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Single Pilot Operations

Emulate Successful Two-Pilot Operations | by Rick Wheldon

We in the MU-2 community generally fly single-pilot. The fact of the matter is that we value the flexibility of having our own airplanes and the ability to go where we want, when we want, without having to hire a co-pilot. We also enjoy the flying. These positives, in our minds, outweigh the added risk of single-pilot operations. Bob Breiling, who makes a living analyzing accident statistics for the insurance industry, has pointed out that single-pilot operators are 50% more likely to have an accident than two pilot operators. That is significant! Yet, while we cannot ignore the statistical disadvantage of operating single-pilot, there is much that we can do to minimize the risk. One key is to develop habit patterns that emulate successful two pilot operations. What do I mean by that?

Successful airlines and corporate operators use standard operational procedures. In previous discussions I've addressed the advantages of standard operating procedures extensively. SOPS allow you to decide, on the ground and without outside pressure, just how you intend to operate your aircraft. SOPS might list personal limitations and policies, and frequently describe cockpit procedures. For now, I would like to concentrate on the cockpit procedures used by successful two-pilot crews which could by modified slightly and adapted by the single-pilot operator.

Let's start with the pre-flight. In my airline days, flight crews typically performed as many pre-flight tasks as possible, as early as possible. Take navigation programming, for example. We would obtain the clearance well before engine start. We set up the VORs, CDIs, initial altitudes, headings, and reviewed and pulled the taxi diagrams and departure procedures, which we kept open and immediately at hand. We programmed the FMS. This was all done well before pushback. This eased our workload during taxi and the initial stages of flight. For single-pilot operators, early accomplishment of these essential tasks becomes doubly important, because there is nobody else available to handle them while we're taxiing or flying. Of course, in the airlines, we typically arrived at the airport one hour before flight, so there was plenty of time to accomplish the walk around and the pre-flight tasks, but there was also time to handle any unexpected glitches. How nice it was to not be rushed!

Another technique that we used in flight was to make standard callouts for various events. I still believe in making standard callouts, and I make them out loud to myself when flying single-pilot. This serves to keep me on my toes, anticipating events, and therefore ahead of the aircraft. What do I mean by standard callouts? Here's a specific list from an airline flight manual (not all apply on every flight, but most do):

TAKEOFF

- "Power set", "airspeed alive", "80 knots, engines check", "rotate", "positive climb, gear up", "400 feet, flaps up, after takeoff."

CLIMB

- "Transition altitude", "1000 feet to level-off." (On all level-offs, try to do make the 1000 foot callout before the altitude alerter goes off so that you are anticipating the alert rather than reacting to it. This keeps you ahead of the airplane.)

DESCENT

- "Transition level", "1000 feet to level-off." (Again, try to make this callout before the altitude alerter goes off.)

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APPROACHES

• "Approach lights (or runway) in sight", "(name of final approach fix), altitudes and instruments cross-checked", "1000 feet above the field", "200 above minimums", "100 above minimums", "minimums, no contact", "missed approach point, no contact", "200 feet above touchdown, REF speed plus (x knots)", 100 feet above touchdown, REF speed plus (x knots)."

MISSED APPROACH

• "Positive climb, gear up", "400 feet, flaps up, after takeoff."

One of these callouts deserves special mention. On the approach, "(name of final approach fix), altitudes and instruments crosschecked", means that the pilot compares his altitude with the final approach crossing altitude, on both the barometric and radar altimeters. On an ILS, the glideslope should be centering, the localizer should be centered, the radar altitude should indicate approximately 1500 feet AGL (this could vary, depending on the terrain), the barometric altimeters should match the final approach fix crossing altitude listed on the chart, the marker beacon should be audible, and the NDB should indicate station passage. Adherence to this procedure will ensure that premature descent is never initiated and the correct glideslope lobe is captured.

Another procedure that professional two-pilot crews accomplish regularly is departure and approach briefings. Content of the briefings is standardized, so that essential information is consistently addressed in an orderly format. How can this be applied to a single-pilot operation? Why not brief yourself, out loud? When briefing, double check that the courses and radio frequencies are set properly and identified.

A typical departure brief might contain: 1) Initial turns, heading and course, 2) Initial level-off altitude, and 3) Procedures in the event of an emergency. "we'll depart runway 25 on runway heading, at 400 feet turn right and intercept the Orlando VOR, radial 290. Initial level-off will be at 1500 feet. If we have an emergency on the ground, we'll abort. Once airborne, we'll maintain VFR, fly the engine failure profile, and return to Orlando."

For approach, the briefing might contain the following:

1. Name of the approach
2. Navaid frequencies and approach courses
3. Minimum sector altitude, or MEA, or MOCA, as applicable for the direction from which you are approaching, and initial approach altitude
4. Final approach fix and crossing altitude
5. Minimum descent altitude or decision height, and height above touchdown
6. Missed approach point, based on timing or position
7. Missed approach procedure, with emphasis on initial heading and altitude
8. Runway review, including length, width, and a review of approach lights, VASI installations, etc.

The approach briefing might sound like this – "we'll fly the ILS 17R at Tulsa, ILS frequency 111.1, inbound course 177. The ILS is tuned and identified. Sector altitude from the south is 3600 feet, initial approach altitude is 2500 feet, we'll cross KROAK final approach fix at 2479 feet, descending to decision height of 867 feet, which is 200 feet above touchdown. If the runway is not in sight at the decision height, we'll climb straight ahead to 1400 feet, then turn right, climb to 2600 feet, and intercept the Tulsa VOR 238 radial, frequency 114.4, and hold at KEVIL intersection. The runway is 6101 feet long, 150 feet wide, with no approach lights or VASI."

This approach brief, generally conducted after picking up the ATIS, but before beginning descent, (anticipating the landing runway) gets us into the mindset to conduct the approach and, most of all, accomplishes a preliminary review of the procedure.

Here's another two pilot procedure that enhances safety – the sterile cockpit below 10,000 feet. If you have a friend or wife sitting in the copilot's seat, resist the impulse to chat about matters not directly pertaining to your immediate flight. Brief them beforehand that you'll be busy for the first and last portions of the flight and you'll let them know when you're comfortable to chat. Once you begin the engine start sequence, your mind needs to be focused on the flying.

Flying a high performance airplane is not an easy task. Flying it without the assistance of another experienced operator, trained to work as a team, is even more demanding. It requires thorough preparation, discipline, and constant planning to stay ahead of the airplane. But . . . that's what makes successful single-pilot operations so satisfying. Try these techniques – they will help you fly like a pro! **AAOG**

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