

Room To Manoeuvre

by Bryan Quickmire

Decisions, Decisions

*To go or not to go, that is the question.
Whether 'tis nobler in the mind to suffer
The slings and arrows of cancellation,
Or to take arms against a sea of troubles
And by opposing, get there.
To wait? To fly? Perchance to try?
At worst, retreat. Go, be fleet!*

My mission is to take a Zlin 242L two-seat aerobatic airplane, from Barrie, north of Toronto, to an airport near New York City. A jet charter operator is considering supplementing simulator training with aerobatics and emergency manoeuvres training in a real aircraft.

This trip was scheduled two weeks ago, an optimistic act for VFR flight in December. All the company's pilots are at home base today and tomorrow, a rare occurrence. Meetings are planned with the pilots and with corporate management. I am to take five pilots on flights to assess the effectiveness of the proposed program.

I'm over five hours behind schedule. The initial delay was due to weather. A mechanical problem has been circumvented. Now the holdup is one of the most intractable problems in aviation: paperwork, customs paperwork.

Getting there

Finally, the engine fires at 13:42. Estimated flight time is 2:45. We need to be there by 17:00. There's not a lot of slack! It's tempting to go GPS direct but the enroute ceilings are low and the winds aloft are 50 knots. I decide on a route with two big doglegs. One avoids flying 65 miles over Lake Ontario beyond gliding range from shore. The other avoids wending through the Catskill Mountains in serious turbulence.

Soon we're on course, dodging occasional clouds but high enough to be in smooth air. Near the eastern end of Lake Ontario the clouds solidify. The destination is no longer overcast so I try VFR-On-Top.

At nine point five the Zlin is barely clearing the tops, which are obviously even higher further along. It's at

least a hundred miles to the next opportunity for a VFR descent. I head back to the nearest hole, spiral down and slip underneath. This foray has cost precious time!

Down low, the gale on the beam makes a big dent in ground speed. After an hour and a quarter of bumping and thumping at the bottom of the atmosphere, we round the corner at the Hancock VOR and are finally able to climb to smooth air and put the wind on the tail. Ground speed grows to a scintillating 175 knots.

The active runway is 11,818 feet long. Sadly, 2,000 feet is sacrificed to a displaced threshold. Calculations using aircraft weight, density altitude and braking action show that with the 37 knot surface wind there's a decent shot at shoehorning the Zlin into the remaining 9,818 feet. At 16:45 the calculations prove correct.

The Zlin is put to bed in a cavernous hangar between a Citation and a Gulfstream. The limo pilots admire the Porsche-like Zlin, while I in turn admire the tools of their trade. We have a most enjoyable time exchanging cockpit tours. Pilots will be pilots!

Being there is half the fun

Dawn uncloaks a beautiful clear sky. Surface winds have abated to the high twenties. One of the evaluation pilots confesses to having flown an ILS inverted, only rolling upright at 200 feet to land. Of course this was in the simulator! Otherwise none of the five has been upside-down in an airplane.

Everyone wants to go first! With the lucky winner of the draw strapped securely into the left seat we fire up and follow the Hudson River north to an area legal for aerobatics. Finding this spot was difficult since the area is highly populated and crisscrossed by airways.

The plan is to give each pilot a one hour hands-on summary of what a full program would entail. We start out with steep turns and stalls and work our way through to loops and aileron rolls. I demonstrate each manoeuvre then the evaluation pilot practises.

A cornerstone scenario in emergency manoeuvres training is the rolling upset. Even large transport category aircraft have been inverted by encounters with wing tip vortices or severe turbulence as well as by autopilot or control malfunctions. Simulators cannot reproduce the overpowering physical sensations and disorientation.

I do a half roll to inverted then maintain altitude for a while before rolling upright. The student gets to hang from the straps and try to stay oriented. Students invariably don't use enough forward stick on this exercise so the nose heads towards the earth and speed starts to increase rapidly. This is exactly what happens in real upsets. The correct recovery is to roll, which does not consume altitude or increase speed.

Finally we look at what happens when you instinctively pull back to recover from an inverted dive. We decelerate to well below cruise speed then roll inverted and pull through. It's amazing how much speed builds up and how quickly. In an actual upset the pull would be initiated at or above cruise speed. At low altitude the airplane would simply dig a crater. At high altitude, the plane comes apart in the air. Neither are happy outcomes!

Going home

It's dusk. The demo flights are done and all five professional pilots are babbling excitedly like school kids. Company management now understands clearly why a real aircraft is so much more effective than a simulator. Mission accomplished!

The forecast is miserable for the next several days. It would be nice to get home tonight! The winds aloft are unchanged - yesterday's 50 knot tailwind is today's 50 knot headwind! A more worrisome factor is that just up the road the sky becomes overcast, with ceilings lowering to make VFR at night marginal.

There's lots of airports enroute and I don't mind holing up in strange towns. Maybe we'll get to Barrie, maybe we won't. I elect to follow the same double dogleg route but add a stop in Kingston, which has extended hours for customs and gas.

One flight plan and one call to customs later and the view from the cockpit is of 11,818 feet of runway lights. The lights blur, the vibration of wheels on pavement ceases. The moonlight is bright enough to make the hills cast shadows. There'll be ample time to savour the sights - ground speed is 76 knots, a hundred knots less than yesterday!

As expected, the sky deteriorates to overcast which keeps dropping until we're down to unpleasant heights. There is no dividing line visible between air and earth. Few lights pass beneath. Syracuse Approach vectors us cavalierly at swimming altitudes over Oneida Lake.

Is it time to land? The higher terrain is behind. Visibility is good and there's no precipitation or fog. I decide to probe further north. Things get no worse and sixty miles later Kingston is in sight.

Flight Service alleges that the weather from here to Barrie is much the same as what we've just come through. One customs, fuel and bio break later and we're back in the air.

In fact visibility is a little worse, but still at least six miles. Peterborough looms in the night. Since we're going to fly

right over the runway at pattern altitude I click the mike a few times and the ARCAL turns up the runway lights for a stop and go.

Sixty more miles of blackness and we're on final at Barrie. The 2,000 foot runway is more than adequate but not so long that you can afford to squander much. The trick is to get the plane on the ground at the beginning of the runway while not clipping the trees, which are invisible at night, or scaring the dickens out of people driving on the street a few feet from the threshold.

Time to reflect

After shutdown I sit in the dark cockpit, feeling great, listening to the gyros wind down. This is the aviator's equivalent of a cigarette after. The two day excursion adds 12.4 hours to my log book. I'm struck by just how many decisions were required.

A few decisions covered the big go/no-go items like airworthiness, weather and legalities. Countless more were required to handle the interactions and changes in route, altitude, wind, airspeed, power, fuel and the like. Also dealt with were less obvious areas such as deciding to tactfully abbreviate the aerobatics portion of a flight when the other pilot showed signs of becoming queasy.

Some decisions were made only after a great deal of reflection while most required only the briefest analysis or were made almost instantaneously, without conscious thought. At least one, taking control in a botched aerobatic manoeuvre, was time critical.

After a few hundred hours in any given class of airplane our hands and feet are about as good as they are ever going to get. It is the pilot's brain that improves with experience. Experience will aid in correctly and rapidly assessing situations and alternatives. The attitude of the pilot, whether risk averse or aggressive, will determine how the assessment is converted into action.

Each and every decision leads inexorably to the next decision, and ultimately to the outcome of the flight. A large number, if not a majority, of aircraft accidents can be attributed not to equipment failure but to flawed decisions, usually not just one but a chain.

Sometimes external forces skew pilots' decisions. I leave you with these not quite immortal words.

*Is this a dagger I see before me,
The pressure to match schedule
Or reach destination?
Come, let me clutch thee.
I have thee not, but I see thee still.
Art thou but a dagger of the mind,
A false creation,
Proceeding from an oppressed brain,
under the influence of others?
I see thee yet, in form fully palpable.
But you don't exist. I will resist.*