

Mooney Tunes (Part 1)

By George Irvin

Landing away?

On an overcast Sunday in early August, I dead-sticked my Mooney into a potato field near Rotterdam. I was lucky, and the only damage was to the potatoes. But as I write, the aircraft is still there in the field. There have been moments---long moments --- when I wish I had totalled it. Pilots are well drilled for emergency landings. What pilots are not taught is how to deal with the bureaucratic mess that follows.

Before proceeding, a few words on how I came to be in this particular potato field. As you read this cautionary tale, think of the decisions you might have made in my position. At the end of the piece, I'll look at own decisions critically---let's see whether your criticisms match mine?

The day before the incident, I had collected the aircraft in Kortrijk (EBKT) following its 100-hour check and flown back to Rotterdam. It was 700 ft OVC and 900 metres when I arrived on the ILS, and since I was due to collect somebody for an instrument check ride to Ostend (EBOS) and back, I left the Mooney out on the ramp. Hence it was only upon return from EBOS when the aircraft was pulled into a dry hangar that I noticed some drops of oil on the ground. Since I was due to fly with the family to see the eclipse on the following Wednesday, I made a note to return to the hangar the next morning, Sunday, and I placed an old cardboard carton beneath the oil sump. Tomorrow, I reasoned, I could check the dipstick properly and gauge whether the leak was serious.



Sunday promises

Sunday morning was dry and still, but misty with a broken cloud deck at 2000 feet. Inside the hangar, there was a bit more oil on the cardboard. More worrying was the fact that the dipstick showed only five quarts. It would have been 8-9 US quarts upon departing Kortrijk and I had only done three hours since then ... not a good sign. I pulled out the trusty mobile (its purchase at last justified) and rang my Belgian engineer who explained that some old oil that had flowed down into the skin when he changed the oil filter. "But that wouldn't explain burning three quarts in as many hours" I pointed out. Couldn't have been the dry vac pump, which I also change at 500-hour intervals, I thought. That only sucks air. Of course, the engine might just be shedding oil in excess of the normal 6 quarts ... or again, there could be a leak somewhere. The sump plug ... surely not? Troubleshooting by phone is never very satisfactory, so he agreed exceptionally to work on a Sunday if I could fly the aircraft down for inspection. Kortrijk is only 45 minutes south, the destination weather was forecast to remain reasonable and

anyway, if I didn't get it checked today, it might not get checked on Monday and Tuesday when I had a load of appointments. So I filed and flew.

The mag checks were normal, the prop was cycled checking for RPM drop and oil pressure rise, the T&Ps were in the green and the engine analyser scanned four greens as I applied power. The Woody departure off Rwy-06 calls for a climb on heading to RTM D 2.8, then a climbing right turn to intercept the SPL R-188 direct to Woody. It's particularly enjoyable when using the GNS-430 because, stepping down the display to 5 nm, one can fly the departure with pinpoint accuracy. Passing 1000 ft I was handed over to AMS radar who cleared me to FL 060. I was in and out of cloud in the climb and hand flying the departure.

Mind that Prop Guv!

It was on passing FL 045 that it happened. First, the pitch went to fine uncommanded. The T&Ps looked good and the engine analyser winked green. Prop governor failure, I wondered, remembering that unlike a twin, a single prop will default to fully fine. Should I level at FL 050? The, just as I got to F050, the front end began to vibrate severely. I levelled, pulled back the power and went to rich mixture and fine pitch as per the book. But the vibration didn't stop; indeed, it seemed to get worse. In these situations, troubleshooting is a messy business. Could there be something major broken in the prop governor? Could I have shed part of the prop? Might the engine shake itself from its mounting? Hold on, red light, where's the oil pressure gone to? At that stage I stopped thinking and pulled the big red knob fully lean, trimmed for best glide, turned back towards the north and pressed the PTT button.

"Amsterdam, N-201XJ declaring an emergency.... we have an engine failure and require vectors back to Rotterdam" I said, omitting the Maydays and trying to sound relaxed. After all, AMS was talking to a lot of other traffic.

"Roger, N-201XJ" came back a unruffled voice, "radar heading zero three zero, cleared to descend, QNH one zero two zero, call Rotterdam Approach on one two seven decimal zero two". Automatically, I repeated the numbers and twiddled the knobs. I also toggled the GPS cursor, found EHRD and pressed "direct to". "That's odd", I remember thinking, the direct course to the airport lay about 60 degrees to port according to the GPS. Amsterdam must think I'm a twin and has vectored me towards the ILS. (Later, on reflection, I realised that irrespective of what views the AMS controller might hold about the number of engines on an M20P, he was wisely vectoring me away from the built up area between me and the airport.)

"Rotterdam Approach, N-201XJ, engine out, requesting direct vector to the airport" I said. "Roger, 1XJ", approach replied, "fly heading three-three zero for base, runway two four, range 7 nautical miles". I was now approaching three thousand feet and as every flying rocket scientist knows, short of being pushed along by a force ten gale, three thousand doesn't stretch that far in a Mooney. "Err Rotterdam", I replied, "not going to make it ---I'm going for a field." "Good idea", the approach controller concurred as if he'd been waiting to prompt me on the correct answer. For a brief moment, I thought of trying to restart the engine, but then remembered that I had deliberately chosen to shut down. I mentally rehearsed what needed to be done before landing; gear down, flaps as required and electrics and fuel off. Now for the serious business of finding a suitable field.

Potatoes at Nine o'clock

At three thousand the visibility was poor, but below two thousand, the fine detail of fields came into focus. The Netherlands seems ideal for an emergency landing because it's so flat, but in truth the fields are a patchwork intersected by small canals and drainage ditches. What's needed is a long unbroken patch of something---grass, potatoes, tulips though preferably not ripe maize. Forget about cross winds; land in the direction of the rows. If the ground is soft or has been tilled, the aircraft will run with the furrows. I picked a field running diagonally across my flight path starting from a road and farmhouse on my right about two miles ahead. Turning out to the right, I judged that a standard rate turn would put me on finals. I recalled that an instructor had once told me not to lower the gear prematurely and risk undershooting. On finals, now. When it was clear I was high for the aiming point, I selected gear down, flaps two and switched off the master and fuel.

The Mooney came sailing in over the little road, past the farmer's house and touched down at the beginning of the potatoes, some 250 yards beyond the road. Potato plants provide a good leafy cushion, slowing the aircraft down rapidly and avoiding the danger of the nosewheel digging in at speed. Although the ground was soft, the gear held, the aircraft decelerated, lurched up for a moment but then settled and stopped. The door was open, I noticed---I must have opened it as part of the drill. There was no fire, just lots of greenery and, somewhere, a perplexed farmer running towards me. I switched the radio back on just long enough to give RTM my co-ordinates. "Thanks for the call ... somebody will be along in shortly" replied a cheery voice. Slowly, I swung myself up and out of the Mooney. One of the first things I did was to ring my engineer, give him the basic details and elicit a promise from him to inspect the aircraft on Monday. Then there was the farmer to greet, followed by the *Luchtvaartpolitie* (Dutch Air Police), an assorted collection of neighbours and even a news photographer. What I didn't yet know is that landing was the easy part!

For want of a nail ... a kingdom

My first task the next day, Monday morning, was to ring my insurance broker. Equally, there were a couple of quick incident reports to dash off to the FAA (My Mooney is N registered) and the Dutch RLD sandwiched between meetings at work. At mid-day, I told my secretary I had other business to attend to and headed for Rotterdam Airport where my engineer and an FAA inspector were waiting. Although the aircraft was situated about five nm east-north-east of the airfield, almost underneath the localiser for Rwy 24, driving meant going three quarters of the way round the ring motorway---perhaps 30 kilometres. I had had the presence of mind to note the farmer's phone number the day before and had rung to say we were coming. The farmer, a tall young chap named Jaco Lekkerkerk, spoke far better English than I spoke Dutch. Gathered with him were various members of the family clan. One promptly went off to fetch a tractor while the rest of us, led by my engineers, deliberated how best to move the aircraft back to the strip of grass I had crossed near the farmhouse before alighting in the potatoes. In the event, with the aid of several long straps and the tractor, we turned the machine around and had it out of the potatoes in no time. Apart from a few leaves in the air filter, the Mooney was intact, right down to the rotating beacon underneath the fuselage.

Next, we removed the cowling. There was no oil in the sump. Pulling the prop through, my own view was that the compressions were low or non-existent and that the engine had been oil starved. There was nothing suggesting breakage in the governor. There

were oil splashes on the firewall and hoses and much oil below, but all the hoses were intact. The inspection went on for several hours until the source of the oil leak finally appeared. Upon removing the dry vacuum pump, the lower half of the gasket had disintegrated at precisely the point where oil would flow into a wet pump had one been fitted. Moreover, the gasket was neither the usual black type, nor of the cork material sometimes used. It appeared to be of a new hybrid material and was very thin. Later investigation revealed that the vacuum pump maker had only recently changed to a new type of gasket. The matter requires further investigation, but as I write it appears that the gasket was of defective manufacture or else slightly damaged in some way in packing. In the event, it failed catastrophically after just 3 hours' flight.

One need hardly add that had the gasket failed on the previous low-IFR flight into Rotterdam, or on a night flight, or over mountains---or even over the 90 miles of water I was required to file a fornight before to get from Rotterdam to Shoreham----I might not be writing this piece. And the irony is of course that it would not have happened had I not replaced the vac pump as a precautionary measure. Need I have replaced it? Questionable----since I have both a backup manifold vacuum system and a backup electric horizon. I posted a message on the AVSIG forum about this and Paul Bertorelli (the editor of *Aviation Consumer*) replied that he carries a spare vac pump in the back of the aircraft but never replaces his until it actually fails.

With the benefit of hindsight, what were my mistakes? The first, arguably, was the precautionary vacuum pump change. Second, should I have taken off on Sunday having observed oil loss? The answer in retrospect is clearly "No"---I should have insisted on an inspection *in situ*. But having taken off, it is clear too that the leaking gasket ruptured in the climb. As the oil level dropped below two quarts, pressure was no longer sufficient to keep the prop at 2500 RPM and the prop defaulted to fully fine. When did the oil pressure go red? I can't say precisely. My third mistake, crucially, was not to have levelled and throttled back the moment a change in RPM was noted! The change could only mean a faulty governor or serious oil loss. Instead, I spent a minute trouble shooting---between FL045 and FL050. Why? Because the IFR 'mindset' is either to declare an emergency or proceed as instructed---in this case, to climb. It was only when the vibration started---probably the result of a fast-deteriorating connecting rod vibrating on the crankshaft---that I shut down. It is possible that had I acted quickly enough and throttled back to 25% power, I could have limped back to Rotterdam. But of course, it's also possible that the engine could have thrown a connecting rod or seized on the way back.

Meanwhile, my Mooney is still sitting in the field. Watch this space for further instalments and further mistakes.