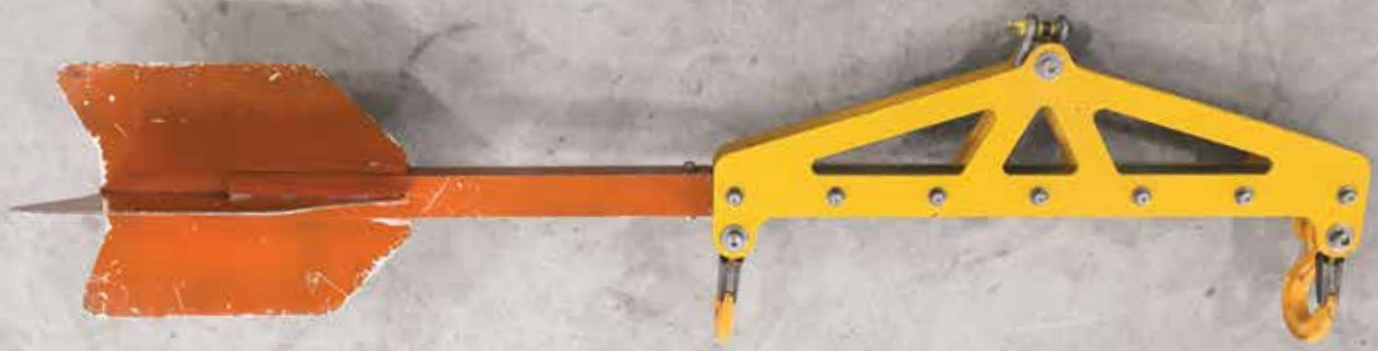
I learned about flying from that //

STRAYING FROM STANDARDS



It might seem like rigidly sticking to best practice is a pain, when workarounds and shortcuts seem to do as good a job. This pilot's story illustrates how getting even a *little* casual with safety standards could end in disaster.

// Above: this 'dart' stops the beehives spinning during flight.

The task was to fly beehives to new honey areas. We do this every year, on and off over the summer months, while the flowers are out.

The first flight of the day was taking two beekeepers from the load site to the drop site, so they could unhook the hives after I flew them there, and prep them for the honey season.

After giving a safety briefing to our two passengers, I walked back to the aircraft where the ground crewman had carefully laid out for my inspection, the 20 ft lifting line with a beehive 'dart' attached to the end of it. This weather vane-type device prevents the beehives spinning during flight.

I walked along the line, having a look at its condition, and confirming the crewman had the D-shackle laid on the ground and not attached to the aircraft cargo hook. I wasn't lifting beehives on this first trip.

The helicopter was ready, the dart and lifting line had been inspected, and the line wasn't attached to the aircraft. So far so good. I climbed into the helicopter, got seated, and belted myself in. The crewman boarded the passengers, assisted them with their seatbelts, and closed their door.

We lifted off, gained height, and I put on a little forward speed to get going. Immediately, I felt a very slight jolt through the airframe and I knew straight away the 15 kilogram dart was being jerked off the ground.

I instantly realised that somewhere in the moments when I was boarding and preparing myself for the flight, the crewman must have reached underneath and quickly hooked the strop, with the dart on the end, to the helicopter.

I didn't want the dart snagging on anything and bringing us down, so my first reaction was to slow the aircraft to lose that forward momentum.

I pulled the cyclic back, and looked out and down – the door had been removed for lifting – to get a visual on the dart. There it was, at the end of the lifting line, benignly resting next to a wire farm fence.

What I didn't realise was that, between the dart being snatched from the ground and ending up against that farm fence, it had smashed through a very old brittle wooden farm gate and destroyed it – which clearly also carried the potential to bring us to the ground.

We didn't feel the 'collision' because of the opposing forces of the slowing helicopter and the forward propulsion of the line and dart into the gate. Had we all been travelling at the same speed we would have been aware of the impact.

// Beehives are regularly lifted by helicopters, taking them to new patches of Manuka.

Because my immediate focus was on the dart, I didn't even notice the destroyed gate beside where it rested. I simply released the line, visually confirmed the release, and carried on to the destination to drop our passengers off.

I called my ground guy on the radio.

"You hooked up the line, man. I didn't ask you to do that! That was so lucky!"

And he said, "Yeah – that was lucky!"

The thing was, I was referring to our luck that we didn't take the dart through the fence.

And he was referring to the luck that we didn't get hooked up on the gate he'd just seen get destroyed. »

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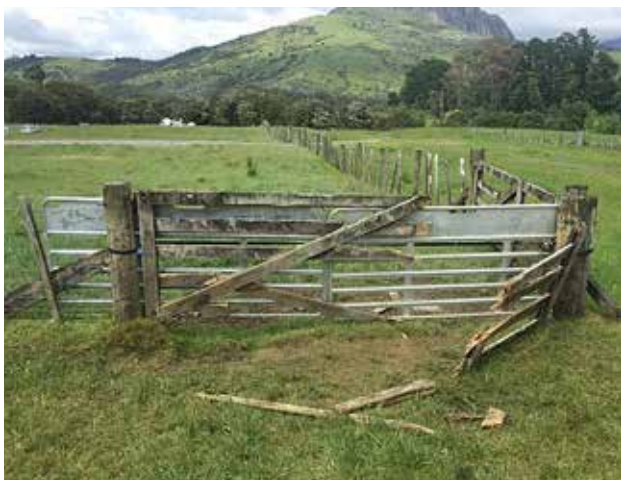

// The replacement gate, and the remnants of the original.

I talked to the ground crewman about better communication because he hadn't told me he was attaching the line to the helicopter before that initial flight. Apart from that, I thought nothing more about the whole incident.

The awakening

A couple of days later one of the beekeepers texted me a photo of the smashed gate. He messaged, 'the farmer says you smashed his gate'.

And I was, like, "no way! I didn't smash his gate. That looks like a car or bull has smashed through. If I'd smashed his gate, I'd have known about it."

So I rang my ground guy, and each of us was utterly disbelieving.

I said, "Hey bro, they're saying I smashed the gate," and he replied, "yeah, straight through the gate with the dart bro – remember?"

And I said, "Nah, no way! I didn't know I'd smashed the gate!"

"No way!" he replied, incredulous. "That dart went right through the gate man, I saw it happen!"

"Why didn't you say something?"

"I thought you knew!"

I apologised to the farmer, gave him a box of beers for the hassle, and we replaced the gate.

By now it was evident this was a pretty substantial incident, and, as per our system, we investigated it in-house and submitted a 005 report to the CAA.

Some might look at the ground man's actions as the sole cause. Out of sheer habit and in a momentary lapse of concentration, he'd hooked the line to the chopper when he didn't need to – and didn't tell me he'd done it.

But it wasn't a one-off human error that had caused the problem. We'd been allowing an unexamined drift from what our standard operating procedures said we'd do. We'd become comfortable with a workaround that we thought was safe, but we hadn't looked at it closely enough.

Because right up until the moment that dart went through the gate, it all *did* seem safe.

This is how it happened

To unhook the beehives from under the hovering helicopter, the beekeepers must wear safety helmets, one of them enabled with built-in aviation communications. Due to the complexity of putting together or obtaining such a comms helmet we'd agreed we would supply one of ours to one of them.

That meant we were one helmet down and it was company policy that in such circumstances, a spare had to be taken to all in-field jobs. That's because, before the first beehive lift of the day, the ground guy hooked the lifting line to the helicopter while it hovered over him and he needed to be helmeted to do that. I didn't want a D-shackle, inadvertently released, hitting his unprotected head.

// Had that dart snagged on something solid like the gate strainer post, we were so low we would have been dead in a second. //

But in the recent past the ground guy had occasionally forgotten to bring the spare from the hangar. So we'd devised a workaround to ensure safety. We'd temporarily changed our SOP so that, rather than the aircraft hovering over him, he'd connect the line only when it was on the ground. He'd stand outside the helicopter facing me inside the cockpit; he'd hook up the line, and I could see that happen.

This had worked so well over the past few days that not bringing the helmet and using the temporary workaround had, in fact, become our new normal.

It was just a verbal agreement between us that this is what we would do to get by without the helmet, and we never stopped to weigh any risk associated with doing that. I basically just said, "can you hook it up only when it's landed on the ground?"

This informal approach to procedure perhaps led my ground crew to, on this one occasion, also not stick to our verbally agreed practice, and suddenly hook up the line when it wasn't needed. And not ensure I knew that.

A stauncher sticking to procedure would have meant no miscommunication about what each of us should do; no assumptions that each of us knew what the other was doing; and no new work habit that we'd rushed in to make right the fact we were no longer sticking absolutely to our SOPs.

It was a classic Swiss cheese accident looking to happen. The final line of defence preventing all the holes lining up was sheer luck. Had that dart snagged on something solid like the gate strainer post, we were so low we would have been dead in a second.

But sheer luck is no legitimate line of defence.

Lessons learned

So what have we learned? Well, when I give those initial briefings to passengers, I invite all on site to stop and join in, so everyone is hearing the same story, questions are asked, and job steps are clarified.

Next season, while we will again loan one of the beekeepers a comms-enabled helmet, we'll never leave the spare back in the hangar. Without the spare, the job won't proceed.

If we ever have to modify something again out in the field, we will pause and take stock of what we're proposing, looking for where it could create new dangers.

What happened to us was not the result of a reckless decision. It was just human nature and we tried to do the right thing to mitigate any risk.

What we didn't do was reflect enough on the possible effect of an on-the-spot change to our standard operating procedures.

And it could have killed three people.

Swiss cheese model of accident causation

In Professor James Reason's Swiss cheese model of accident causation, an organisation's defences against failure are represented as slices of cheese. The holes in the cheese represent weaknesses in the system. When those weaknesses line up, a hazard passes through the holes, leading to an accident.

The CAA database is peppered with numerous incidents where it was good luck and not good management, that the outcome wasn't catastrophic.