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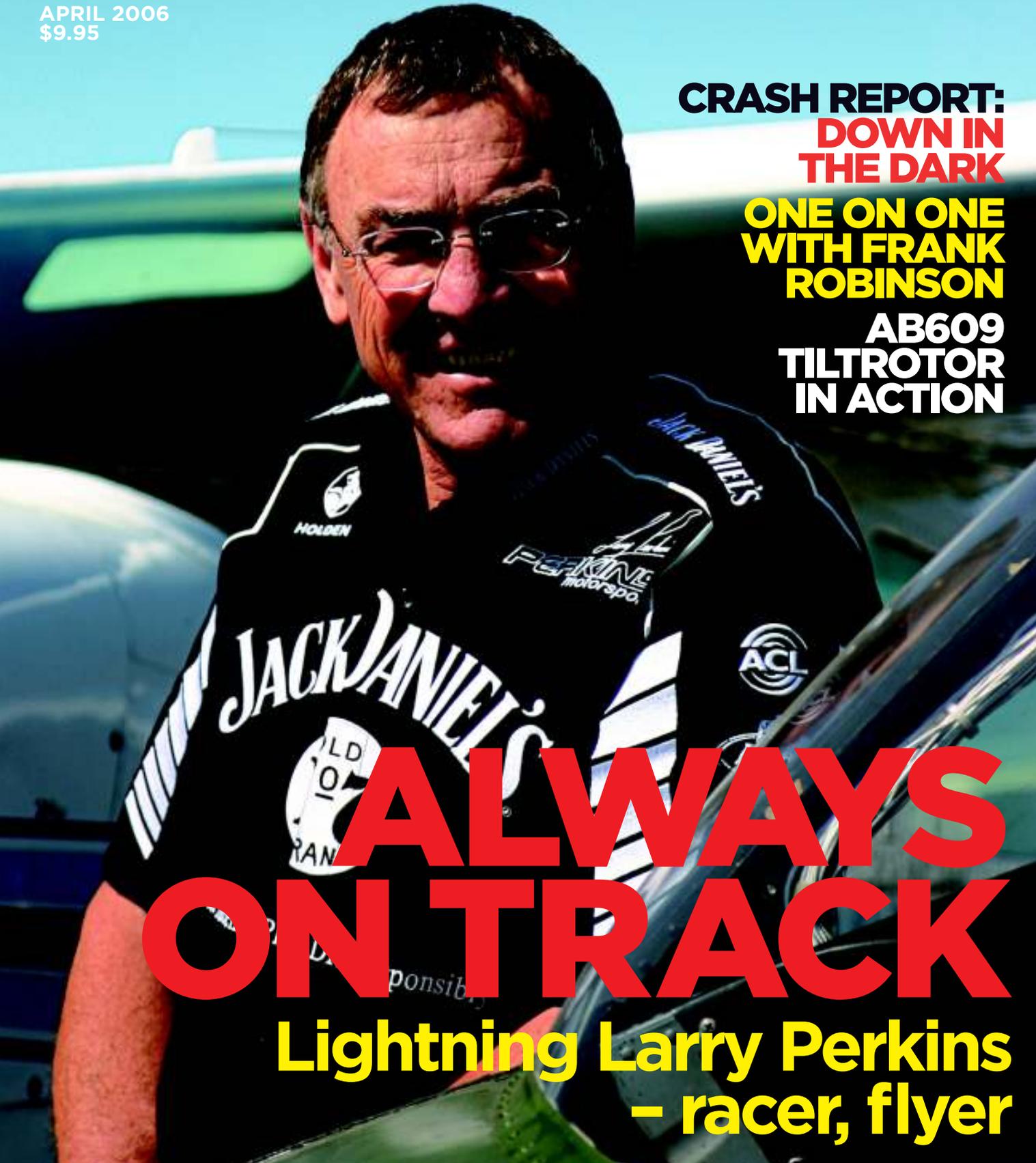
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APRIL 2006
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**ONE ON ONE
WITH FRANK
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**AB609
TILTROTOR
IN ACTION**



**ALWAYS
ON TRACK**

**Lightning Larry Perkins
- racer, flyer**

ALWAYS ON TRACK



Six times Bathurst winner, Larry Perkins, is a legend of Australian motor racing, and is set to parlay his unparalleled engineering expertise into his passion for flying. Mark Slade caught up with 'Lightning Larry' at his Moorabbin-based facility.

The list of Larry Perkins' motor racing achievements is incredible – former Formula One Grand Prix driver; six times winner of the Bathurst 1000, Australia's most famous touring car race; winner of the European F3 and Australian F2 Championships; plus a string of other notable victories. In engineering feats, Perkins' record is equally amazing – among other things, he built the world's first solar car in 1982 and also designed and built the engine for the first non-stop trans-Atlantic crossing by a drone aircraft.

The precision, timing, skill, and cool-headedness required of a champion race car driver and engineer are the natural ingredients for a quality aviator. Today Perkins is an accomplished fixed-wing jockey and avid helicopter pilot. At his Perkins Engineering facility, based in a hangar at Melbourne's Moorabbin Airport, the champ recalls how his interest in rotor-craft developed.

"I got into helicopters as a passion," he says. "For about 20 years I wasn't that keen at all on helicopters, but then one day, about six years ago, I thought I might as well go and take a helicopter flying lesson. I did that just over here at Moorabbin airport. After the flight I thought, 'this is alright.'"

Following that first lesson, Perkins spoke with a neighbour at Moorabbin, Ross Carrington, about diving in and learning to fly helicopters. Carrington, managing director of General Flight Services, suggested that if Perkins was considering purchasing a chopper, he should buy one and learn to fly all in the one hit.

"He quickly talked me into buying a Bell 47," says Perkins. "I took his advice and hot-footed it up to Caboolture, where I eventually completed my helicopter ticket. After a couple of hours flying this helicopter, I knew that it was a passion."

Perkins held onto the Bell 47 for a number of years, but now owns a Kiowa, also made by Bell.

"I was a fixed-wing pilot first," he says. "I got my license in 1978 and I now fly a Cessna 210. As I said earlier, I wasn't a fan of the helicopter at first. I have a current fixed-wing instrument rating but don't intend on converting this to the helicopters, as they are just too unstable. I would need something with a bit more stability than the Kiowa. I'm not going to step out of the Kiowa to get into something just to fly instruments in a helicopter."

"I purchased the Bell 47 for the training aspect of it. I did this to get my personal skills up to a standard so I was safe to fly. I was flying approximately 150 hours a year in the Bell 47, but since I started to travel and use the helicopter more for work I required more speed. The 47 just wasn't fast enough for those long trips. An opportunity came alone to purchase a Kiowa so I jumped at the chance as it gave me greater range and I could get to places faster. I mean, it takes some time to travel across Australia in a Bell 47!"

Perkins has had the Kiowa for the past two years. With his frenetic racing and business schedule, he is always going somewhere, often to remote circuits, and the chopper is his ideal mode of transport. Perkins set up

THE STANDARD OF HELICOPTERS IS ABOUT THE SAME AS FJ HOLDENS – THEY ARE SIMPLY NOT AS GOOD AS THE NEW HOLDENS. THE AVIATION INDUSTRY IS A LONG WAY BEHIND WHERE IT COULD BE TODAY.



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I USE THE HELICOPTER FOR MY ENDORSEMENT WORK WITH THE CAR RACING TEAM. I'VE TRAVELLED TO MINING TOWNS IN OUTBACK WESTERN AUSTRALIA WITH THIS MACHINE AND IT'S JUST SO EASY AND CONVENIENT. I JUST LOVE TO FLY THE HELICOPTER.

Perkins Engineering at Moorabbin Airport in 1992 in order to take advantage of the size of the hangar space for his racing team. The facility comprises two hangars side by side and is the perfect base of operations for Perkins.

"Plus, I can take off from my office back door to Temora and be up and back within three hours," he adds happily. "I use the helicopter for my endorsement work with the car racing team. I've travelled to mining towns in outback Western Australia with this machine and it's just so easy and convenient. I just love to fly the helicopter."

Today, Perkins has logged about 750 hours in a helicopter, with a total time of around 3500 hours, including fixed wing. It seems he has been deeply involved with high performance machinery all his life; when he began flying helicopters Perkins' engineering brain kicked into gear, identifying a deficiency and conceiving a solution. "I had never realised the limitations with regards to instrumentation in helicopters," he says. "It was at a stage early in my flying, about five years ago, that I decided to make instrumentation for helicopters."

During his training, Perkins became extremely concerned about the number of possible engine or blade errors that could occur without being reported.

"In my early days in the Bell 47, I didn't realise you could over-rev the main rotor blade and have an exceedance that could one day become a problem for the aircraft," he recalls. "From the time that was explained to me, I became very nervous flying training-school helicopters, as there was no way of knowing if the guy before me had over revved the helicopter."

Perkins asked the question: how do you know these things weren't over revved at any stage during a student's training? Their answer was, of course, that students are supposed to report it if they exceed a limitation. "I heard that and thought, 'Well, what if the student is looking out the window as they should be and doesn't notice the over-speed or any other error. In an emergency especially, students should not be looking at the gauges. All students have good intentions, but when you are in the middle of some incident of some sort, your attention is not going to be on the gauges, it's going to be on survival! I think it is an error on the part of a designer to assume that all students must read the instruments constantly, because it just doesn't happen like that. So we took a practical approach to it."

Perkins started work on a monitoring system for helicopters. Initially the system was for his own interest

and peace of mind, but discussions with other aviators revealed some true potential for a quality monitoring instrument.

“It’s grown to the point where I’m now spending two days a week, where I really should be spending five days a week, on making instrumentation which I call DAAM – Data Acquisition Alarm Monitoring,” explains Perkins. “This is basically a monitoring system for engine exceedances, trending, and so on. Really, it started off as a passion and a personal solution but I quickly converted it into a business. I can’t afford passions, but I can run businesses.”

The DAAM business is still in its early stages. There are approximately 25 units in the field and the team is still going through quality control and field testing, which is very close to completion now, according to Perkins.

“I am now very close to getting the STC, and I will go to the market,” he says. “Once the unit becomes STC any licensed aviation engineer will be able to fit the unit. I have a staff of three working full time on this, and have so for some years now, in research and development.”

During his tinkering with DAAM, Perkins stopped asking questions and set about using some of the knowledge he’d gleaned from car racing, on instrumentation and recording, to develop his idea. He worked with some “really good propeller head guys”, who helped him design a recording device that tracks exceedances, time stamp events, alarms, and more. “It had to be totally tamper proof, and easy to use,” says Perkins. “I anticipate it would take approximately six to eight hours to install, as there are certain sensors that need to be put in to conduct the required monitoring. There are approximately 16 items being measured at any one time. This includes G-meters, airspeed indicators, altitude, and temperatures inclusive of manifold pressure exceedances. The cost of the unit is around eight to ten thousand dollars. I set out to make an affordable unit, and it needed to be a practical-to-use instrument that a pilot or owner could interpret information from at the push of a button. I designed DAAM so that all of the exceedance alarms could be viewed in the cockpit by the pilot, and not have to be downloaded into a laptop before viewing after each flight.”

In comparison to the advances in automotive engineering, particularly in race cars, Perkins is staggered by the contrasting lack of progress in the development of aviation machinery. He believes that the industry is largely stifled by the increasing exposure to litigation, with companies more reluctant to offer new technology because the potential liabilities are far too great.

“It’s a sad state of affairs,” he says, “because the aviation regulators are always complaining about poor safety records, etc, etc, but the standard of helicopters is about the same as FJ Holdens – they are simply not as good as the new Holdens. The aviation industry is a long way behind where it could be today. I believe there is plenty of room for helicopters to accommodate a good fuel-injection engine and make use of current designs. There is a long list of things the industry could do to make general piston engines more efficient. That doesn’t apply to turbines – I believe the turbine manufacturers have their act together very well.”

FLYING IN AUSTRALIA

Like many private pilots we’ve spoken to at *Heli News*, Larry Perkins is also frustrated by what he perceives as



above: Perkins’ DAAM monitoring system installed in his Kiowa, at the bottom right of the cockpit.

an unnecessarily restrictive general aviation environment in Australia.

“This is the world’s best country for flying,” he says, “and we need to take care we don’t allow the politicians to let the aviation industry go backwards. It’s so depressing to see airports closing. After visiting the USA where there is an airport every three miles, it is a fantastic experience, and here we just don’t understand how efficient flying is. If the trend continues – and the trend starts with the regulatory body – we risk not having general aircraft flying here in Australia in the next 15 years. It’s as simple as that.”

“The ministers seem to take the view that the majority of people don’t fly. I’m of the opinion that if people wish to fly around, either for the efficiency and convenience or just for the fun of it, then they should be allowed. I feel that the privatisation of airports like Bankstown and Moorabbin is the greatest blow to aviation, because the population masses are in the cities. Unlike the US, here you have very few options of airfields. Having no master plan to guarantee the future of aviation is, in my opinion, criminal.”

Perkins says that to really experience freedom in general aviation, one needs to go and fly in the US, and believes there is little freedom to fly in Australia. However, despite the fact he feels Australia has a lot of catching up to do, there is still no substitute for flying cross country to race meets.

“It’s extremely disappointing to people with a passion for flying, but even worse for someone who is trying to make a living out of the aviation industry,” he says. “Aviation seems to be a disappearing industry, but it should be one of the growth industries, especially in Australia. I don’t drive anywhere anymore. I far prefer to fly, as I don’t think the road rules here are up to modern day pace. For example, you have a perfectly good highway running between Melbourne and Sydney on which you are only allowed to drive at 110 kilometres per hour. In just about any other country in the world, the cars would be driving 140 kilometres per hour, where no one is going to sleep and there are no accidents.”

“So I just fly everywhere. I do feel more comfortable in a helicopter than in a fixed wing now, too, especially over rough terrain – as long as you are on top of your autos, you have more options.”



BONE DOMES

In 1961, Perkins had his first crash – hitting the gate post on the family farm in Murrayville, Victoria in an FJ Holden. In all his years of motor racing (he retired from full time driving in 2003), helmets have been an integral part of his dangerous profession. Flying helicopters is perhaps not as inherently dangerous as race-car driving, but there is still a significant risk and helmets have certainly saved lives (see ‘Fighting Fires’ in *Heli News*, March 2006, for one example). Why don’t we wear helmets in a helicopter?

“I would like to say life is an inherently dangerous business,” Perkins responds. “Everyone is free to wear a helmet. I, for one, will always side with the individual who wants to be free to do what he wants to do. However, that’s subject to the condition that if you choose not to wear a helmet and you have an accident, don’t come to me wanting help to pay your medical costs. “We want to be careful not to get into a situation where we write a regulation forcing pilots to wear helmets, as the specification for that helmet could change regularly as new models come onto the market. This could become a nightmare where pilots could be fined for not wearing a helmet, using the wrong helmet, etc. It would take a long, hard argument to convince me to have to wear a helmet in a helicopter. It’s about freedom of choice – I don’t wear a helmet in flight, as I don’t enjoy the comfort of them. But in saying that, I’m still trying to find a good helmet. Arguably, I would wear a helmet by my own free choice, but I would never push another pilot to wear a helmet.”

HIGH TIMES

After learning to fly helicopters, Perkins felt reborn with the ability to go anywhere. It also spawned an exciting

new business project in DAAM. The pure sensation of flying, however, remains the driving force behind Perkins’ passion for aviation, both flying fixed wing and helicopters. As for any pilot, Perkins’ time in flight has not been without some frightening moments.

“I always say you haven’t really learnt properly until you have had the odd scare,” he says. “The key to it is getting through the scare and learning from the experience. I iced up my Cessna once over the top of Melbourne at 8000 feet. I was non-IFR and sniffing through the top of clouds, and I knew all about cloud temperature but didn’t pay enough attention to it and found myself with the aircraft weighting 10 tonnes.

“It took me a few seconds to work out why the airspeed was falling. Being in that cloud certainly got my attention and my heart rate jacked up a bit. I’d like to think that my good training saved me, as at the time I was the only bloke who was going to get me out of the situation. It’s a bit scary seeing an inch of ice on the wings and windscreens, I can tell you!

“How I managed to get out of it was by contacting the Melbourne control tower and telling them I was in a little strife. I think they cleared the airspace of regular public transport aircraft for about 100 miles to give me some space. I was as cold as hell and started to get my bearings and saw a hole of sunshine, which was above. I managed to climb up on top of the clouds at 11,000 feet and thaw out, then found a way down outside of the clouds. As soon as I landed, I was promptly interviewed, which was appropriate.

“Also, three months ago I took off from Parafield in IFR. I got into cloud at 800 feet when my AH failed. That was an exercise in faith I can tell you! I kept it in a climb



IT'S AMAZING HOW IMPORTANT GOOD TRAINING IS... THE HARDEST THING IS TO REMEMBER YOUR TRAINING – YOU MUST REMEMBER WHAT YOU WERE TAUGHT AND EXECUTE IT. I'VE NEVER HAD ANY REAL SCARE IN THE HELICOPTER AS I'VE NEVER HAD A PROBLEM ASKING SOMEONE FOR ADVICE ABOUT A SITUATION I WAS UNFAMILIAR WITH, TO GAIN AS MUCH OF A HEADS-UP AS I CAN. TOUCH WOOD.

and got on top at 6000 feet and survived to talk about it. It's amazing how important good training is. I went and saw Ross Carrington, who trained me in IFR, and thanked him for the lessons in the simulators with partial panel failures. At the time of initial training I would have crashed on several occasions, but the good training helped me through it. The hardest thing is to remember your training – you must remember what you were taught and execute it. I've never had any real scare in the helicopter as I've never had a problem asking someone for advice about a situation I was unfamiliar with, to gain as much of a heads up as I can. Touch wood. I've never been worried about aborting missions if they are not going to plan. I have no excuse as I can just land in a paddock or football oval if the weather turns bad."

Despite some of his criticisms of general aviation regulators, Perkins has plenty of time for air-traffic control.

According to him, their support has made flying a far sight easier. But there is much more work to be done for Australia to realise its full potential in general aviation, something he remains concerned about.

In a lifetime of racing and half a lifetime in the air, Perkins has lived every motor and aviation enthusiast's dream. As owner of the Jack Daniel's Racing V8 Supercar Team, his successes in racing, business and engineering have not only given him the means to fly in style to any destination in his Kiowa, but also the abilities and resources to make a difference in aviation.

The champion's brain works in overdrive when it comes to high-performance machines, and his vision for DAAM is just the beginning. The system has yet to be proven, but if there is one thing the helicopter industry can be assured of, it's this: Larry Perkins does not know how to fail. **HN.**