F14 Carrier Landing Tips

by Victory 205 *Rev 1*

OK gents, here we go with how to fly around and land on the ship. If you can't get aboard, you are useless to the Battle Group Commander, because he can't count on you bringing back your multi-million dollar supersonic fighter to use it to fight another day. He doesn't care about you, but he wants his jet back.

This will be a real world treatise, not an artificial cheat sheet. You will still have to go out and find out what works for you, and nail that technique, every time. It will come with practice. Stay positive.

The guide assumes that you are familiar with the Case I pattern. There are plenty of videos out there that show the basic pattern. The serious video creators do an amazing job, but they haven't flown an F14 aboard a ship at sea. None of the videos that I've seen really get into the nuances of getting a good start and flying the ball. Let's see if we can change that.

You can tell that I am not a fan of video by the way. It just isn't practical for sharing detailed information as you will see below. I am still an active professional pilot who attends training regularly using a variety of techniques, including manuals, Level D simulators, and video. Few of us prefer video. This will give you a reference that you can use to find quick information to refresh your knowledge on an area of interest. Far better than slogging through a three hour presentation to find the nugget that you need.

Overview

This is a guide that can be used to find your way around any VFR landing pattern under any conditions, including various weapons configurations at the field and at sea. Apply the concepts, find your numbers and used them to land anywhere.

Every pilot flies the pattern a little differently. It's like a pitcher learning to throw a curveball- Each uses a slightly different grip, finger pressure and delivery, but the object is to get the ball over the plate. For our purposes, getting the ball over the plate means arriving in the groove with a good start.

Since we all have a Case I Instant Action Mission on the Caucasus map, we will reference that from time to time, while applying techniques to achieve safe landings anywhere, including at the field.

Flying a jet involves instrument flying skills, you will need these as described. In fact, Naval Aviators got their instrument ratings in the back seat of a TA-4J before they were qualified in the front seat. We did takeoffs from the runway under the hood from the back seat to simulate the night catapult launch and dynamic transition to flight. Then, after passing a full instrument check ride, we moved to the front seat and began Familiarization stage, learned to land visually, and all that came later.

Some of you only know FBW controls and Fourth Gen HUDS, you are slothful, lazy and complacent. The F14 will teach you to how to actually fly, and with a little training and practice, you can look down your nose at those plebeian FBW cripples and know that you can fly their jet, but they don't know how to fly yours.

I still fly a combined round dial and glass cockpit jet. I actually prefer analog airspeed and altitude because it shows rate of change better than a slew of numbers scrolling by or changing on a HUD.

There is nothing mysterious about flying an F14 aboard a ship. It is a traditional flying airplane in the pattern and groove, and Naval Aviators have been doing it that way for generations. Don't be intimidated, it's quite fun and satisfying.

Start growing a 1980's moustache, it will improve your landing scores by 20%.

F14 Carrier Landing Tips

by Victory 205 *Rev 1*

Starting Airborne in the Sim

Most quick missions start behind the boat on a run into parallel to the ship's Basic Recovery Course. To get set up in the cockpit, you have a lot to do quickly when you spawn -

First, trim the aircraft so it is level or climbing slightly.

Set 4000 pph on the fuel flow gauges, this will result in 400 KIAS.

You many need to move the throttles around to wake up the throttle axis and slow or speed up the jet. Sometimes the sim spawns doing 500 knots plus. That's too fast. You may need idle for awhile to decel to 400 KIAS. Then move the throttles to set 4000 pph.

Setup

Start at the left side of the cockpit and flow clockwise.

All three SAS Switches - On

Spoiler Brake Switch - Off

HUD Brightness - Reduced/Off or Pull the handle to engage the Red Filter

PDCP - Land Mode on left side, AWL or TACAN on bottom, and HUD and VDI in ICLS

Turn up the instrument lights on the right console by hovering and clicking your right mouse button

While in TACAN on PDCP, set the BRC on the HSD using the course selector knob on the right side if desired for reference. (The published BRC is is 40 degrees, it's really 27 degrees in the mission)

Fly the BRC Heading, then look at the BDHI bottom tick mark to obtain the downwind heading (it's simply the reciprocal of the BRC for you USAF types)

Note your fuel state. Fuel is time. Time is life.

Now that you have time to focus on your flight path, slow to 400 KIAS. Adjust fuel flow from the intitial 4000 pph gouge if necessary, and manually sweep the wings aft to 68 degrees. This will require nose up trim as the center of aerodynamic pressure moves aft with the wings.

You are now noticing that fuel flow is a big deal, and is used to set power. Welcome to jets.

Why am I doing all of this?

These steps set up the aids and gather the data you need to help you fly the pattern. This includes lighting to help you see the instruments and setting up the HUD and VDI to display the ICLS needles to help put you on glideslope. It is very difficult to see the ball in DCS due to screen resolution and the fact that there is a shiny radar dome behind the lens on the ship. *Please petition DCS to paint dark grey or black*. It wasn't shiny to the eye in real life and masks the position of the actual ball.

If you can't get the tasks done due to distance and time from the ship, then simply enter the Case I holding pattern over head the ship at 3000 MSL and 250 knots. Leave the wings out for now, slow as you climb to 3000 MSL, and enter a left, 25 degree angle of bank turn with the ship positioned at the nine o'clock position. These parameters result in about a five mile diameter circle.

Set everything up as above at your leisure. When you have your courage up, from the three o'clock position (across the circle from the boat), extend aft of the ship while heading downwind, and begin a descent to 800 feet. Move the wings aft to 68 degrees as you accelerate past 300 KIAS. The wings are moved aft in order to set up a higher induced drag delta wing profile to facilitate a more rapid deceleration and also to make formation easier and tidier.

Remember where that AUTO wingsweep switch position is on your throttle quadrant.

No really, *remember where that AUTO wingsweep switch position is on your throttle quadrant.*

Turn back in at three DME behind the ship.

Roll out on the ship's course (note the reciprocal heading if you forget before) at 800 MSL and 400 KIAS, again, try 4000 pph on each engine. Continue upwind, carefully holding wings level to fly the ship's heading.

Continue upwind for no more than 4nm. Break left when you dare, but the farther you go upwind, the more probability of lateral error on downwind. Simple geometry. Hold the correct heading precisely.

The Break

I recommend initiating the break at around 400 KIAS. Slower and things happen too quickly, faster and the turn radius is too large unless ample G is applied. Not so good until you acquire more experience.

Find your sweet spot. Some like slower with less G, some prefer faster. Do you feel lucky, punk?

Roll into a left, 60 to 70 degree angle of bank turn and pull. Then reduce throttles to idle and extend the speedbrakes. Keep your head out of the cockpit, pulling the nose along the horizon (you can reference the flight path marker on the HUD if you like). The speedbrake switch must be held aft until full extension is achieved. Conversely, they are fully retracted by a momentary "in" selection.

About four to five G's is in order, but don't look inside at the G meter. You must get a feel for doing this maneuver visually.

If the nose sags below the horizon, then roll right to underbank as necessary. If climbing, then roll left to overbank, holding a constant back stick position initially. You are managing the lift vector to control altitude.

A few seconds into the break, your scan should go from horizon to airspeed, then back to the horizon. As you pass three hundred knots, click the wings to AUTO. Do not stare at the airspeed indicator. Keep your scan going back to the horizon, make any necessary correction in bank while you glance at the wing sweep indicator. You should see the wing mode in AUTO and the wings moving forward. If you don't, look at the horizon again, manage your bank for a level turn, and ensure you have the switch in AUTO. Then check the wing tape and mirrors again to ensure that they are moving towards 20 degrees. Your RIO should call out that the wings are moving. If all is well, you will be rolling out to maintain altitude at 800 MSL.

If the wings aren't moving, then ease your pull, get your lift vector vertical and your descent rate zero, push the power up, get the speedbrakes in and stop your deceleration at no less than 250 knots plus before investigating the problem. You don't want to get slow with the wings aft, you'll end up mushing into the water.

Practice actuating the AUTO wingsweep switch and seeing the wingsweep mode at a safe altitude before trying this at 800 feet above a certain watery death in shark infested waters.

After ensuring that the wings are moving forward, the scan goes back to the horizon and then to the airspeed indicator repeatedly. When you see 250 knots (and two G's or less), extend the gear handle, without looking at the keyboard or your controller. Map the gear, flaps and hook to physical switches. Invest in a throttle quadrant, it will save your life. If not, well, sharks gotta eat too…

You can hear the gear move and thunk into place. No need to stare just yet.

Same with the flaps. Continue scanning the horizon, altimeter and the airspeed. When you see 200 KIAS, move the flap handle full down. As soon as your hand leaves the flaps switch, push the power up to at least 3-4000 pph to arrest the deceleration rate.

But Victory, your speeds are wrong!

Most squadrons were conservative with speeds. The gear/flap placard speeds are indeed 280/225, but waiting until 250/200 KIAS resulted in fewer flap/slap lockouts and gear issues. Remember, this is real world technique.

Monitor heading and roll out on the downwind heading that you forgot to memorize before. If this is the case, simply reference the heading at the bottom of the BDHI. The ship's BRC should be under the 180 degree tick mark.

You want to be close to wings level when deploying flaps, in case you get an asymmetry.

Speedbrake extension causes a mild pitch down, gear extension results in a moderate pitch down, flaps a moderate pitch down and finally DLC extension causes a mild pitch down.

You must monitor the speed to ensure that you don't get slow. When wings level downwind, engage and check DLC (I find that I have to look at the spoilers visually, in the real aircraft, DLC engagement was easily felt without looking, Heatblur is looking at modeling this). Just bump the switch in the down direction to ensure the spoilers extend fully and DLC is in fact, working.

Descend to 600 MSL, trimming as you decelerate. Pitch in the descent should be about 7-8 degrees nose up and Raise the nose to approximately 10 degrees nose high and trim like a mad man. Watch the VSI for trends. If it sags, don't wait for the change to show on the altimeter, add power. Vice versa holds true as well.

Look at the AOA indicator, as it approaches on speed, push the power up to approximately 5200 pph on each engine and hold the nose at approximately 10 degrees nose high.

This is a critical nuance.

You must trim to hands off in pitch after the power is set, and you must take time to find the power setting that will produce onspeed in your aircraft's configuration. *It will change* if you have tanks, missiles, bombs or even battle damage. Doesn't matter, you have to find the fuel flow setting that works for your airplane on that day, and use it for a baseline that will get you to, and keep you onspeed.

F14 Carrier Landing Tips

by Victory 205 *Rev 1*

The thrust line on the F14 is below the center of gravity, so when you add power the nose pitches up, and when you reduce power it pitches down. That's why trimming up downwind with the power close to a stable onspeed setting will help you fly a stable approach.

You must get trimmed hands off on downwind, and you don't have much time to do it.

Forget using the pitch on the HUD or the E Bracket. Both ratcheted in the aircraft, weren't accurate, and were too slow to update to be of use.

In the sim, the velocity vector works better than it did in the aircraft, so if it works for you, feel free to put it where you think you need it. You likely won't need it in due course.

Run the Landing Checklist when able - Say it out loud to Jester, and move your left shoulder out of the way so he can see and confirm the gear and flap indicators. It is one sentence, checking each item.

"Wings are twenty auto, Gear's down, SAS on, flaps full, DLC engaged and checked, Hook down, Harness locked, Speedbrakes out, Spoiler Brakes off, fuel is _____ "

Ensure that your fuel state puts you below the Max Trap Weight (54,000 in my day).

That's a helluvalot of words just to get from the break to downwind.

Abeam Distance

I love the gang at Heatblur. Not only are they are geniuses that fought like hell to get the flight model and unique F14 handling characteristics correct, but they even put an escort ship exactly one mile abeam the aircraft carrier for reference. How awesome is that?

The abeam distance should be 1.1 to 1.3 NM abeam, based on the ship's TACAN. The escort is at 1 DME, so take it down your port side canopy rail. With the TACAN Mode selected on the PDP, you should see about 1.6-1.7 DME on downwind with the bearing needle at 45 degrees left of course. If you are well off, take a quick cut and turn to the downwind heading by the time you are abeam the boat.

With experience, you can just look at the ship rolling wings level out of he break and get a good idea as to where you are. Don't blindly follow the gun in front of you, he may be a USAF Exchange pilot and AFU on the abeam distance.

The pilot that fouls up the pattern gets waved off. If someone is long in the groove for instance, he messes up the landing interval of the following aircraft. Therefore, the LSO's send Mr Long in the Groove around and land the following jet who's pattern is correct.

Distance from the ship affects time of turn, length of groove and therefore, altitude required for a centered ball at the start . Therefore, if wide abeam, you turn earlier and use less angle of bank and a lower rate of descent, if close aboard you turn later, use more angle of bank and a higher rate of descent.

Sometimes due to the smaller vertical component of the lift vector in a larger bank angle turn, slightly more rate of descent requires more power.

Let's look at a typical Max Trap Approach Speed of 137 KIAS and the required geometry to arrive in the groove. We will assume 20 knots WOD for a closure speed of around 115 knots

TACAN Distance Abeam	Actual Turn Diameter	Angle of Bank Required	Time to Turn 180 degrees	Delta Time in Groove	Delta Distance in Groove
0.9	1.0	30	39 sec	-10	- .32 nm
1.0	1.1	27	44 sec	-5	- .16 nm
1.1	1.2	25	49 sec	0	0
1.3	1.4	22	56 sec	7	.22 nm
1.4	1.5	20	60 sec	11	.35 nm

Turn diameter is slightly larger than TACAN DME because the aircraft overshoots the axis of the ship to align with the angled deck, and the location of the TACAN itself is on the ship's mast to the right side of the deck.

Analysis shows that the wider abeam, the earlier you need to turn to arrive at the same point in space to achieve a proper 15-18 second groove length. The difference in turn diameter between a 1 mile turn and a 1.5 mile turn using 30 vs 20 degrees AOB is three quarters of a mile in distance. That's huge in terms of altitude if the pilot uses the same standard, 700 fpm rate of descent. He'll be low if starting wide abeam, and high if starting close abeam without adjusting rate of descent for the lateral error.

You start each descent from 600 MSL, so the difference in time to turn means that closer abeam requires a higher descent rate to get to the glideslope altitude intercept, while the wider abeam means a lower descent rate is required.

On the downwind heading, with the TACAN bearing needle 45 degrees left of course, 1.5 DME will result in 1.2 DME at the abeam point. If you pass this benchmark too close or too far, you can take a quick cut to reduce the abeam distance error. This seems less than it was in reality, but that's what I've found so far in DCS.

Hopefully, this shows why abeam distance is critical, and why getting it right to remove a variable in order to get consistent, good starts is worth the effort.

The Approach Turn

Let's assume a baseline of a correct 1.2 distance abeam, on the downwind heading, trimmed onspeed. *You are flying instruments, 10 degrees nose up, looking at VDI.*

Reference the BDHI - the tick mark that is 90 degrees to left of course shows the "90" heading, which will be your heading when you want to be at 450 MSL if your abeam distance is correct. If wide, be higher, if close, be slightly lower. It is easier to come down to glideslope than come up from below as the latter requires two corrections- same with overshoots of the centerline.

Abeam the LSO platform, just before you see the end of the flight deck, *using coordinated rudder and lateral stick*, smoothly roll into a 25 degree angle of bank. You are looking for a slight rate of descent, about 150 fpm in order to arrive at the 90 heading at 450 MSL. This requires *a very slight addition of*

power. Sometimes, simply trying to stay level results in the correct descent rate. Pitch attitude should be about *a degree or less than level.*

This is where we're going to cheat by using the ICLS needles to offset the difficulty in seeing the ball. As you approach the 90, the ICLS needles will flutter and pop into view. If you are on glideslope, then ease the power slightly to smoothly achieve a 5-600 fpm descent. I find in the release build that around 44-4300 pph is in the ballpark, but you have to determine what works for you, in your configuration. This will change over time as the engines are tweaked, and will be very different in the F14A as well.

You aren't heading at the ship just yet, so less rate of descent is required to track the glideslope, around 500 fpm. If you are high, then ease the power a bit more to achieve 7-800 fpm, but once approaching a centered GS, you should lead your power application and set baseline fuel flow before arriving on GS. If you are descending rapidly, then add more power to stop the inertia of the descent, before going back to baseline fuel flow. If low, add power to shallow or keep your existing rate of descent, and lead the power reduction as you sneak up on the glideslope from below.

Every time the power is changed, the pitch will change. You can help the changes by easing the nose up or down a degree with the stick, while making a commensurate power change. Remember your baseline setting for on glideslope, and make small fuel flow corrections, watching the pitch on the VDI. Since the turn commenced, we still haven't looked at the ship. We are flying instruments.

On final, the pitch will be about 7-8 degrees nose up, with fuel flow around 44-4300 pph, and 700 fpm.

The way to find your baseline pitch and power is to set up a long, onspeed, precisely trimmed up final approach from say 3000 MSL fifteen miles behind the boat, and fly the glideslope down as carefully as possible. Write the fuel flow and pitch in grease pencil on your computer screen. In SME testing, I've probably flown 200 miles doing level flight in the landing config and approach descents.

Just past the 90 degree point, after you have made a correction for the glideslope error, then look at the ship. You probably won't see the ball yet, or you won't be able to tell where it is on the mirror. Go back inside, check rate of descent, and ensure that you don't reduce the angle of bank that you set at the beginning of the approach turn.

When you begin to look at the ship, there is a tendency to shallow the bank angle. Don't do it. The ship looks close, you feel high, but since the ship is moving away or there is at least 23-25 knots of wind, you are fine. The geometric glideslope is higher than the apparent glideslope due to wind and or movement.

Glance at the ship again, when you are at the 45 or so, you can begin to play the turn to the groove. The deck is short, making lineup difficult to attain, so overshoot the wake slightly, tuck it under your left armpit to align with the centerline of the angle. The drop lights can help here.

Assuming on glidepath, then anytime you reduce angle of bank, you need to reduce power. The opposite is also true. Anytime you change power, the nose will pitch commensurately, which actually helps the aircraft to respond on the glideslope better. Go back inside for a moment to check VSI, then back outside. We are transitioning to a visual approach now.

This is where in the sim at least, it may be worthwhile to keep the HUD on, but very dim or in the night mode. It allows you to reference the ICLS needles until you can make out the ball.

As you roll wings level, a relatively large power reduction required to avoid going flat. Don't let the nose drop, because as soon as you have the power off, you will need to put it right back on to the baseline setting. As you roll out, the lift vector is again vertical, and the aircraft will tend to balloon and or go fast. So power off to arrest this, then right back to baseline. This must now be done by feel of

the throttle position, and is much more difficult than in real life, where seat of the pants helped immeasurably. Your careful trimming should be taking care of Angle of Attack, and it shouldn't be a variable anymore.

You must be on speed, and you should roll out on a heading about two to three degrees right of the angle deck's centerline (final bearing) to account for the ship's movement.

I know, it's tough to see the ball with the HUD camera and windscreen frame in the way. Make yourself move your freaking head until you can see.

You've got the ball now, tell your RIO and he will call it for you. I just say "ball" over the ICS and let Jester do his thing.

Now your scan is meatball, lineup and AOA. If lineup is squared away, then you can glance at VSI, but look immediately back at the ball and lineup. Your mind's eye will remember the VSI picture. If it is below 700 fpm and you are on GS, then add a little power. If above 700 fpm and on GS, then reduce a little power. Don't wait for the ball or GS needle to move. The farther out, the larger the ball width, so you can see a centered ball while descending through the centered ball "window" if that makes sense.

If you are confident in your trimming with respect to AOA, as you get closer, transition your scan to meatball and lineup only, and standby for a settle behind the round down due to down draft.

Is the burble really modeled? Damned if I know, but there tends to be a "psychological" burble for me, perhaps it is ingrained in my subconscious mind from seeing the ass end of too many boats.

The "burble" is simply a downdraft behind the stern that hits the water, bounces off, and causes an updraft further out. Nothing mysterious, just airflow over and around the boat. It's not supposed to be modeled yet.

If you do suffer from hallucinations like me, and get a settle, then add power to stop it, and get it right back off. Each power correction requires three movements. One to initiate the change, one to arrest it, and one to get back to baseline. It is exactly like flying formation in that regard. Each power change requires a little pitch change as well.

If you go flat over the ramp, then *bang twice on the DLC.*

You thought I forgot about DLC didn't you?

That's what it is for. *"Bang twice, no more no less, never thrice and never just once. Twice it shall be if needed at all to fly the ball…"*

You can quote me on that.

Don't hold the button down, but don't be timid, bang it twice to keep the ball from rising while easing the power a smidge and get it back on when you see the settle. You may need a burst of throttle if you hold the button and come down like a ton of proverbial bricks, but usually not.

Do not get mesmerized by lineup and forget to look at the ball. In close, the scan goes from meatball, lineup, to meat ball, meatball, letting peripheral vision and the LSO calls to address lineup. You should have it squared away by then.

When you trap, go to mil power, thumb in the speedbrakes (they should retract at mil anyway) and hold it until you stop. Then immediately raise the flaps and engage nose wheel steering. Look for the yellow shirt to your right. He'll tell you when to raise your hook. By the time that's done, your flaps will be retracted and he'll give you the signal to sweep your wings aft.

In reality, go to an outside view, chase works well, and look for the cable to become rounded and just forward of the hook point. At that point, you can retract the hook without fouling the cross deck pendant and taxi out of the wires. Be patient.

If you bolter, then go to mil power and pitch the nose up to 12-15 degrees. It will take a strong push and you will have to hold the trim switch in the nose down direction due to the pitch up moment of power and excess trim during approach. Climb straight ahead for a few seconds, then turn 10 degrees to the right to parallel the ship's BRC. Note the BRC as before.

At 400 feet, reduce the power to baseline (5200 pph), set ten degrees nose up pitch on the VDI and level off at 600 MSL. Turn downwind when your interval gets aft of your wingline, engage DLC, extend speedbrakes and trim back to onspeed as above. Watch your altitude and roll out on the downwind heading that you wrote on your computer screen.

I recommend that you select mil power *in the sim* by banging the throttles full forward and then immediately pulling them back to where you think mil should be. Without an AB detent, it is tough to know exactly where military power exists, and this technique will ensure that the speedbrakes retract and DLC disengages. The engines won't spool up quickly enough to engage AB if you use this technique.

Corrections

Use the lovely escort ship to help with your ***abeam distance*** at first. If wide, turn a few seconds before abeam the landing area and use the appropriate bank angle from the nifty matrix above. If close, turn two seconds later than normal, go right to 30 degrees AOB, and add a little power to keep the rate of descent slightly higher than baseline. You will still need a little more power because your lift vector is more horizontal with more bank. Don't pull on the nose and get slow. Add power and let trim take care of your speed. Slow will cause wing rock, more drag and a higher descent rate. Slow is a bad place to be, so trim and do not pull on the stick.

OK, so you still find yourself ***full slow***. Add power and bump the nose down Add way more power than you think, way more than baseline. Remember, application of power causes the nose to pitch up, you have to push a little. Once on speed, go back to baseline pitch and power for whatever you are doing.

If ***fast***, ease throttles to put fuel flow below baseline. Hold the nose up to negate the natural pitch down, and as the aircraft decels to on speed, go to baseline pitch and power as you approach a half unit AOA of on speed. You have to use both the AOA indexer and the donut, and you may have to nudge the stick to get things heading to where you want them.

You know what I'm going to say- Trim, trim, trim. Fix it with trim.

Slightly slow around the turn before rolling out in the groove is fine. As you roll out, you'll go onspeed. Full slow is not acceptable. Full slow or Fast will result in a technique waveoff. The jet must be on speed. Fast or slow affects hook to eye distance dramatically in a long jet like the F14. If you are slow with a centered ball at touchdown, you'll catch an early wire. If fast at touchdown, the opposite is true, and you'll have a propensity for hook skip bolters as well.

If you ***overshoot the centerline***. Use no more than 30 degrees angle of bank during the turn. Wave off and take it straight up the starboard side of the ship if necessary. A squadron mate overshot so badly that he did exactly that. We asked him where the ball was when he overshot, and he said "I don't know, the island was in the way". Best comeback of the cruise. Take your waveoff like a man, and live to fly another approach.

Stay in coordinated flight, don't use bottom rudder in an attempt to sweeten your turn.

Angling approaches tend to cause overshoots. If you are angling, lead the turn into the groove, knowing that it will be more acute than normal. Angling puts you closer to the ship while off centerline. Complicates things dramatically due to the real world lens geometry. Know the bank angle for abeam distance in the matrix above.

I *don't care which wire you catch, it's how you got there that matters.* A three wire is meaningless if you are fast, slow, got a bad start, overshot or angled final, landed more than two or three feet left or right, or had drift either way at touchdown. Fair at best, no grade likely depending upon magnitude.

You should be aligned with the centerline when you land. A quick lateral correction in close to attempt to touchdown on centerline from a full left in close can put you over the port side of the ship. Very embarrassing.

Land within a few feet of the centerline, parallel to the centerline. The Tomcat is obviously big, and will start clipping expensive government property if you get careless with the centerline. If you like to land anywhere you please, go see the USAF. It's unsafe and a one way ticket home, for good…

Mindset

Keep fighting. Work like hell to get a good start, onspeed and on glideslope as you roll wings level in the groove. The key is a good pattern and a good start. It's easy if you begin squared away.

If you are inconsistent in the pattern, you will be inconsistent in the groove.

Trim is your friend.

Coordinated rudder and lateral stick in all maneuvers in the landing configuration.

Trim is your friend.

Spend some time learning the baseline pitch and fuel flow for level, a 200 fpm descent in a 25 degree AOB turn, and 700 fpm in a wings level descent. Go to those numbers when you are on profile. My numbers are approximate and will change with configuration and FM tweaks. You must take a few minutes to find what works for you. Write them down. I do.

Once trimmed on speed, make tiny pitch corrections in concert with power changes only.

See you in the groove, onspeed, with a centered ball.

Remember*. "Fly Pretty, Anyone Can Fly Safe…"*