runway will increase stopping distance and can easily result in loss of directional control. Make every effort to remain in the center line of the runway if any barrier engagement should become necessary. Decelerate to 20 KIAS and taxi to the apron as required.



GO AROUND

If you want to cancel your descend and abort the landing, set throttles to **MAX/AB** pull the nose up 5 degrees to 7 degrees retract the air brakes and try to establish and maintain a possitive climb rate. At 120 ft minimum, retract the landing gear. Raise up the wing flaps after gear has been retracted and the aircraft is at safe altitute and airspeed.

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 throttles back to minimum by pressing the **F1** key on your keyboard and by using the instrument engine switches, shut the engines down.

First shut down engine Nr 1 by clicking your mouse on the left engine’s **Fuel shut switch (45)** to **OFF** position, just like the following screenshots are showing. You’ve just “close” Nr 1 engine’s fuel valves and you should hear your Nr 1 engine rotating lower and lower until 0% rpm. Continue the procedure by shutting down the Nr 2 engine by clicking your mouse on the left engine’s **Fuel shut switch (45)** to **OFF** position. Now you’ve “close” Nr 1 and Nr 2 engine’s fuel valves and normally the engines are not rotating.



After engines shut down you must de-activate the **Taxi / Landing / Navigation lights switches (33)**, the **Anti ice / Pitot heating switches (41)** and the **Battery / Avionics master switches (44)**.

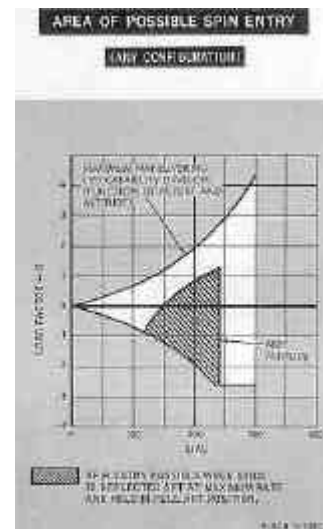


UNUSUAL SITUATION FLYING

Erect spin: Once an erect spin has developed, the spin will be flat and may be either oscillatory or very smooth. The aircraft may oscillate about all three axes and the pilot will be forced forward.

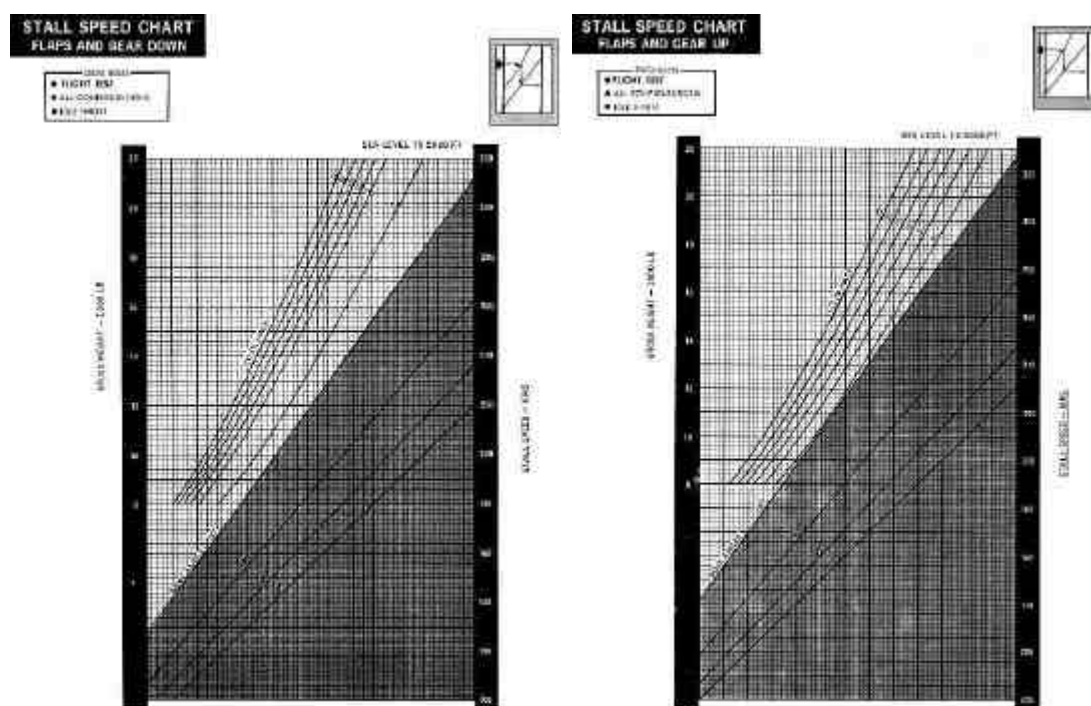
Erect spin recovery: The primary antispin control is the aileron and it is imperative that full aileron deflection be held during recovery. Immediately upon recognition of the direction of rotation, use the following procedures:

- Control stick action: FULL aileron in the direction of the spin and as much AFT stick as possible without sacrificing aileron.
- Rudder action: FULL opposite
- Do not change gear, flaps and speed brake position during recovery. Recovery from the spin is normally abrupt and may be followed by some spiraling during the resultant dive.



1G Stalling: It's almost impossible to enter an F-5 into a stall! The stall at 0 degrees is not accompanied by any abrupt aircraft motion. The stall condition is preceded by heavy, low speed buffet and moderate wing roll. Complete lateral control is available well below stall speed. The actual stall is accompanied by a very high sink rate. Low speed buffet is most severe with flaps fully extended.

1G Stall recovery: Low pitch attitude stalls can be terminated by increasing power, rolling wings level and decreasing stick back pressure. It is not necessary to allow the nose to pitch down during the 1G stall recovery.



ENGINES & SYSTEMS LIMITATION

Engine: Sustain "compressor stall" when flying above 58000 ft.

Rudder: Never full abrupt rudder reverse deflection above 350 KIAS.

Compressor stall: Happens if flying high alt (at least 52000 ft) / low speed (less than 175 KIAS).

Nose wheel steering: The aircraft should not exceed 65 Knots with nose wheel steering engaged.

Tires: The maximum tire speed limit is 217 Knots ground speed. Do not attempt landings at this speed!

Landing gear system: The best is to retract before 240 KIAS. Never exceed 275 KIAS if wheels DWN.

Hellenic Air Force F-5A photos



My first solo flight as a fighter pilot with the F-5A



This used to be my "office". Totally 1760 hours in it!



F-5A Freedom Fighter of 343rd Sqdr, few minutes after landing & taxiing to the squadron's apron.



Liquid oxygen reloading before flight



Early morning preparations in the shelter



“Tour of duty”. Five minutes readiness.



Mmmm...Nice smell! J85-GE-13 turbojet engine.



F-5A Freedom Fighter at 111st Fighter Wing, New Anchialos Air Base, on a sunny day.



The “old” company. Remembering 343rd Squadron



Close formation with the “SLUF” A-7H Corsair