MANAGING IFR PRIORITIES

"Aviate, Navigate, Communicate" is embedded deep in the pilot psyche. Yet a frightening number of us behave exactly backwards when we're flying the system.

IFR flight is primarily a mental game. Sure, there's a bit of hand-eye coordination involved in, say, making small, precise corrections when hand-flying an ILS, but the bulk of the process is cerebral. In critical phases of flight, there just isn't enough brain power to go around. Prioritization is as critical an IFR skill as the ability to nail that localizer needle in a direct crosswind.

Unfortunately, many IFR pilots simply have their priorities all wrong.

"Aviate, Navigate, Communicate" isn't just a mental checklist to remind pilots of what needs to be done in flight; it's a critical reminder of the relative importance of all the little tasks we can accomplish on an IFR flight. In other words, don't even think about anything relating to "navigation" until all the critical "aviation" is done. Communication? An afterthought that can wait until everything else is humming along nicely.

First: Fly with Precision

I equate "Aviate" with "precisely control the airplane." Put the airplane's attitude, power and drag configuration (gear and flaps) exactly where you want them, and ensure they stay there. Nothing matters more. If the airplane isn't fundamentally doing what you want it to, where you're going (navigate) and who knows about it (communicate) are the least of your worries.

For every second of flight, there is a pitch and bank attitude that is ideal. If you're hand-flying, it's your job to make the actual reflect the ideal. If the autopilot is engaged, you're not off the hook until you've confirmed the AP is doing what you expect it to in both the lateral and vertical axes.

Likewise, for every phase of flight, there is a combination of power and drag deployment that will create an appropriate airspeed and configuration. Knowing what these variables should be is critical knowledge, as it will quickly let you set the desired inputs with confidence the output will be as expected. Too many pilots fly in a state equating a constant feedback loop: "Oh, I'm a bit fast, I'll pull the power back. Oh, now I'm too slow, I'll push it up a little. Damn it, did it again …"

If you know that 17 inches of manifold pressure with gear down and flaps at the approach setting gives 100 knots level, you just saved a whole lot of trial and error when there are many other tasks to attend to.

Second: Fly the Course

When the aircraft's energy state (airspeed and altitude) is basically correct, the next task is pointing that velocity vector in the right direction. If "aviate" means "control precisely," "navigate" means "fly the black line and don't hit anything." By the black line, we might mean an airway, segment of a DP, STAR, or IAP, or simply an ATC vector.

Navigating under IFR is typically the most difficult task of the ANC hierarchy. Depending on the sophistication of the aircraft in question, navigation can be an involved task of piecing together several disparate pieces of information (CDIs, DME info, etc.) into a meaningful mental picture. Glass cockpit aircraft can morph this from "Where am I?" to "Where is it telling me to go now?"

In these automated aircraft, "navigate" means not only flying the magenta line, but making sure that line is painted in the right place. If it's not, and you can't quickly get it there, step down a bit in automation. For example, if the missed approach requires a turn to a southerly heading and the magenta

line is pointing east, ignore the line. Put the AP in heading mode on 180 degrees. Straighten out the GPS after that's accomplished.

Third: Say Something

New IFR pilots often put far too much importance on communication with ATC. ATC's primary job is to keep IFR airplanes from hitting each other and mid-air collisions involving an IFR aircraft are so rare as to be nearly forgettable. Contrast the rarity of mid-airs with the prevalence of loss of control (LOC) and controlled flight into terrain (CFIT) accidents, and it's easy to see why the wise IFR pilot doesn't worry about ATC until everything else is in order.

A classic example of the wrong way to do things is the pilot who reads back a heading-change assignment to ATC before starting the plane turning. Remember, what ATC really wants you to do is turn, not talk about it. The readback is merely a check that your ears heard what should have been heard.

Particularly on the last vector to intercept an ILS, delaying the turn seven seconds to repeat the entire approach clearance can often mean the difference between a smooth intercept and flying through the final. How happy will that controller be with your snappy readback when it causes him to assign another vector to join the localizer from the other side?

There are times when ignoring ATC entirely is advised. A legitimate emergency is one. In simulator training for turbine equipment, I've seen many pilots carry on a lengthy conversation with ATC, telling them what has happened and what they plan on doing (and how the kids are, etc.) They'll accept a tactically poor vector from ATC and answer any question posed. Meanwhile, the underlying situation has not been attended to, and may be getting worse.

If you find yourself in an emergency, don't ask ATC what they want. Attend to the issue and then succinctly tell the controller what you need next. If they don't like it, too bad—as long as their concern isn't that your plan is going to cause you physical harm. ("Um Two Six X-ray, you might want to turn left quickly so you don't hit that mountain.") If you've declared an emergency and are running through the associated checklist, and they call back to ask how much fuel you have on board, do not under any circumstances interrupt the checklist to answer. If they call four times, ignore them four times. If you can't take it, a quick "standby" may get them off your back for a few minutes.

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Where We Go Wrong

A missed approach offers a great example of how priorities should be arranged. Before you worry about tuning VORs and twisting CDIs, promptly get the airplane moving away from the ground. This generally involves applying full power, pointing the nose up to a specific attitude, and getting rid of some flaps and/or gear. Only once the plane is trimmed and climbing well should thoughts move to navigating on the specific missed-approach procedure.

I've lost count of how many pilots start the missed but never get a good climb established before they're heads down, reading the approach plate and tuning radios. Inevitably the climb rate slackens. Sometimes it even turns into a descent. There are few areas in the world where a descent in the right direction is safer than a climb in the wrong one.

Once the climbing is well underway, and the aircraft is on the proper missed procedure, then ATC can be notified. Again, I see pilots call Tower to report the missed before they've even started the first turn. Typically a frequency change is assigned back to Approach, requiring yet another (premature) radio call. Meanwhile the airplane is blundering blindly ahead, diverging more and more from the course ATC would like.

Some tasks can be put off longer than others, sometimes entirely. For example, if your plane is equipped with DME or GPS, don't bother with the timer. I've seen many pilots end up not making

RIGHT: Cockpit automation can be the nemesis of prioritization. Don't touch the buttons—even to start sequencing a missed approach—until the aircraft is configured and responding correctly.

WHAT'S ATC'S PRIORITY LIST?

While air traffic control is frequently listed as one of the ultimate examples of multitasking, it's more about accomplishing single tasks quickly and in proper sequence. One action taken at the wrong time can balloon into a nightmare. A controller could have 15 or more planes on his frequency, four of which are calling at once. Restricted by that most human of limitations—a single mouth—he can't talk to every airplane simultaneously. Who does he handle first?

The closer an aircraft is to a runway, the greater its importance in the mind of ATC. For Tower, that means aircraft on final as well as those instructed to "position and hold," because runway thresholds are the most critical pieces of airport real estate. For a radar controller, the highest status is given to arrival aircraft already being vectored for a visual or instrument approach—in particular the aircraft who's leading the sequence. If Approach gets distracted and gives Mr. #1 a late clearance, he may have to quickly adjust all trailing aircraft to prevent a pile-up. That's a huge workload increase.

A close second on the list are departures. The goal is to get those airplanes turned on course and climbing as quickly as possible, especially fuel-thirsty jet aircraft. Otherwise they may conflict with arrivals.

Next is ensuring new arriving aircraft that just checked in get vectored for the sequence with enough time to descend to approach altitude. Further down the list are aircraft requesting practice approaches. While ATC tries to adhere to "first come, first served," a light aircraft shooting a few currency RNAVs is less critical than full-stop traffic like air carriers. Nonetheless, ATC generally keeps those aircraft close to the airport so they can be dunked in the first available slot.

Next are IFR en route aircraft, which are usually established on course and level at their cruising altitude. As long as their route is kept free of conflicts and pertinent traffic is issued, there isn't much else to do.

Last are VFR aircraft. Radar-identified VFR aircraft are issued traffic advisories and may be given vectors for spacing between airspace and traffic. Unidentified VFR traffic calling out of the blue for flight following may have to wait to get service, as ATC provides service to VFR traffic only if workload permits.

Traffic calls and landline coordination with other controllers fall somewhere in the mix. Their priority is dictated by the urgency of the traffic conflict or coordination needs. Of course, an emergency, trumps all.

— Tarrance Kramer

MDA at a point that would allow for even a reasonably stabilized landing, because they delayed the final descent to fumble with a timer. GPS approaches don't even publish time to the MAP because even the FAA thinks it's superfluous if accurate position information is available.

Next up on the inverted priority list is identifying a navaid before even attempting to head towards it. If you verify the frequency and your CDI is agreeing with your expectation of where you should be going, it's far better to start navigating towards the navaid in question than blunder along on the last course or assigned heading while you try to hit the right switches to hear that Morse code. With a moving map in the cockpit (even a handheld GPS), it should be immediately apparent if you're flying towards the fix in question or not. When there's time, try to pick out those dashes and dots, but not until more important tasks are squared away.

On the other hand, if you think you've tuned the localizer correctly yet it seems like the needles are backwards to what you'd expect, turn on that ident quickly. Many airports have two ILS systems for the same physical runway (one for each direction), with different idents, but a common localizer frequency. Only one ILS can be active at a time, and many times the Tower will forget to switch when a runway change occurs. The result is reversed sensing as you are effectively trying to capture a backcourse approach.

The "Sniff Test"

This is really the fundamental rule that should be behind all cockpit prioritization: Know the tasks that must be accomplished first and do them immediately. Equally important, know those that can be deferred and put them off—unless the hackles on the back of your neck tell you otherwise. | IFR

Neil Singer is a stickler for cockpit priorities with his students, but is still annoyed that the Mustang front office doesn't have XM radio.