

Mooney Tunes (Part 2)

by George Irvin

[Ed: In Part 1, the author noted "Pilots are well drilled for emergency landings. What pilots are not taught is how to deal with the bureaucratic nightmare that can follow."]

Might just as well total it!

Those readers who have kept abreast of this aerial soap will recall the chain of events that led to my Mooney being parked in a potato field near Rotterdam. What is more curious, however, is the manner of my eventual departure a month later. Yes, a month ... of phone calls, correspondence, negotiations, field visits and seemingly endless haggling over the fine print. At least if you botch the landing and total the aircraft, the outcome is simple. The underwriters take possession of the hull and you eventually receive a cheque in the post. But should you have the misfortune to execute an emergency landing that leaves your aircraft intact, read on!

I landed on a Sunday, so my first phone call on Monday morning was to my insurance broker. My broker---a splendid fellow and experienced pilot---was as helpful and supportive as a broker can be. He explained that a sum equivalent to half the hull value was available for getting the aircraft out. But a broker, although he can communicate with the insurer, cannot take decisions. My insurers wasted a fortnight before appointing an adjuster who could.



There are three ways of getting an aircraft out of a field: fly it out, lift it out by helicopter or cart it out on a lorry. Since my engine was clearly unwell (otherwise I wouldn't have been in the potato field), the first option was putting it on a flatbed and driving out. The difficulty with this applying this solution to a Mooney is that unlike other aircraft, the wing cannot be disassembled---it's fashioned as a single piece. This feature makes the aircraft famously strong, but also means that removing the fuselage from the wing is tantamount to taking the entire aircraft to bits, an expensive and risky business.

Why not take the engine off the front and tailcone off the back and carry it sideways? The answer is that what you have left (firewall to tailcone) is nearly 6 metres long, and the maximum width of load the Dutch (and most other) police will accept on a public

highway---even a motorway in the dead of night with a police escort---is 4.7 metres. So right from the start it was clear that, short of slicing the aircraft in two with a blowtorch, we were not going to get it out by road. In fact, the aircraft might spend 10-15 days sitting in the potatoes. I went back to the farmer's field and did a deal with one of his many relatives who, for a generous sum, agreed to guard the aircraft on a 24-hour basis.

Blowing the Helo-lift option

The second option was to lift it out by helicopter. Initially, this seemed the sensible solution since the distance to Rotterdam airport was just under 6 nm and there were no built up areas to cross. Various phone calls got me through to a local company with a large enough helo to do the job---even empty, the M20J weighs a tonne. Three days later I was back in the farmers field with a team of specialists looking at the (few) attachment points, how best to construct a cradle which would avoid the aircraft swinging about wildly (use a lot of cable), how to minimise lift from the aircraft's wings when enroute (tape plastic gutter-pipe to the leading edges) and so forth.

But just when we thought we had solved all the technical problems, a serious legal hitch arose. When a helicopter carries a heavy load, it's own insurance company will insure against damage caused to third parties if the load is dropped---but will not insure against damage to the load; ie, to my aircraft. This is quite simply because if the load starts swinging too much, the pilot may have no choice but to drop the cable to avoid losing control. As I learned on AVSIG forum, this problem is dealt with in the United States by having the lifter "buy" the aircraft for one dollar before the lift, then sell it back to the owner for the same amount once the lift is accomplished. I have yet to fathom the logic of this transaction. Needless to say, no company I talked to in Benelux engaged in such practices. Instead, the main company I approached produced a standard contract stating clearly on page one, para one, that the company would accept no responsibility whatever for damage to the aircraft. My particular insurers must have been City gents unfamiliar with the ways of aerial lifters. My broker sent me an e-mail message saying "... underwriters state that there is no way that you can appoint any organisation that will not accept liability for their actions."

The lawyers were then called in to examine the contract and, as everybody knows, once the lawyers are unleashed, the matter will drag on for years. I tried phoning other helicopter operators, but without success. Within hours, apparently, everyone who was anyone in this business knew the story, and nobody would touch the job! Within a fortnight of landing in the field, the helo-lift option was dead.

Killing the Core

Meanwhile, I had spoken to my Belgian engineers, the chaps who had carried out the 100-hour inspection and fitted the vacuum pump and gasket that led to the incident. I asked them to inspect the engine with a view to assessing the extent of the damage and repairs necessary to fly the aircraft out. You may recall that these same engineers had turned up in the potato field the next day and diagnosed the problem as a catastrophic failure of the gasket resulting in total loss of oil within ten minutes of take-off.

Ten days after the first inspection, during which they removed and took with them the dry vacuum pump and gasket, they returned. This time they brought another vac pump and nine quarts of multigrade oil. To assess the engine for damage, they fitted the vac

pump, poured filled the sump with oil----and started the engine! Two minutes later I am told (thankfully I wasn't present when it happened) the number four connecting rod came through the top of the crankcase with a very loud bang. Not only was it clear that my engine was *kaput*, but this new twist meant that my engine core had suddenly depreciated by \$5-7000. Rod Machado's much laboured coke-machine joke took on a whole new meaning "baaad thing!"

Avid aero-engine buffs amongst you will doubtless have read such books as *The Sky Ranch Engineering Manual*, the bible of TBO-Advisor types. Sadly I had not ... but within hours of my connecting rod disconnecting, I consulted it carefully. And, yes, on p 74 under the sub-heading "Oil Starvation" it says quite clearly that the most likely result of starting an oil-starved engine where internal damage is suspected is that the internal damage will worsen dramatically. The most sensitive area is the bottom end---or the crankshaft bearings and connecting rods. Flemming Pedersen---a fellow Mooney driver who is very knowledgeable on this subject---was willing to give my engineers the benefit of the doubt. He speculated that rather than cut the oil filter and inspect it for rod babbitt and metal particles----standard practice----the engineers had reasoned that rapid oil starvation would stopped oil circulation thus preventing the evidence from getting to the filter. In his view, the engineers might simply have wanted to produce *some* oil circulation before shutting down and cutting the filter. I questioned my engineers about this. Their answer was far simpler---they started the engine in order to determine where the vibration was coming from!

Another week elapsed before I bumped into an old pilot friend, William van Steenoven, Chief Pilot and Chief Engineer at Steenoven Air. He had been fetching and ferrying a King Air from Texas and so had been unavailable at the time of the incident. It so happens that William is also an FAA inspector and so can handle both the engineering side and the paper work. His advice was straightforward: find a "loaner" engine, swap it on site and fly the aircraft out. So I went back to the potato field to find the farmer and look for an adjoining field suitable for take-off.

A Smooth Patch in the Rough

By this time, the insurers had appointed an adjuster. The adjuster was working hard to sort out the legal side of the helo-lift operation, though he was not terribly optimistic. Not only was there the thorny matter of phrasing the contract in a matter acceptable to the insurers, but also any lift runs the risk of bending the airframe. Hence, flying the machine out was now considered an attractive option.

Assuming an engine could be found, where should I try flying out? The strip of grass on which the aircraft currently sat was barely 300 metres long. Beyond it was a maize field. According to my POH, on an ISA day with no wind, the required take-off roll for the Mooney at MTOW is about 950 ft; the distance required to clear a 50 foot obstacle is about 1250 ft. Even allowing for the fact that I would be well under gross weight, the grass strip was rough and rutted----so 300 metres (just over 900 feet) was cutting it too tight, even with a headwind. Moreover, if you prang your aircraft trying to fly out, the insurers normally won't pay. I spent half a day driving and pacing the adjoining fields with the farmer. About a kilometre from where the aircraft was standing was a 500 metre patch of recently cut maize. The ground was firm and there were no obstacles. The only hazard was a drainage ditch at the end. If I aborted the roll and didn't stop in time, the aircraft would nose over and probably break its back ... but that was a chance I'd have to take.

Another problem was how to get the aircraft to the strip? The 2 km path along which it could be taxied adjoined a field of ripe maize about 200 metres long. If we could cut 2 metres of the maize, we could probably get there. There was a flat bridge across a drainage ditch we needed to get over and the width of the undercarriage was 3 metres. I measured the bridge: it was fractionally wider ... 10 centimetres to spare. We now had a way out.

The Great Swap

A few days later William rang me at work to say he'd found a loaner engine. If he could assemble a crew, could I get the green light from the underwriters? I asked him to fax off a cost estimate, then rang my insurance adjuster to explain the situation. He agreed to try to convince the underwriters. That evening, he rang back to say he had provisional approval subject to more detailed costings. The crew could start work the next morning.

All being well, the job would take 3 days working flat out. The aircraft would need to be moved to a suitable location and placed on a heavy-duty plastic sheet. My engine and propeller would come off and be hoisted out; the loaner engine and prop would be hoisted in, secured and all leads and hoses reconnected. Runup checks would be performed and all the paperwork signed off. The maize would be cut and the aircraft towed to its takeoff position. Finally, when the *Luchtvaartpolitie* (Air Police) and RLD (Dutch CAA) authorisation had been obtained, 201XJ would be ready for departure. *Imshallah*, I thought-----may the Lord in His/Her infinite mercy grant us three days without rain, clear skies and favourable winds on the day of the flight, and most of all, for no major technical or legal set-backs.

And so it came to pass that on a Sunday morning, a month to the day since landing in the potato field, a crew from Steenoven Air appeared with an aero-engine and an enormous Mercedes crane-lorry. After two days on non-stop activity, the old engine had been dismantled, towed away and replaced by an undamaged IO-360-A3B6D. By Tuesday afternoon after much careful inspection, the cowling was back in place, the run-up checks performed, the Mooney declared to be in an airworthy condition. Tuesday was grey, but the ceiling and visibility at Rotterdam forecast to stay above VFR minima. I rang the Air Police and the Dutch CAA; an inspector was despatched to look at the site, inspect my papers and authorise the take-off.

As the inspector sped towards us from Schiphol, a last minute snag arose. The farmer who owned the patch of maize demanded a small fortune for cutting down the 2 metre wide strip enabling the aircraft to be towed to the right position for takeoff. Negotiations between William and the farmer proved fruitless. So William made a quick phone call. Half an hour later the crane-lorry was back, this time towing a specially rigged flatbed 3.01 metres wide, 10 centimetres more than the main wheels. With the aid of the lorry's winch, the crew, now swelled to eight men, got the Mooney on the flatbed. By planing planks under the left main wheel, the wing rose sufficiently to clear the top of the maize. Off we went boldly at 2 km/hour. The Mooney was chocked and tied down, six men held it firm and I sat in the aircraft holding the foot brakes. Nearly an hour later, we unloaded it from the flatbed and positioned it for takeoff.

Ready for Departure?

I had rung Rotterdam ATC and filed a VFR flight plan. I had then shown the RLD inspector my licence (a commercial licence is required to take off in these conditions), he had verified all the paper work and seen the take-off distance charts in the POH. A take

off plan was agreed, one hour's fuel was poured into the right-hand wing tank and once the engine had been run-up again and T&Ps were in the green, I received the thumbs up. Ready to go ... err, not quite.

"Rotterdam Tower, N-201XJ do you read? We're ready for departure from field five miles due East with information Charlie".

"N-201XJ, Rotterdam Tower reading you fives ... hold position, IFR traffic and a calibration flight in progress". So I sat there with the engine running, feet firmly on the brakes being watched by a growing crowd of farmers and curious neighbours doubtless wondering whether I had lost heart. Rotterdam Tower seemed to be talking to all sorts of traffic jockeying to get in. Today of all days! To the west, the sky appeared decidedly dark. I called again, and got the same reply. Finally, after a quarter of an hour, Tower called to say "One X-Ray Juliet ... okay!". (Even though I was within the RTM CTA, technically they couldn't clear me for takeoff.) So with flaps set to one and the stick right back, I stood on the brakes and ran up the engine until the aircraft started to drift ... then let go and we bumped along the cut maize gathering speed.

I had set myself a landmark about two-thirds of the way along where, unless within 15 kts of Vr (55), I would abort. As the spot approached, I could feel the bumps lessen and ground effect take hold. Suddenly we were free. Stick slightly forward, I accelerated to 80 kts, then climbed, retracting flaps and switching off the boost pump but leaving the gear down.

"Rotterdam, November One X-ray Juliet is up through 500 feet towards Papa".

"Roger, One X-Ray Juliet, maintain one thousand feet upon reaching, QNH 1012, orbit at Papa"

I shall spare you the details of the weather turning SVFR and having to orbit twice at Papa and once on downwind leg at Bravo. Whatever the circumstances, the exhilaration of being airborne once again after a month was quite overwhelming. After ten minutes flying to cover 5 nm, at last I turned finals, spotted the lead-in lights of R-06---visibility was now down to 1500 metres---and eased the Mooney gently on the runway from where it had so innocently departed in August. Taxiing in and pushing XJ back into its hangar was pure pleasure---like the long-forgotten feeling of having accomplished one's first solo.

Emergency lessons

As I write this, a week after having flown out, my Mooney is at the Steenoven hangar in Antwerp awaiting an overhauled engine which I haven't yet ordered and which may take 6-7 weeks to deliver from Textron-Lycoming. A point to note that if an emergency landing results from a serious engine problem, item one on the to-do list is ordering a replacement engine. Chances are that if you order early, you'll minimise the aircraft's down time. But what should you go for---a field or factory overhaul, a reman or a new engine?

For anybody who is researching this subject, I strongly recommend a piece by Paul Brevard, "Reman or Overhaul" (*The Aviation Consumer* XXVII, 2; Feb. 1997). Unless you have enough money to purchase a brand new engine, the choice between reman and overhaul deserves careful thought. A factory remanufactured engine is zero-timed and built to "new" limits using a combination of new and used components---the cylinders and much of the bottom end will be new---but you pay about \$7000 more for a

remain than for a factory overhaul. The latter is built to 'service' limits and is not zero timed. The difference between the two sounds significant, but to quote Brevard "it's very that the additional premium spent on a reman over a factory overhaul will improve the chances of reaching TBO or add predictable value to the airframe when it's sold". Moreover, today, a factory-overhauled engine comes with new cylinders just like the reman, and of course the factory is more likely to give you a reasonable refund for your core.

Where things get murky is when considering a field overhaul. Reputable firms such as Van Bortel in the USA and CSE (Oxford) in the UK will offer their own overhauls, the most expensive of which will match a factory overhaul in price but be built to 'new' limits. For example, the CSE 'diamond engine' will be overhauled to factory-new limits (including a factory new camshaft, followers and cylinder assemblies) and carry a 12 month warranty (versus 6 months for the Lycoming factory overhaul)---this engine even comes with chrome plated rocker boxes, intake pipes and a Champion red ignition harness. But once you move away from the well-known engine shops, there are endless horror stories about cheap field overhauls. One owner claims his field-overhauled engine actually came back in worse shape than when he sent it in!

What conclusions can be drawn about emergency landings? First of all, if your landing was the result of mechanical error, don't call in the engineer who got it wrong to diagnose the cause. Call in an inspector---preferably not one who signed it off. Make sure you have the evidence---you may need it later. Secondly, know about your aircraft! Few of us are qualified aero engineers. If you are a serious long-term owner, think seriously about doing a course on maintaining your aircraft---most major manufacturers offer such courses.

Thirdly, remember that if your emergency landing results from an engine problem, the insurer will not pay for a new engine. The only way to break even is to total your aircraft and get back your full hull value. You'll be lucky to get back the full value, and even luckier not to total yourself!

Fourth, how good are your insurers? Paying the cheapest premium can mean getting poor service when you need it. Is your insurer a well-known, knowledgeable aviation specialist? If not, it may take weeks or months to retrieve your aircraft and even longer to get your insurers to foot the bill. Remember, you have to pay ... and then get reimbursed by the insurers (who get the money from the underwriters)! Most insurers will pay promptly, but some may provide little or no guidance on how to settle the claim.

Finally, following a successful emergency landing, you may have no choice but to fly the aircraft out as I did. The catch here is that you cannot choose to abandon the aircraft. The hull will only be claimed by the insurer if the aircraft is a write-off. But if you fly it out and prang it, the insurance will not pay. Had I flown my Mooney out of the field but crashed into a block of flats before landing, my estate---not the insurers---would have been liable for damage to life and property. So my wife and children could have ended up in the poorhouse. Think carefully! There is far more to a successful emergency landing than they teach you at Flight School.

Sept. 1999