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Henley Air’s small, solid foundations cast a very big footprint at Rand Airport. The apparent oxymoron of “ostentatious minimalism” that could accurately be used to describe Henley Air, seems to be an effective answer to economic prosperity in uneasy times in South Africa. HeliOps visited Henley Air and found a successful company with a unique approach to helicopter aviation.

SCHOOL GROUND FOR THE TRI SERVICES
The Defense Helicopter Flying School was honoured by the presence of HRH, Prince of Wales, as they celebrated 10 years of flight training success with the school generating over 200 new pilots a year.

TURNING PASSION INTO PROFIT
Many people involved in the helicopter industry dream of running their own company, but what are the pitfalls that lie in wait for those who wish to combine their passion with the quest for profit and independence?
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FROM THE EDITOR

JUST OVER a month ago, two media helicopters collided in Phoenix Arizona while covering a police chase. The collision resulted in the loss of the pilots and news crews onboard. There were no less than five news helicopters in the air at the time covering the same news. While it is extremely sad that accidents such as this happen, considering the number of helicopters that can swarm onto an event, it is perhaps surprising that accidents such as this don’t happen more frequently.

An accident investigation course that I am involved with here in Australia uses the factual element of a 1988 accident involving a mid-air collision between two light aircraft at a major (controlled) airport. The students are required to analyze the facts and produce a report. It is certain interesting to see the different perceptions of what may have “caused” the accident but the one thing that strikes me in many of the papers is that the students highlight the failure of the pilots to maintain separation in accordance with VFR. Even the preliminary report produced by the NTSB into the Phoenix accident reproduces part of the FAA AC 90-48 pointing out, “Pilot s should keep in mind their responsibility for continuously maintaining a vigilant lookout…”

Now while I agree that these are the rules under VFR and the regulators do keep pointing out this obvious requirement, the fact is that pilots don’t go flying into each other deliberately! And with the possible mixing of EMS, law enforcement and media helicopters in the same space, or even numerous helicopters attacking something such as a fire, there are significant limitations to “see and void”, particularly “unalerted see and avoid.”

The Australian Transport Safety Bureau (ATSB) back in 1991 published a research document titled “Limitations of the See and Avoid Principle”. In that publication (available on the ATSB website at atsb.gov.au), which summarizes research up until then, it highlights the limitations of human sight and the effects such as pilot workload, environment and even cockpit design can have on the chances of a pilot seeing another aircraft. So to make a rule that says basically “look out so you don’t hit each other” is fine and reasonable, but there are as can be seen, significant shortcomings to rule-based safety.

I guess my point is that while the rules may say one thing, human limitations and even error will always find ways of unintentionally jumping that line of defence. Operators, pilots and even customers need to be sure that there are other systems at work whether they be training (e.g. CRM), procedural (e.g. placing height or lateral limitations), or technological (radio, TCAS etc) to help prevent aircraft coming together. Preferably there should be multiple “things” in place to stop that human error or limitation screwing with the intent.

On another note, it seems the manufacturers are still going great guns with sales, but hopefully the stock and credit markets “correction” won’t pinch the industry growth too much. Now there are aircraft in the marketplace and there is a worldwide market with few impediments, pilot and engineer availability is becoming an issue. Even Australia has now recognized this and has added avionic and mechanical Aircraft Maintenance Engineer to the Migration Occupations in Demand List. With the average age of licensed engineers in Australia reportedly being in the late 50s, the changes to the Migration on Demand list will, according to the Government, help ensure that General Skilled Migration visa applicants who have recognized skills in aircraft maintenance will be awarded additional points for a points-tested visa, making it easier for them to come to Australia as skilled migrants. Now all we have to do is make the pay and conditions attractive!

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LASeleC, manufacturer of ULyS and MRO 200 wire and cable marking machines used in aircraft maintenance, repair and modification centers, is conducting software, mechanical and optical modifications on its customers’ machines.

The new machines include features that the company sees as the way forward for UV laser wire and cable marking as they benefit from exclusive computer-aided braiding and automatic wrapping technology.

BELL CARGO CABIN FLOOR PROTECTOR APPROVED

DART has received TC approval of their Cargo Cabin Floor Protector kit for 205A, 205A-1, 205B, 212, 412, 412CF, and 412EPs. The kit, weighing in under 40 lbs, offers protection for the cabin cargo area and is constructed of high density, impact-resistant aerospace grade plastic which the company claims will not warp or crack from extremes of heat or cold.

TWO-DAY CRASH SURVIVAL FACTORS COURSE

Eagle Eye Solutions will be holding a two-day training program on crash survival factors on October 4th and 5th in the Greater Cincinnati Ohio Region. The course evolved out of a passion for a better understanding of crash survival dynamics and will offer a deeper understanding of the physics, but also the how and why of survival factors.

Helicopter Crash Investigation Instructor Jack Cress will be teaching the course, which will include reviews of factors leading to serious injuries in helicopter crashes, injury types and probabilities, flight regimes and associated injury risk, and FAR/MIL-spec occupant protection requirements as well as discussion of injury reduction technologies. More information can be found at www.helicopterseminars.com.

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COMPANY GROWTH IN INDIA

Global Vectra Helicorp Ltd., India’s offshore air logistics company, has grown to a fleet of 18 helicopters, a 47 percent market share for offshore operations in the country. The company’s main base is located at Juhu Airport, Mumbai and some of the forward bases are located at Bhubaneswar, Vizag, Rajamundry and Pondicherry on the east coast of India. There are now a total of 225 employees working for GVHL, whose primary business is to transport crew and cargo of E&P companies to the offshore locations across India’s coastlines. The company is part of the US $400M Vectra Group comprising of 18 companies in six countries, and is also looking to enter the international market in the near future.

CUSTOMERS COMMEND MDHI FOR PRODUCT SUPPORT

A resurgent MD Helicopters captured the number two position for overall product support and service excellence among rotorcraft OEMs in a recent survey. Sikorsky, Eurocopter, Agusta, and Aerospatiale trailed MDHI in the rotorcraft segment, where overall ratings for product support and service fell by 1.53 percent. MDHI also topped all other rotorcraft OEMs in the categories of “Authorized Service Centers” and “Cost of Parts”. Improving product support has been a top priority for Lynn Tilton since her company acquired MDHI in 2005 and she is pleased the improvements have now been acknowledged.

S-92 TAKES TO THE SKIES IN DENMARK

Denmark’s S-92 has made its first revenue flight for CHC Denmark from their base in Esbjerg. CHC will operate three S-92s for Maersk Oil and Gas following a recently renewed contract for five years, where the S-92s will replace a fleet of Super Pumas. Two more S-92 helicopters are scheduled to enter service during the latter part of 2007. This new beginning for the S-92 in Denmark is further validation of the aircraft’s capabilities, and comes some 42 years after the delivery of the SAR S-61, which is today still operated by the Danish Air Force.

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ROYAL VISIT FOR UK’S HELICOPTER MUSEUM

Her Majesty Queen Elizabeth II and His Royal Highness The Duke of Edinburgh recently visited the world’s largest dedicated rotorcraft collection at The Helicopter Museum near Weston-Super-Mare. The Duke renewed his acquaintance with a number of helicopter types he flew in the 50s and 60s, including the sole surviving Queen’s Flight Whirlwind HCC.Mk.12. The Royal couple inspected a Wessex HCC. Mk.4, and the Queen remarked that she had forgotten how large it was compared with the S-76 now in Royal Flight service. The Duke unveiled a plaque marking the opening of the new Conservation and Engineering Hangar, which will also be used for the hands-on training of future helicopter engineers in conjunction with the City of Bristol College and other training providers.

NEW JAA ATPL(H) THEORY COURSE LAUNCHED

CAPT announces new modular training course covering the JAA ATPL(H) theoretical exams. The course is geared towards working professional pilots holding an ICAO ATPL(H) with over 1,000 hours multi-crew. With further approvals it is planned to extend to those with more modest qualifications. Three modules based on Phil Croucher’s “Professional Helicopter Pilot Studies” will be spread over a 45-week schedule, amounting to 650 hours of study, with pre-exam classroom time as an option. An online version of the Canadian CPL(H) is currently planned under license by Premier Helicopter Training, in BC, Canada, with an estimated completion date of late 2007. A version for the FAA and Canadian ATP is expected soon afterwards. More information at www.captonline.com.

NEW GENERAL MANAGER FOR RRTM

Eric Hamon has been named General Manager of Rolls-Royce Turbomeca, replacing Pacal Legrand. Hamon joins RRTM from Deloite & Touch, Paris, where he was Manager within the Multi-National Companies Department.

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Wherever you find hard-working helicopters, you’ll find AFS systems. From the desert of Iraq to the desert of Arizona, AFS systems are protecting engines, enhancing performance, and delivering a range of benefits that help operators do what they do best.
Insurance – Is there anything that is nearer and dearer to all of our respective hearts in this industry? “Am I covered?” is the first question that we all ask ourselves if something bad happens.

Let’s look at a couple of issues that I’ve addressed recently. First, the “handshake” deal. We’ve all been there before – admit it. You’re doing business with a good customer that you’ve known for years. The multi-aircraft services contract that you signed a few years back expired by its terms two months ago, and there’s no automatic renewal clause in it. You keep telling yourself that as soon as you get one of those thingies called “A Round Tuit” that you’ll sit down with the customer and hammer out a new agreement. In the meantime though, you’re too busy and you don’t want to call your attorney and have him take care of it because he’s too damn expensive. And, besides, you had beers with the customer just last week and were told that everything was just ducky. No big deal, right?

Wrong. Consider this potential problem, which is only one of many:

Insurance – Is there anything that is nearer and dearer to all of our respective hearts in this industry? “Am I covered?” is the first question that we all ask ourselves if something bad happens. Let’s say you had cross-indemnities in the expired agreement, which is fairly common. You indemnify the customer for your negligence, the customer indemnifies you for theirs, and both of you procure insurance certificates which add the other party as an “additional insured” to cover the indemnity obligations. But what if the insurance certificate states, as is very common, that the carrier’s obligation is limited to liability “arising out and related to the Services Agreement dated XYZ, 2004?” That Services Agreement has gone away, remember? It expired two months ago. In all likelihood, the insurance coverage probably died with it. If you have a mishap for which your customer is responsible, good luck trying to convince its carrier that they need to pay up because you and the customer “shook on it.” And, when they don’t, are you really going to sue your customer for indemnity because his carrier used the language of the certificate to avoid coverage? We both know the answer to that one.

Now let’s look at another somewhat common mistake – failure to sweat the details, somewhat akin to the old rhyme which begins “For want of a nail the shoe was lost.” Let’s put a little twist on the above example. Instead of a contract that has no renewal clause, imagine that you have an agreement that allows you to renew, but you have to give notice of renewal at least 60 days prior to the expiration of the term. You’ve read that part, no problem, and since you have four aircraft, 12 pilots and a couple of mechanics, you need to keep working. You tickle your file to send in the renewal notice well ahead of time. You send it in, to the person that you normally deal with, who is the nice lady at the customer accounts payable department. Unfortunately, there’s another part of the contract that you forgot about – a little thing called a “Notice” clause, which states, as is also common, that any notices or communications under the contract have to be sent to the person who actually signed the agreement (normally a little guy called the President). Two months later, on the last day of the contract, the customer tells you to move your equipment off the ramp, because they’ve decided to go with a competitor. Wait a minute, you say, I renewed our agreement 60 days ago. Guess again. In a lot of jurisdictions you may not have, because the one little detail that you didn’t pay attention to – who the notice was supposed to go to – didn’t get complied with. If you’re in a jurisdiction which follows the common rule that “a contract says what it means and means what it says,” then you probably just lost. Instead of watching the checks come in, you now have to figure out what to do with four aircraft and a bunch of pilots that are out of work. All for want of a nail. So make sure that you always sweat the small stuff. It’ll pay off, I promise.
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Contact us for the complete picture
By Chris Esposito

Protecting the Pilot
Part 1

Even when an operator’s insurance policy is adequate, pilots can still be held liable for damages. Knowing how the policies work may keep you safe from potential litigation.

As pilots, many of us simply assume an operation has adequate insurance coverage, be it an instruction and rental outfit or a charter operation. Unfortunately, due to the expenses inherent in helicopter insurance policies and the somewhat lax regulations governing insurance requirements (if indeed the country has any), some operators do not carry adequate insurance on their helicopters.

As a pilot, knowing that an operation carries some sort of insurance is not enough to protect you. A commercial operation may be insured for tours and aerial surveys, but instruction is typically excluded for this type of operator. Since instruction and rental is statistically more dangerous, hull rates and liability rates increase, which is why many commercial operators do not offer flight training. While finding employment in the helicopter industry is sometimes difficult, and asking to see an insurance policy is something that would leave most job-seeking pilots weak-kneed, it may save the pilot a substantial headache in the future. One should be wary of commercial operators who offer time-building or occasional instruction, as this may not be covered on their policies, and thus would open the operator and pilot up to potential lawsuits.

Most insurance companies offer open pilot provisions in their policies; this means that a pilot meeting the insurance company’s minimum requirements may fly the helicopter and coverage will still be in place. The issue with offering time-building is that the low-time pilots building hours usually do not meet the pilot requirements of the policy. While the operators usually accompany the low-time pilot with an instructor or higher-time pilot, anyone with less than the hours required in the open pilot provisions would be excluded, and once they are manipulating the controls the insurance company is likely to decline the claim. All the insurer would have to do is look at the logbook of the low-time pilot; if he or she has been flying the helicopter when they are not listed on the policy and they do not meet the open pilot warranty, no coverage would be provided. This is certainly something most low-time pilots want to avoid.

Pilots working at a flight training establishment probably know the difference between liability-only coverage and full-flight coverage. The latter offers full protection for the helicopter operator while the helicopter is on the ground or in the air, and in the event of a total loss, the operator would be reimbursed for the full value agreed upon at the policy’s start. Due to the fact that many helicopter insurance policies can cost 10 percent of the helicopter’s value each year, some flight schools and commercial operators choose to buy liability-only coverage, which is typically set at a $1,000,000 per occurrence/ $100,000 per passenger limit for flight schools. The helicopter itself is self-insured, so the operator assumes all responsibility for any damage that might occur to it. Many operators correctly assume that if there are no claims in ten years, the money saved on insurance could buy another training helicopter.

A pilot at an operation which has liability-only coverage should be concerned with how an operator plans to handle a damaged helicopter. Since the instructor may be held liable for damages, he/she would want something in writing from the operator promising not to hold the instructor liable for any damages that may occur. Many operators assume the money saved each year by not buying full hull coverage would be used in the event of an accident. Human nature proves otherwise, and it is a possibility that instead of losing thousands upon thousands of dollars, the operator will try to find someone else to blame. Having a document that clearly waives their right to hold the pilot liable is invaluable in such an occurrence.

For student pilots or those working on additional ratings, knowing what type of insurance policy a flight school has could save you a lot of money in the future. Choosing a school with a solid reputation means the school is not likely to come after a pilot in the event of a loss, even if they do have a liability-only policy that excludes damage to the helicopter itself. It would be far too damaging to the school’s reputation and their potential student base if the school tried to come after a student or renter for a mistake, as mistakes are going to occur at a flight training operation. The more you know about aviation insurance, the more likely it is that you will avoid potentially costly mistakes when choosing a school.
Now that you have chosen Bell, choose the team that specializes in financing Bell helicopters, Bell Helicopter Finance Group. We are part of the Textron division that has been financing aircraft for over 50 years and is known in over 50 countries. Our trusted experts know the industry, understand the global market and are passionate about helicopters. We are the financing power, no matter your mission.

Bell Helicopter Finance Group — Your Smart Solution.
MODERN LIFE is stressful and it is hard to keep aviation in isolation – it is very important not to let what happens outside into the cockpit. We are all hostages to other peoples’ expectations and attitudes, and it often seems that within an hour of waking up, we have an attitude all of our own, especially after the toast has been dropped on the floor and everyone’s had their bite out of you. There is also an increasing tendency to live further and further away from the place of work. Even though the accepted maximum, for most airlines anyway, is 90 minutes, this gives plenty of time for it all to build up.

Although it is accepted that a little stress is good for you and keeps you on your toes, continuous, unrelenting stress is not, and which is why we need proper time off with which to recover. The fight or flight response that is the basis of the stress process actually brings all the relevant hormones, organs and muscles into line at once, whereas the unwinding process does it one organ at a time. Muscles can only contract or relax, and it takes a specific procedure to make them relax properly. The problem is that just thinking about a defensive action can cause you to adopt a posture without consciously realizing it. This is how hidden fears or anger can create muscle tension, especially in the cardiovascular or digestive systems. Thus, stress disorders are caused by chronic, long term over-activity.

Although many authorities restrict the number of flying hours per duty day, my own preference is to rigidly enforce days off, on the basis that it is more tiring to be sitting around at work than to be flying. After all, if you are away from home anyway, you may as well work, and once you’ve sat around for several hours you can be well out of the mood.

Part of the benefit of a day off is the knowledge that you are going to get one, and it allows you to take that little bit extra stress because you are going home soon. What state of mind is a pilot in then when he/she has worked solidly for three weeks, but is then told that they are going to be staying in one of the backsides of the world for another three? This is a favorite trick of many companies. My first job in Canada was taking over from such a pilot, whose stress rating was probably not helped by the thought of likely divorce proceedings! If you get to the state that you never want to see a helicopter again, I would suggest that you are chronically fatigued and should get some time off immediately.

The commonly accepted sources of stress are the usual suspects; death, divorce, moving house, etc. In fact there is a long list of items on the Life Change Events Scale, ranging from the death of a spouse (100) to minor violations of the law (11). A visit from the in-laws rates 29!

However, the common denominator behind them all is change; something that humans in general don’t like anyway. So, rather than the stock answer of removing stressors to reduce your stress levels, because they are often immovable objects, learning to handle change would probably be more productive, since it is the perception of stress that is the real problem. If you cannot change the situation, change the way you think about it!
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- Deliveries are up: 20 year-to-date — 43 expected during 2007
- Recently captured the No. 2 position for overall product support and service excellence in Aviation International News survey
- AOGs are down: By 90%
- Fill rates are rising: 75% within 24 hours; 91% resolved within 5 days
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The industry’s passion for the MD platform burns bright, its former glow reignited by new deliveries and highly praised customer support.
FLIGHT TRAINING

R22 – ROTOR STALL
Fact or Fiction?

GOVERNOR HIDES A LURKING THREAT

Since the introduction of the engine governor about a decade ago, the R22 low IAS/low RPM rotor stall, the number one killer of the R22 helicopter in the eighties, faded away. Today most junior instructors barely have a grasp on the phenomena. As a result, a large number of students will flick through the safety notices in the R22 Pilot’s Operating Handbook and pay little attention to the scant technical information on this topic.

LOW RPM ROTOR STALL OR OVER PITCHING?

I have been providing Robinson Helicopter Safety courses since 1993, and I’ve observed that many consider the low IAS/low RPM stall to be the same as over pitching, a trait of the high inertia rotor helicopters such as the Bell 47 but accident data shows the R22 with its low inertia rotor and derated engine is rarely involved in an over pitching accident on takeoff.

SO WHAT IS OVER PITCHING?

Unfortunately, as was shown in the 1982 Robinson/FAA crisis, instructors moving onto the R22 from the Hiller, Bell and Hughes piston types taught R22 students to use techniques applicable to the older machines. These helicopters were usually underpowered, with heavier rotors and usually running flat out during a typical takeoff. As a result, accidents occurred when a nervous pilot raised the collective too quickly and did not notice he had reaching maximum power.

If the collective was raised further, the rotor slowed as drag now exceeded the power available. The high inertia rotor decayed slowly as its inertia tended to keep it steady for a few more seconds. As the RPM slowed, lift quickly reduced so now collective had to be reduced to regain RPM. Frantic efforts to survive were made harder because the heavy rotor was slow to speed up again, even when the collective was reduced, initially increasing the sink rate.

Overpitching is usually encountered in a confined area during takeoff, at slow speed, with full power applied. Being hot, high and heavy does not help when flying a “heavy” rotor system.

By comparison, the Robinson R22 Beta II engine is derated from 180 BHP to the maximum allowed of 131 BHP for takeoff and 124 BHP for cruise. On an average day at sea level you reach the maximum allowed power at around 23 inches of MAP, a long way short of the possible MAP limit of say 28-29 inches. The reason the R22 is less likely to be involved in an overpitching accident is twofold: firstly, although it means overstressing the airframe, you can use some of that unused MAP to save your neck; and secondly, the low inertia rotor system recovers RPM quickly.

HISTORY – LOW IAS/LOW RPM ROTOR STALL

The R22 because of its excellent flying characteristics can lead the unwary pilot into a low IAS/low RPM rotor stall when the governor is not operating. This type of accident was once the greatest cause of fatal accidents in the R22, especially with early solo students. It was eventually stamped out in the mid-nineties when the engine governor was installed. By comparison to over pitching, the low IAS/low RPM rotor stall generally occurred often with a reduced power setting and from a height well above terrain. Weight, temperature and density altitude were not significant factors.

Research showed 40 percent of the R22 fatal accidents involved the low IAS/low RPM rotor stall. A lack of knowledge about low inertia rotor systems was cited as the cause and instructors were teaching pilots to fly the new R22 as if it was high inertia rotor machine typical of the older helicopters.

In January 1983, the Robinson Factory Safety Course was introduced, primarily to teach instructors how to handle this high performance machine. A decade later 4,000 pilots had been through the programme and the accident rate plunged by 60 percent. However, the low IAS/low RPM rotor stall still featured in too many accidents. Frank then pleaded with industry to accept engine governors. Operators initially refused but a decade later they became compulsory. The accident rate again dropped dramatically. So why should we revisit this problem today?

A recent serious training accident in Queensland is a reminder that rotor stall can occur any time you are flying with the governor turned off. Usually, this can occur on four occasions:

1. Training with the governor turned off as part of an approved syllabus.
2. During autorotation, when the governor is turned off by closing the throttle.
3. Harsh handling during cattle herding with the governor off to allow a more responsive throttle response.
4. Flying back to base when the governor has failed (approved in some countries).

SO WHAT IS LOW IAS/LOW RPM ROTOR STALL?

( Assuming the governor is not working). During normal forward flight the centre of the rotor disc is stalled due to low rotational velocity. Further out on the disc we have an area known as the autorotative driving area, which pushes the blade forward when the collective is fully lowered and keeps the RPM within safe limits. In the event the rotor is allowed to slow down, the inner stalled area will increase in size and move outwards. Any descent will also increase the area because the angle of attack on the blades is increased by the R22’s descent.

Many accidents were caused by the pilot looking at something outside the helicopter as it slowed, usually at a good safe height. As the IAS slowed through 53 kts, the minimum power speed for forward flight the R22 does not stall. This is one last chance – why not open the throttle and speed up the rotor?

The slowed rotor also slows the engine RPM. If the rotor RPM is 80 percent, then the engine can only produce about 80 percent of its designed horsepower. At some point engine power will not be able to overcome the drag and the rotor will slowly slow further and snuff out the engine. When does this happen? According to the factory, at 75 percent +/- 1 percent for each 1,000 ft increase in DA. Even at flat pitch, the engine will not have enough power to overcome the drag caused by the stalled region and the rotor rapidly slows with catastrophic results. This is known as a low IAS/low RPM rotor stall.

LOW RPM WARNING LIGHT IS LOW THROTTLE LIGHT

So how do we avoid this often fatal problem? Treat any governor off operation as an emergency, keep your speed above 60 knots in the cruise and do not allow the RPM to fall out of the green. In addition, if the low RPM warning system activates, it is really a low throttle warning. Your Pilot’s Operating Handbook says it all:

“Roll on throttle and lower the collective simultaneously to recover RPM”

It is that easy!
More than ever, concern for the environment is escalating; by taking care of the nature around us, we protect future generations.

At Canadian Helicopters, all employees are moved by the same passion for doing things right. In addition to going above and beyond to satisfy customer needs, they endeavor to respect the land and the people who inhabit it.

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burden, making the box still lighter and smaller.

Several designs are common. A stacked planetary gearbox allows many teeth to contact at once, so the stress is spread across several teeth, at least theoretically. In reality, if the gears are not perfectly held by a close tolerance ring, the stress might be much higher in some of the teeth that contact earlier. This drives the weight of the planetary gearbox up as more tooth area is needed to overcome the alignment issues. Also, the large number of big, highly machined parts make the planetary expensive. Newer, so-called split torque gearboxes are being introduced as the next thing. These typically have one main “bull” gear and two or more free-standing pinion gears meshing with the bull gear, each carrying some of the main torque. They are lighter, and have fewer parts to keep the cost and maintenance down. Whether planetary or split torque, the gearbox’s main challenges are two-fold – carefully orchestrating the meshing of the gear teeth and quelling the dynamic responses of the gears.

The gear teeth meet where the action is. The spinning gears meet where one steel tooth pushes against another. Those teeth must meet precisely, with no sliding or chaffing, but rather a smooth rolling of the two surfaces as they push off each other. Rolling is easy on steel, so that all that is needed is just a film of oil to lubricate and cool the surface. If the gear faces slide at the pressures that a helo transmission must use, the teeth must be very strong, and still their surfaces will begin to tear each other up, building heat and shortening life.

To keep the contact surfaces rolling, curved tooth shapes are used, and early test gearboxes are carefully studied. The trained eye of the gearbox designer judges the surface motions of the gears just the way a dentist matches the bite of his patient’s new teeth using carbon paper. A test box is run with highly polished teeth for a few hours under high power, and then shut down so the designer can look for slightly worn surface finishes. The finish tells how much sliding or scuffing is taking place, and what must be done to change that contact into pure rolling motion. A test gearbox can go through half a dozen “grinds” as the designers re-curve the teeth to make them roll perfectly.

This job is doubly hard because the gearbox case must be light, and only as strong and stiff as needed. As the power is increased, the gears strain against each other and the box warps, which changes the gear tooth contact. A box that can have perfect contact at every power doesn’t exist, but of course at lower power the lighter contact means that the tooth contact need not be as perfect as that at the highest power.

The gears themselves are dynamic objects, with natural vibration modes that make them subject to high stresses if their rpm is close to their natural frequencies. Gearbox designers sometimes mount the gears by their axle shafts and rap them to measure their bell-like tones, or cover them with fine sand and shake them with oscillators to depict their frequencies. The sand is tossed off the places on the gear where the motion is highest, and it collects at the places where the motion is nil (the “Nodes”). This lets the designer see if the gear has sufficient metal in the high stress places, and also lets them decide where cracks might form. The vibration tests also clue the designer as to the rpm where the frequencies of the gear are naturally excited, where the gear resonates. Resonant conditions can destroy a gear in a few minutes of operation – I once reached into the hole of a test gearbox when a resonance caused a large gear to come apart and toss itself through the gearbox wall. The hole was large enough to get my forearm right into it! The resonant regions of the gears contribute to the yellow arcs and red lines on helo rpm gauges, and make compliance with operating limits more than just a good idea.

The heat produced by the transmission is the product of the power it consumes, usually about two percent of the total power. If the oil is lost, this heat is the enemy we fight, so aux lube systems are sometimes used to cool the gears and bearings until a landing can be made. The vast majority of oil leaks occur in external oil lines, where many fittings are exposed to damaging shoes and vibration. Modern transmissions are often internally “cored” so that no external lines take oil from one section to another, and the only lines are the pair to and from the cooler.

Should a transmission start to fail, noise, chips and vibration are usually the first clues. Yaw licks indicate massive disruption, of course. In transmission emergencies, the flight manual often calls for reducing power to the minimum, near the best rate of climb speed, to help reduce further damage.

Next issue – the shafting and controls! 

THE TRANSMISSION is phenomenally light (perhaps 20 percent of the weight of an automotive or marine gearbox of the same power), quiet and robust. Reducing the rpm of a turbine engine from a whopping 20 or 30,000 rpm down to 400 or so makes a 50-to-1 reduction necessary. Fitting this into a small, light gearbox usually asks for several stages. One solution is to burden the engine with the first stage, so engine gearboxes now deliver the output power at perhaps 6,000 rpm, and the main transmission makes up the difference. For piston helos, the reduction from 2,500 rpm is an easier
We proudly use our experience and facilities to support the Warfighters of Oregon and the nation.

Columbia Helicopters is the only commercial operator of the Model 234 Chinook and Vertol 107-II, the civilian models of the CH-47 Chinook and H-46 Sea Knight. The company’s aircraft operate globally in extreme weather conditions, and are supported by one of the most outstanding maintenance facilities anywhere in the industry.

Columbia’s exceptional maintenance facility is a one-stop shop, able to meet all depot level maintenance requirements for internal and external customers.
Yuri Kazachkov
Russian Helicopter Team
Moscow, Russia

For Yuri and his father Mikhail, flying helicopters has become more than just a hobby – it’s their life. The father and son team have traveled the world to compete in a vast number of helicopter championships, as well as running their own competition in Russia.

WHAT IS YOUR INVOLVEMENT WITH HELICOPTERS?
My father and I own a company called Russian Helicopter Systems which provides a range of helicopter services. The company operates three Kamov KA-32 helicopters and performs all kinds of heavy-lift operations, such as fire-fighting in Turkey and GSM supports construction in central Russia. Our hobbies are also helicopter-related; we are into helicopter sport and organize an annual helicopter championship called the Mill’ Cup. We also visit all the major helicopter competitions in Europe.

HOW DID YOU GET INTO FLYING?
Both my father and I started with our private pilot training at Myachkovo airfield in winter 2002. Our first instructor, Slava Komlev, told us that there was a helicopter sport that would be very useful for achieving good pilot skills. We really loved it from the beginning – it was ever so interesting. At that time there were no helicopter sporting events in Russia and we decided to organize an amateur championship by ourselves. Our company was created in 2006; we’d had the idea long before but it only became possible last year.

WHICH TYPES DO YOU FLY?
We each have about 500 hours on Mi-2 helicopters. I have around 80 hours on R44s and my father has over 300 hours. After passing all the PPL(1) exams we mainly built our hours through helicopter sport training and we are currently training on the Mi-345 helicopter.

HOW DID IT FEEL CONVERTING FROM THE MI-2 TO THE ROBINSON?
Well, we were the first crew in Russia to fly a Robinson R44 for sport, so we had to transfer our Mi-2 skills to it. It was very interesting but rather difficult. The difference between the piston-engine R44 and the turbine Mi-2 was huge. The main problem was that the pilot sits on the left in a Mi-2 and on the right in a Robinson, and it was about the pilot getting used to moving differently and the operator having to exercise the other hand! It took us around 30 hours to get used to the major differences. Now we have started flying the Mi-34, which differs from the others again – it is as maneuverable as the R44 and at the same time it is almost as precise as the Mi-2. All the more, the Mi-34 was specially designed for helicopter sport and aerobatics. This is a very exciting experience for us, and we want to achieve good results.

WHICH IS YOUR FAVORITE TO FLY?
We love flying different helicopters; sometimes we fly the Mi-2 just for fun or for simple freestyle. When we need a comfortable recreational flight somewhere it is more convenient to use the R-44. I don’t think that there could really be a favorite type for us – every helicopter is great!

WHICH COUNTRIES HAVE YOU FLOWN IN?
We have flown in Russia, Ukraine, UK, USA, France, Italy, and UAE. The USA in my opinion brought the most pleasant flying. The situation in Ukraine and the European countries is almost perfect as well. You can fly more-or-less wherever and whenever you want to, provided you avoid restricted zones, which is very simple compared to the situation over here. Russia, for private pilots, is like one huge restricted area. You have to do a lot of paper work, make loads of calls and receive a huge number of permissions just to fly around. It’s another story if you want to fly to a different airport. It is also pretty much illegal to visit a friend somewhere in the countryside, not to mention towns.

HOW DOES THE CLIMATE IN RUSSIA AFFECT YOUR FLYING?
The Russian weather makes quite an impact on the life of the private pilot. If you want to fly in winter you either have to have a warm hangar or a special instrument to warm up the helicopter before starting it. You must be ready to face the whirl of snow whilst hovering near the ground. The helicopter must also be equipped with anti-ice systems to fly in certain conditions, and this happens frequently. Still, the famous phrase by Igor Sikorsky “Russia was created for helicopters” is absolutely correct. We have regions in which a helicopter provides the only means of communication with civilization.

HAVE YOU EVER ENDED UP IN ANY EYE-OPENING SITUATIONS?
Once we were returning in the Mi-2 from a Russian helicopter championship in Samara. It’s about 1,000 km from Moscow, and the weather seemed to be perfect all the way. Suddenly though, we noticed a huge black cloud, a wall of heavy showers and lightning flashes all around us. We thought about flying around the cloud; we tried to the left, then to the right, but it was no good - the cloud seemed endless. By Russian aviation laws we had to fly to the nearest alternate aerodrome, but both fields were already covered by heavy rain. We decided to land somewhere, and found a field which happened to be a garden shared by people working there on their tomatoes and potatoes! They stared at us from under the trees where they were trying to take shelter from the rain. As soon as it stopped raining we started the engines and flew away. People around were amazed – I suppose they were surprised to see a helicopter in their garden!

WHAT ARE YOUR BIGGEST ACHIEVEMENTS SO FAR?
We came 2nd in the Fender Rigging event in the World Championship 2005, and 1st overall in the Ukrainian Helicopter Championship 2004. We are also very pleased with our result of 3rd place overall in the Russian Helicopter Championship 2005.

DO YOU RECALL ANY VALUABLE LEARNING EXPERIENCES?
The greatest learning experience for me is the sport itself. The conditions under which I have learnt to fly have built confidence, and taught me precise and safe flying. Between the sport training we have to do emergency procedures training on a regular basis; it is essential. When we prepare for the season, we do autorotation and other failure imitations for at least two hours per month.

HAVE YOU ANY FUTURE PLANS FOR YOUR FLYING?
We both plan to start helicopter aerobatics on an Mi-34. This machine does the loops, rolls and other elements of aerobatics and that’s what we would really like to do. This year we are traveling across Europe with our helicopter to compete at the French, Italian, UK and (possibly) the German National Championships. Of course we will also fly at the Russian Nationals and the Mill Cup.

WHAT DO YOU THINK ABOUT THE HELICOPTER INDUSTRY IN RUSSIA?
In December 2006 we initiated the birth of the Russian Helicopter Industry Association. We have done this to help get the future of the industry under control. Now all the companies, manufacturers, training centers and private owner/operators are separated and it is a frightening situation when you see the Russian helicopter industry dying. Our country had one of the leading positions in the world of helicopters, and now our laws are out-of-date, our manufacturers make several helicopters per year and think that it is an achievement, our operators provide services for payments that do not cover costs, and private pilots cannot always fly legally because of the heavy restrictions. We have put all the interested sides together and are working on these problems. We hope the association will be able to negotiate with the authorities and lead to improvements in the laws.
In a world where technology and the Internet has changed the way we communicate and do business, you’d think the demand for executive travel would be declining. Once upon a time a similar assumption was made about paper...
ABAHO: Aviaxess EC130 flying over Paris on the heli routes

TOP RIGHT: The hangar is rarely full as the aircraft are out flying some 160 hours a month.

MIDDLE RIGHT: Aviaxess moved into Issy-les-Moulineaux heliport in 2002.

BOTTOM RIGHT: The team chill out in their designer garden!

STORY BY SARAH BOWEN
PHOTOS BY SARAH & MARK BOWEN
that face-to-face meetings between company executives play a significant part in the successful running of a business – for these people time is of the essence.

French operator Aviaxess, based at Issy-les-Moulineaux Heliport in Paris, responded to the cry for speedy and convenient, no fuss transportation, by launching a newfangled tool for business aviation called the "Corporate HeliCard". This avant-garde helicopter time-share program gives a fresh approach to business travel for executives and regular airline business passengers alike.

STATISTICS HAVE proven that the dream of a paperless office was just that – a dream. On the contrary, the introduction of e-mail and low-cost printers has caused paper consumption to increase so much that the average office worker is using a ream of paper every two weeks! Similarly, corporate helicopter transport is following an analogous trend; whilst most day-to-day business is conducted online, or by telephone, it would be foolish to leave the fate of the most strategic and vital business decisions in the hands of a computer, without physical interaction and discussion. It goes without saying that face-to-face meetings between company executives play a significant part in the successful running of a business – for these people time is of the essence.

French operator Aviaxess, based at Issy-les-Moulineaux Heliport in Paris, responded to the cry for speedy and convenient, no fuss transportation, by launching a newfangled tool for business aviation called the "Corporate HeliCard". This avant-garde helicopter time-share program gives a fresh approach to business travel for executives and regular airline business passengers alike.
card offers a subscription to an annual block of 25, 50 or 100 flight hours at a fixed price that can be used throughout Europe. Unlike fractional ownership, the hours are not tied to a specific helicopter type guaranteeing the customer flexibility all year round. For the end user no time is wasted; one phone call and a helicopter appropriate to the sortie and number of passengers is ready to take off – almost as easy as calling a cab!

Frederic Aguettant, President of Aviaxess came up with the HeliCard concept a couple of years ago, when time-share in the business jet industry was gaining popularity. In the rotary world however, a similar scheme had not yet been implemented. Introducing this new way of selling helicopter charter to the corporate market presented unique challenges and required a different approach to management and marketing.

“Today, passengers need to travel under the best conditions of safety, effectiveness and budget. Our understanding and experience within the helicopter world has enabled us to tailor the product, which was originally based around the jet model, to suit the heavy users of rotary transport. We are confident it is the perfect solution,” Aguettant said.

For the executive business traveller, organizing air transport “on the fly” with regular airlines can be problematic and expensive, not to mention time-consuming and stressful, particularly with heightened security measures causing delays at busy airports. The HeliCard opened a door to an easier way of getting from A to B in style and comfort; the challenge however was opening the eyes of business travellers – making them appreciate that helicopter transport is far more cost-effective that
The R44 is often used for photographic work as well as some flight training. The French CAA building is located opposite the heliport, visible in the distance.

OPPOSITE PAGE
LEFT: Minor maintenance is performed on-site, with larger jobs carried out at a nearby airfield by a partner company.

RIGHT: Eric Gardien is one of Aviaxess's commercial pilots. He really enjoys his job and finds flying around Paris highly rewarding.
they realize, given that time is money. According to Aguettant, the deployment of the HeliCard has so far proven progressive and satisfying from a selling point of view, but the general lack of “helicopter awareness” amongst the general public is a major issue the company is working on solving. “One of our key goals here is for potential users to discover and try this incredible productivity tool,” Aguettant added.

Even customers who do not hold a HeliCard account can benefit from the company’s innovative ideas, with the AviaCard, the first “Frequent Flyer Programme” of its kind in the business aviation world. The traveler cumulates “units”, essentially frequent flyer points, and can earn quality rewards each time a determined level of points is reached. The program is so unique because each minute of flight time is logged and rewarded, whether it’s taken on an R22 helicopter or a Bombardier Global Jet!

Downtown Paris is an ideal location for this type of operation, strategically placed adjacent to business and residential areas, and forming the perfect operating base for transportation in and around the country’s capital. Anne Chantal Pauwels, a commercial pilot who recently started flying for the company commented that the heliport provides an effective link between the city and popular destinations like Deauville, Le Touquet and the Normandy coast. “All these places can easily be reached within the hour, and from Moulineaux there is high demand from customers wanting to go to the French Britany Coast, Quiberon, and the islands, Belle-Ile, Yeu, and Ouessant,” Pauwels remarked.

Flying in Paris does not come without its difficulties, however. There are strict regulations about where you can and can’t fly, and sightseeing tours are virtually a non-starter. This is down to the regulations prohibiting departures from the heliport on circular flights with passengers unless a local stopover of at least one hour is made. Then there are the monuments and stadiums – there are numerous areas of Paris that cannot be flown over and pilots must strictly adhere to the designated city-belt heli-routes. Separation and altitude along the heli-routes are also an issue the authorities take very seriously, since Paris lies within Class A airspace. Helicopter operations are admitted SVFR with compulsory transponder use. “We have to be precise with our altitude – 1,000 ft over the north and east of Paris (because of Le Bourget and Charles de Gaulle traffic) and 1,500 ft over the rest. With the transponder on, ATC have your exact position and altitude every second!” Pauwels explained. “There are a number of entry and exit procedures around the heliport and the radio work can get pretty heavy, but it gets easier with time and experience.”

With the heliport becoming more of a business center, the corporate transport business between Paris and its surrounding regions was proving really successful, but the company soon realized that HeliCard customers traveling further afield across Europe would need a faster and more cost-effective way of gaining access to a helicopter. Sending an aircraft from Paris every time someone needed to fly was not the answer. They decided to take action and initiated the first European “Helicopter Operators Alliance” (HOA) – a unique network of partners in various parts of Europe they could call on when a helicopter is required in a specific area. They call it an “alliance” because of the strong, trustworthy relationship they share with each of the partner companies, both in quality of service to the end user and in the structure of their pricing policies. There are already more than 38 helicopters available throughout the main cities in France, Germany, Spain, Portugal, the UK, Italy, Switzerland and Belgium, but Vice President of Marketing and Sales, Barthélemy Gilles is keen to see the alliance grow, and is confident that it will. “We believe it possible to go significantly further with this; building an authentic alliance behind a unique banner opens up opportunities for smaller companies and makes it possible for operators to work together rather than competing against each other,” said Gilles.

The HOA has many unique plus points – the main advantages being shared common experience in the industry, and the exchange of privileged technical, administrative and marketing resources. Typically, smaller operators in Europe have very few machines and staff, and would otherwise rarely have access to such powerful resources. Since Aviaxess is highly pro-active and heavily focused on marketing, pulling together the assets that each company has to offer is very beneficial both to them and to the partner operators. “Uniting forces has given all
passengers, covering everything from booking hotels to arranging car hire. The company has also developed similar time-share solutions for business jets, and thanks to an agreement with Bombardier SkyJet and selected operators, they also have a fleet of 65 business jets available across Europe. Their base at Paris Heliport has a remarkable atmosphere; it’s very chilled out and oozing tranquillity – despite it lying right in the middle of a big city, the atmosphere there makes it feel like the open countryside.

Aviaxess believes very strongly in all-round customer care, and since its foundation in 2002, has offered a complete concierge service to its clients and their passengers, covering everything from booking hotels to arranging car hire. The company has also developed similar time-share solutions for business jets, and thanks to an agreement with Bombardier SkyJet and selected operators, they also have a fleet of 65 business jets available across Europe. Their base at Paris Heliport has a remarkable atmosphere; it’s very chilled out and oozing tranquillity – despite it lying right in the middle of a big city, the atmosphere there makes it feel like the open countryside.

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one of most densely populated cities in Europe! Their fleet consists of 14 helicopters, most of which are less than five years old, and although the helicopters are managed and operated by the company, every one is privately owned. “Not actually purchasing the helicopters means we are not tied to aging machines,” Gilles noted. “We select our customers and aircraft very carefully, so we can continue to guarantee the best level of comfort. Right now we are close to reaching our maximum hangar capacity – the biggest in the Paris region.”

The team consists of six pilots, three in operations, one in administration and CRM, two Business Development Managers and two handling mechanics. All share an obvious dedication to the helicopters with each aircraft in the fleet looked after as if it were a member of the family! Jean-Frederic Badois, one of the mechanics, even goes to work on his days off (out of choice!) so he can spend time with the helicopters. He carries out minor maintenance work on-site, but major services are carried out at nearby airfield Toussus Le Noble. Pauwels has also noticed the team spirit and likes the fact that everybody is very keen to help out. “It’s inspiring to see people going out of their way to make your job easier – ground staff are always doing their best to assist us pilots; pushing the helicopters out, getting fuel, marshalling us in – even booking hotels when we have to go away on a mission,” Pauwels remarked. “The company is always very professional, and we get on really well with our customers too – it’s a real pleasure flying for them.”

The helicopters fly four to six flights per day on average and the fleet includes two EC130 B4s (one of which was the first to be delivered in Europe), several AS350 helicopters, an Agusta 109E, Bell 206, SA 365 N1, and a couple of Robinsons. Gilles noted that the company’s dynamic and individual touch is in the way they provide the client with a momentous experience. “When a customer approaches these incredible machines, everything must be exceptional. Nothing and nobody must disturb this extraordinary moment. Our customers are loyal because they love the ambiance we provide – sophisticated, relaxed, trendy, and extremely friendly.”

Three years ago Aviaxess established a second base in Toulon-Hyères, on the gates of the French Riviera, 40 km from St Tropez. Presently one or two helicopters reside there permanently, but they provide additional aircraft to the base if the season causes demand to increase. Being a military airport, the company obtained special permission to run a civil operation in the area, and is currently the only helicopter operator authorized to do so. “The two pilots we have flying at our Toulon base belonged to the corp that manages the airport, and being familiar

with the area and procedures has made it easier to get the necessary clearances to develop it,” Gilles explained.

The need for helicopters in the Côte-d’Azur region is growing significantly and the company is looking at providing more machines to the area. Until this happens, however, they will continue to satisfy the rising demand by obtaining helicopters from their partner companies. Currently there is a 50/50 split between corporate and private flying in the region – the private sector reaching around 75 percent between June and October, and the trend inverting during the rest of the year. Aviaxess aim to smooth out these fluctuations over the coming years.

It’s not just the corporate sector who benefit from the efficiency of helicopter operations in France. The company has saved the day a number of times by transporting urgent freight around the country. If a manufacturing plant, for example, runs out of an essential stock item and must meet an imminent deadline, it can cost them hundreds of thousands of Euro to shut production down. The clock is ticking, and sending a helicopter to collect and deliver the item is a very small price to pay compared to the huge losses at stake. The freight can be sent freely with minimal paperwork, removing the delays associated with courier services and reinforcing the smooth running of many industries. This type of work requires a quick and efficient turnaround – something the company claims to be quite used to. In fact, freight and cargo flights make up around 40 percent of their operations, with the remainder covering many of the country’s corporate events; the Formula One Grand Prix of France, Transat Jacques Vabre, Route du Rhum, Marathon des Sables, as well as numerous car rallies and football championships. They broke their record for event coverage during 2004 and 2005, when they won the contract for “Official Heli Carrier” at the Formula One Grand Prix of France, Transat Jacques Vabre, Route du Rhum, Marathon des Sables, as well as numerous car rallies and football championships. They broke their record for event coverage during 2004 and 2005, when they won the contract for “Official Heli Carrier” at the Formula One Grand Prix, operating 40 helicopters and performing over 400 rotations! Events like this prove executive transportation is not going out of fashion – quite the contrary it seems.

With the Paris Heliport buzzing and with helicopter movements on the increase, it doesn’t look as if the corporate sector is going to be quashed by the effects of technology any time soon – good news for the helicopter industry, great news for Aviaxess!
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The BIG and the Small of HENLEY AIR
Henley Air’s small, solid foundations cast a very big footprint at Rand Airport. The apparent oxymoron of “ostentatious minimalism” that could accurately be used to describe Henley Air, seems to be an effective answer to economic prosperity in uneasy times in South Africa. HeliOps visited Henley Air and found a successful company with a unique approach to helicopter aviation.

STORY & PHOTOS BY ROB NEIL
for André to combine his interest in helicopters with his study, he took a job as an apprentice with NAC, which he did. During two years of intense study and lots of hard work, André also managed to obtain his commercial helicopter license and began doing the occasional commercial flight.

His dad had started Henley with a single Bell JetRanger and when the time came that André decided to join his father in the business, they obtained a second JetRanger from Air Mauritius and bought a small hangar around the corner from their current location at Rand. They also

**RAND AIRPORT**, on Johannesburg's south-eastern outskirts, is home base to South Africa’s biggest small helicopter company — Henley Air. The company, which only began in 1995, operates from an extremely large and impressive hangar adjacent to Rand’s runway 17/35. The big hangar used to belong to the country’s biggest general aviation company, NAC, which still operates a maintenance facility in different premises on the airfield.

When his father began Henley Air, André Coetzee, its current owner, was a hard-working university student. It was his father who suggested that in order
began a small flight school, using a single Robinson R22 Beta. 

From the start, both André and his father wanted Henley’s own operation to remain as small as possible. To see their giant hangar today, one mightn’t think so, but when its former owner NAC made changes, and decided to part with the building (which used to be its head office), André and his father seized the opportunity to purchase it. NAC moved its operational base to Lanseria, but – happily – kept a maintenance facility operating in another hangar at Rand. Henley and NAC have maintained a good working relationship ever since and Henley’s current fleet of owned, leased and customers’ helicopters together comprise NAC’s biggest current helicopter “customer”.

A strange thing happened as soon as Henley Air moved into the huge hangar. Almost like some “critical mass” phenomenon, it was as if the building’s very size led people to assume Henley was already a huge company and it immediately began to attract ever-increasing numbers of students and customers.

Nevertheless, true to André’s aim of staying as small as possible, Henley’s own fleet of aircraft has remained relatively small. While the clean, airy, spacious hangar contains a massive fleet of privately owned helicopters (mainly Robinson R44s), Henley still only owns four helicopters – two JetRangers and two Robinson R22s.

With the huge number of Robbies filling Henley’s hangar, it is a good thing to have NAC – southern Africa’s Robinson agent – right next-door.

Henley Air has evolved significantly from what André and his father imagined at the beginning. No longer just a small charter and flight-training establishment, Henley now also specializes in hangaring and managing privately owned helicopters and has around 40 machines on its books. Some of these helicopters are seldom used, others are used frequently; Henley’s guardianship of the various machines varies with different owners’ requirements. In many cases owners will call ahead requesting machines be prepared for flight so that all they need do is arrive and go flying, and then leave their machines with Henley’s staff upon their return. Henley Air arranges cleaning, servicing and preparation as required.

Homeowners around Rand Airport below will be used to seeing Henley’s R22 buzzing overhead.

No longer just a small charter and flight-training establishment, Henley now also specializes in hangaring and managing privately owned helicopters and has around 40 machines on its books.
Johannesburg’s roads are seldom as quiet as this photo over the motorway near Rand Airport suggests. Helicopters are a great way to escape the Johannesburg traffic — and with no chance of being carjacked!
While some owners prefer to keep their machines strictly for their own personal use, others are happy to have their machines chartered or made available for commercial work. Henley has arrangements to operate a number of such machines on a variety of jobs, including flight training at its own school, charter and vehicle tracking. At present, Henley Air uses five JetRangers, two LongRangers, two 407s, two twins (a 412 and an EC135), four R44s and four R22s.

Another occupant in Henley’s hangar is an Agusta A109 belonging to a public mining company that uses the machine to fly platinum from its mine to the airport each day. While this helicopter is occasionally available for Henley Air to use for charters, the mining company isn’t particularly keen on it.

The EC135 is a near-new machine that is used only once or twice a year by its owner, so it does make good sense to have a professional operation like Henley Air utilizing it for commercial charter.

With the EC135 and the 412 available to it, Henley Air is one of the only companies in South Africa that currently has twin-engined helicopters available for charter. The 412, which is owned by Anglo Gold, is – like the A109 – basically used to shuttle precious metal (gold, in this case, naturally enough) between the company’s mines and secure airport facilities. When the 412 is required for charter, they are usually Anglo’s pilots who fly it. Although André is rated on the 412, it isn’t a practical proposition to maintain currency for the number of times he would use it, so it makes sense to utilize Anglo’s pilots.

Today, Henley Air’s business comprises around 50 percent mining-related contract and charter work, 35 percent flight school, with the remainder being ad-hoc charters and odd jobs, including filming and transport for one-off events such as funerals and weddings.

Henley Air’s flight school, while thriving successfully, has always been “a bit of an orphan” according to André, and a bit like Topsy, has just sort of “growed”. André now has four instructors working full-time (in addition to instructing himself occasionally). So busy has the operation become, that André struggles to find enough helicopters and instructors at times.

The school typically has around 35 students on its books at a time. Henley doesn’t run its own ground classes – there is a good ground school at Grand Central Airport especially set up to do that, which André believes does a great job of it.

Despite its “orphan” status, André acknowledges that Henley Air’s school is a perfect “shop front” presence and gets the right people through its doors. A great many of Henley Air’s students have progressed to owning their own helicopters – which Henley Air now manages!

André has seen things change significantly in this regard since the company began. At the start, typical students would have been as likely to sell mothers or wives into slavery if necessary.

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It is not only the effective little R44 that is well regarded – baby brother R22s are becoming scarcer and scarcer and are highly prized as trainers!

**TOP LEFT**: This Bell 407 is a Henley hangar resident.

**TOP RIGHT**: Three “Henley” Robbies framed by the tail of another in the afternoon sun.

**RIGHT**: With the day’s flying over, the Henley Air hangar begins to fill with carefully parked Robbies.

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in order to fund flying time. Today, 60 percent of Henley’s students sign up to buy their own new machines in which to do their PPLs.

Most of these new helicopters are Robinson R44s, which are very sought after aircraft throughout South Africa. It is not only the effective little R44 that is well regarded – baby brother R22s are becoming scarcer and scarcer and are highly prized as trainers!

Of all the helicopters hangared or managed by Henley, around 80 percent of them belong to either current or past students. André finds it particularly satisfying that his students feel sufficiently confident in his company to continue such a relationship beyond the issue of their licenses. “It makes for great camaraderie here,” he says. “Many of our clients are, not surprisingly, high profile businessmen, but when they come out here, they’re all just helicopter pilots together.”

Most students think only that they are learning from their instructors – and as far as flying helicopters goes, this is in order to fund flying time. Today, 60 percent of Henley’s students sign up to buy their own new machines in which to do their PPLs.

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largely true. However, Henley’s customers’ positions as champions of industry in South Africa, do not go un-noticed by André or his instructors and they realize that they learn a great deal from being around such people.

Charter work, which is André’s preferred personal specialty, remains an important part of Henley’s operations. The local mining industry provides much of the company’s charter work. Few charters cover more than about 150 miles and there is little tourism charter to be had around Johannesburg. South Africa’s game lodges are typically too distant from Rand Airport for helicopters to be cost-effective charter platforms.

Each of Henley Air’s own machines averages around 600 hours each year – the flight school’s busy little R22s, slightly more. The company uses R44s to fulfill “Matrix” vehicle tracking contracts – tracking stolen cars. This is an extremely busy task in Johannesburg, as crime statistics reflect. The Matrix work provides an ideal opportunity for Henley’s newly qualified commercial pilots to build time in a relatively benign flying environment. Tracking involves one-hour sorties and takes place only from a controlled airfield, with only one takeoff and landing each sortie. It allows André to watch pilots during the time they spend flying “Matrix” missions, and gives him the opportunity to “hand pick” pilots to remain and progress with the company.

It doesn’t take long for a pilot to build the 700-odd hours necessary to progress to the small turbine machines (JetRangers and 407s). For insurance reasons, pilots for the twins are expected to have at least 3,000-4,000 hours minimum time. André’s intention to be lean and efficient is also behind Henley Air’s minimal fleet size. When viewed objectively, it does indeed seem practical and sensible to utilize leased aircraft for the company’s work wherever possible, rather than owning, operating and maintaining its own expensive helicopters – while keeping a hangar full of otherwise wastefully idle private machines.

Henley Air’s hangar building is the only “expansive” aspect of its entire operation. Everything else (staff numbers, helicopter fleet) is kept as lean, efficient and simple as possible in order to avoid the situation of “big company inertia” where it takes months to make decisions about the simplest of things. André is committed to be always in the position of being able to change quickly when required.

In a volatile economy like South Africa’s, operating such a globally dynamic and unpredictable business as helicopter aviation, the Henley Air principle of staying small and flexible – albeit in a big shop front – appears to be an ideal solution.
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The Defense Helicopter Flying School was honoured by the presence of HRH, Prince of Wales, as they celebrated 10 years of flight training success with the school generating over 200 new pilots a year, DHFS are ensuring the next generation of rotor wing pilots for the tri services.
The concept of a Defence Helicopter Flying School (DHFS) “vehicle” was born during the Defence Cost Study of 1994. The aim was to select a single site for basic helicopter training using contractor-owned aircraft and a proportion of civilian flying instructors to produce high quality front-line helicopter pilots, navigators and crewmen for the UK Armed Services. One of the bidders in 1995-96 for the 15-year contract was a company called FBS; Flight Refuelling Aviation, Bristow and SERCo each partner owning a third of the enterprise. Their bid was successful, and the DHFS was formally opened in April 1997 at RAF Shawbury, Shropshire.

By May 27 the first group of recruits had arrived; two Royal Navy, five Army and three RAF students. Training commenced 3 weeks later and now, ten years on, the school turns out some 420 students per year; around 180 ab-initio pilots and 40 crewmen, and a further 200 or so “post-graduate” students. The contract was initially a private finance initiative (PFI) which, at the time was a remarkably new idea. It was seen that by having a special purpose consortium to hold the funding and to own the aircraft, the banks could protect the tens of millions they had invested in the program whilst subcontracting the work out. SERCo later left FBS and company became FB Heliservices, as it is known today.

In order to deliver aircrew training to all three services, three squadrons were brought together; 705, 660 and 60. Each deals with different phases of training as well as providing refresher and conversion courses. An extra unit called SARTU, based at RAF Valley in North Wales, also became linked to the school to boost the level of SAR training. The DHFS also provides advanced multi-engine training for RAF aircrew and further special courses for all three services. But for the new recruits it all begins in the classroom.

IN THEORY...

Before students are let loose on the aircraft it’s essential they understand a few basic fundamentals about the helicopters they will be flying. Lieutenant Commander Adrian Coulthard, DHFS Chief Ground Instructor explained, “One of the first things we draw attention to in ground school is the engine and throttle system. Unlike a lot of civilian equivalents, the Squirrels we use have a fully manual throttle so that we can practice engine-off landings. If students don’t have enough technical knowledge they could easily overtemp the engine on start-up, and suddenly that’s £250,000 worth of engine written off – a very expensive mistake!” By using visual aids such as engine models and emulators, which also examine fuel and hydraulic systems in great detail, the risk of this happening are minimized.

Once through the classroom work, students sit four exams; Principles of Flight, Operations, MET and the Squirrel Technical Package. The exams are apparently quite tough, probably the equivalent of the commercial pilot exams, but the subjects are covered in just three weeks. They sit the papers in-house requiring an 80 percent pass mark, and according to Coulthard, on average 90 percent of students succeed.

Crew Resource Management (CRM) training is another highly significant area of training and focus. Close cooperation between crewmen in the cabin and pilots at the front is paramount in any military operation, so a two-and-a-half day UK Civil Aviation Authority accredited course extension is delivered. CRM training is
Ten years on, the school is turning out some 420 students per year; around 180 ab-initio pilots and 40 crewmen, and on top of that a further 200 or so “post-graduate” students.

660 SQUADRON

The primary role of 660 within the DHFS is to train the ab-initio helicopter pilots in the basics of helicopter flight. Students arrive from elementary flying training, having typically completed 50-90 hours on light fixed wing aircraft, but with no rotary experience whatsoever. Commandant Captain Martin Westwood MA, commented on the basic principles of their training; “Starting students off with fixed wing is how we’ve always done it. This enables them to develop basic airmanship, navigation skills, and awareness in the air, and once they’ve got through that we give them a stab at all three services on a 65-80 hour single engine package on the Squirrel HT1 (Eurocopter AS350B).”

After successful completion of the single-engine basic course and a basic handling check, students return to ground school for another week before progressing to 705 for advanced training. 660 also runs a navigator induction, a loading course and Harrier VSTOL conversion training, which is intended to give student fast-jet pilots some experience at hovering and low-speed flight. Since they need the skills to maneuver into confined areas, they practice many of the Harrier approach profiles on the Squirrel.

705 SQUADRON

705 Naval Air Squadron’s primary initiative is the continuation of students’ single engine Squirrel training.

On the single engine advanced course students start thinking about advanced operations and instrument flying. “They will be facing the challenges of flying at night, out of clearings and down at low level so navigation skills need to be of a much higher standard.” Coulthard explained. “To give students an insight into helicopter production, we also try to fit in a trip to Westland.” What comes next depends on which service they’re going to; students never really know where they’ll end up when they enlist. Army students graduate first, moving onto Squirrels at Middle Wallop. For the Air Force and a small number of Navy students, who will go straight onto operations on type after graduating, it’s then consolidated by taking the students out for a day and a half in Griffin aircraft with the intention of getting them into field conditions to prepare them for the missions they may one day be flying. As four weeks of intense ground school comes to an end, the successful ones are handed over to 660 Squadron where they will get their first taste of real hands-on helicopter flying.

TOP LEFT: Confined area training plays an important part in the single-engine course.
LEFT: One of the DHFS 25 Squirrels on the base at RAF Shawbury.
yet another trip to ground school before starting the multi-engine course at 60 Squadron.

**SIXTY (R) SQUADRON**

Sixty (R) Squadron was a fighter unit until 1992. On returning to England after 76 years serving overseas, it took on a new role flying Westland Wessex HC2 helicopters at RAF Benson. Later, it disbanded and reformed as RAF Advanced Rotary Training Squadron operating Griffin HT1 (Bell 412 EP) helicopters with the newly formed DHFS.

“By the end of the multi-engine course, should we need to use Griffins front-line, we’d have produced here a combat-ready Griffin pilot,” remarked the Commandant. From this point they go straight to their OCUs to learn their operational aircraft. The turnaround is so quick these days, we’ve had people finish here on a Friday and start at the OCU on Monday, and within a couple of weeks of finishing there they could be out on the front-line.” For the crewmen, training is consolidated by teaming up with the pilots for the final tactical phase.

Every multi-engine student works with SARTU as part of their course to complete an element of winching and mountain flying. The early 1960s saw the first training of dedicated SAR Crews at RAF Valley by 3 Squadron CFS(H), a lodger unit parented by RAF Ternhill. In the late 70s, with reorganization of their fleet, Valley’s training squadron was renamed SARTU.

When SARTU left Strike Command in 1997 to become part of the DHFS, the unit was re-equipped with the Griffin, improving training even further. Students graduating into the SAR field take an RAF SAR lead-in course before moving to the Sea King OCU.

**EQUIPMENT AND TRAINING AIDS**

Although the DHFS’ 25 Squirrels and 11 Griffins are owned and operated by FB Heliservices, they are all on the military register. The station flies in the order of 30,000 hours per year, and according to Captain Westwood, the partnership has proven a huge success. “The DHFS concept would not work without the aircraft’s engineering reliability and success. They’re built for the purpose and they just keep on working. Of the 25 Squirrels we’re using 22-23 a day, and the same ratio goes for the Griffins. The hours we have flown over ten years is a testament to their reliability and to the maintenance provided by the government.” Squadron Leader, Al Dawson added, “We keep most of our helicopters turning all day long, because in terms of serviceability it works out much better with less starts and

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It’s not only the pilots, however, that benefit from the DHFS latest innovations. Until recently, Loading Trainer Paul Crutenden had to take his crewmen off-site learn about physical loading and lashing. Now, thanks to his brainchild, essentially a porta-cabin with the same basic internal dimensions as a Chinook, he can teach everything from physically tying equipment in, to performing weight and balance checks to ensure items are not loaded too far fore or aft, to actually driving a Land-Rover in to simulate fast on-load and offload situations. “Although this is not a particularly hi-tech form of simulation, we have everything we need to make this fully-realistic training. Depending on service demand, students might move to Merlins, Pumas, or...
Chinooks, but the generic loading aspects and principles they learn here will serve them well throughout their entire careers.” Crutenden explained. Dawson agreed that the main benefit of the on-site facility, is that they can practice loading at relevant stages of training and it can be refreshed throughout the course, rather than cramming it in all at once. As a result students are prepared to a much higher standard for the next stages of training and will have learnt about transportation of cargo to IATA standards.

“We plan to put some seats down the sides to restrict the crew’s access somewhat and make it feel more like the real thing, and if we turn out the lights and shut the doors we can make it a night-time environment,” Crutenden added. “They can practice with people who know what they’re doing, they can make mistakes and corrections, and since it’s all done in real time, it’s excellent practice for the future. It’s much harder today for crewmen to learn their trade prior to the front-line, because the “pipe” is so fast and they’re getting pushed out of each individual section so quickly that training is more compressed. They don’t have the option of “practice makes perfect” out in the field, so it’s better they get it wrong in here than out there.”

Crewmen also have access to a rear simulator; a simple software package connected to a movement-sensitive helmet and goggles, invaluable for practising the crewman’s role. “It’s our way of getting used to all the procedures for all the different sorties we do rather than wasting aircraft hours,” Dawson remarked. “The crewman guides the pilot through landing in confined areas where the pilot has restricted visibility. He looks at the size, shape, surround, surface and slope of the chosen area, and also checks for obstructions, wires, and other hazards. It saves a considerable amount of money not having to use flying hours to do this.” While the DHFS operates reasonably small aircraft, students may well progress onto sizable aircraft like Chinooks and Merlins, so getting into very small confined areas is a skill that needs to be up and running from the outset.

TODAY’S STANDARDS

While some countries face recruiting
problems, it seems the DHFS have no trouble getting people through the door. In fact, according to DHFS statistics the competition is stiffer today than it was ten years ago. The same can be said for the instructor pool. Initially training was delivered mostly by military instructors but over time some retired and became civilian members of the company. In the early days there were 350 staff applications to fill 55 posts and although the future may see less military and more ex-military instructors, the military helicopter pilot pool is getting bigger and within it there is no shortage of experience. With the school generating over 200 new pilots and crewman a year, whose tours will eventually come to an end, there’s a good chance that some will opt to return to instruct.

Fail rates have been fairly constant over the years and of all the courses the DHFS have run they have never even approached the fail rate set out in the planning phase of the contract. According to Captain Westwood, the most common reasons for failure are either difficulties with basic motor skills or not being able to cope with the workload capacity as more and more is loaded onto them. “The recruiting entry requirements are the same for all three services, and the main measure of our efficiency is that the failure rate at the OCUs, which is fairly negligible. It’s a very expensive mistake to send someone forth from here only to find out they can’t handle the front-line job, and as they move on from here the cost of flying training goes up by an order of a magnitude,” Westwood remarked.

“We don’t want to be wasting Chinook, Merlin or Apache hours on people who aren’t ultimately going to qualify as front-line service pilots.” The school tries to identify people with capacity or awareness issues early on, although the fact remains that people progress at different rates, and someone who initially struggles may graduate as an exceptional pilot. “The only way we can judge this is experience. One of our reasons for success is our mixture of old and bold ex-military instructors with thousands of hours, and what they don’t know about helicopter flying is not worth knowing. These guys are excellent at spotting strugglers and getting them through. Married in with that we have those who have come back from very recent front-line operations in Iraq and Afghanistan, so the two compliment each other very well and as a result ours standards are very high,” Westwood added. Ultimately the flying training system is not just about teaching them how to fly the helicopter but preparing them for the next stage so they will be successful out in the field.

AND TOMORROW?

Thinking about the future, DHFS is Military Flying Training System (MFTS) and Westwood is very proud of their achievements, believing that essentially they deliver a complete product to the front-line. “What you see here is a picture of British military flying training, and I have no fears about the future because it’s been a huge success story and what we’ve got now is a system that works. We don’t want to get complacent, but the numbers we’re getting through now provide a good model for the future. Ten years into the contract with five to run is a good opportunity to take stock of what we’re doing, learn from the early teething problems and have a long hard look at the syllabus to make sure we’re doing things because we need to and not because we’ve always done them in that way.”

The school has grown considerably in ten years and because it was originally designed for a smaller capacity of students this has caused a few choking points. Although they have invested in additional assets, Dawson says they would like to see the provision of simulation capacity grow. “This type of training is bound to evolve over the next 10-15 years as we progress into the future and simulators get better and better. We also foresee the simulation of all sorts of additional operations like air to ground gunnery and engaging enemies. I think it’s the way forward and it will provide a link between rear crew and front crew simulation.”

Although the emphasis of training has not changed since the early days, the front-line force continues to dictate how people need to be trained and there is no doubt that this will change with the times. NVG training was one addition not originally in the syllabus, which now reflects a big part of operations. Further fine-tuning may well go on when the contract is up for renewal in five years time, but nothing is set in stone and for the time being, it seems the Squirrel and Griffin platforms are doing the DHFS proud.
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Many people involved in the helicopter industry dream of running their own company, but what are the pitfalls that lie in wait for those who wish to combine their passion with the quest for profit and independence? PHIL CROUCHER gives some handy tips and pointers based on first-hand experience gathered over his many years in this demanding industry.

PHOTOS BY NED DAWSON
THE MAJORITY of helicopter pilots are quite happy working their way up the career ladder, graduating to larger and larger types as their experience grows and without concerning themselves with operating their own aircraft. For others, however, there comes a time when they feel that life should hold a little more challenge and reward, or they come across an aircraft owner who would like to offset the operating costs against some income. In other words, there comes an opportunity to obtain their own Air Operator’s Certificate (AOC) and set up their own company.

This article is not a Business 101 course (there are plenty of business schools out there for that), but is intended to address some of the “gotchas” that are peculiar to the helicopter industry, and which are often not anticipated or planned for until far too late in the development of a fledgling aviation company. I hope that if you are one of those for whom the thought of running your own company is an exciting prospect, this article will help smooth your path to success and eliminate or reduce some of the more painful mistakes.

FINANCE:

There is a well-known aphorism that says, “It is surprisingly easy to make a small fortune in Aviation, just start with a large one!” Trust me when I say that you will need much, much more capital than you initially anticipate.

To run a healthy company you’ll need as much available and uncommitted capital as you can get, to cover cash-flow requirements. Customers and other debtors seldom pay promptly, but your creditors won’t wait for their due pound of flesh. When running an airline, for example, you will find that the major travel agencies can take up to 6 months or more to pay their bills (if they pay at all), which can cause major cash-flow problems. Once the fuel companies don’t give you any more credit, your company doesn’t have long to go! Emergencies and unexpected non-budgeted expenses are a given. If you are borrowing capital and only ask for enough money to meet budget, it will be patently obvious you don’t know what you’re doing and any intelligent lender will not hesitate to show you the door.

Usually, things work out cheaper if you can afford to fork out money from the start. Buying your own fuel bowser, for instance, instead of positioning your helicopter to the local airfield for fuel, will probably cover all the non-revenue flying and unnecessary landing fees inside three months; but you need to have the capital available in the first place and paying as you go should be avoided wherever possible.

You will need an accountant on board for the business plan, but never ever let them run your business unless they’ve either been there themselves, or have gone to business school and actually understand business. Most accountants thoroughly understand money but are not great business people,
as their training makes them very narrowly focused. Don’t forget though, pilots have limitations too, since they’re programed to fly and don’t always realize that sometimes more money can be made by not flying. By this I mean that contract work wears out your machine quicker than it would under normal circumstances for less money. If you charge higher prices, you fly less and abuse your machines less.

A business-plan is needed to raise capital. It is a brief overview of your proposal, detailing how you mean to repay the money, together with how things will be run including details of the management team. Like a resume, it should be short and to the point; somewhere between a quarter and a half inch thick and provided it is well thought-out, need not be too polished, though it should still look neat, tidy and professional.

Note that although a business plan is important, you will find that your personality, or those of others in the proposed organization, will account for at least half of the decision from a Venture Capitalist.

SOURCING AIRCRAFT:
Obviously, you will have to get your hands on at least one machine. You don’t actually need to own the aircraft, but some countries, such as Canada, expect you to at least have “custody and control”. Outside aviation it is common practice to place all valuable assets into a holding company that trades only with associated ones, thus insulating them from unplanned contingencies. Where aviation is concerned, it also legally separates the registered owner from the user.

Once you let it be known that you’re after an aircraft of any description, you will get every man and his dog ringing you up with whatever they have to offer. On the one hand, this can save you a lot of work, but it can also be a pain in the neck, so here’s a tip; get the registration number of what they’re trying to sell – it could be the same machine several times over!

Take the time to talk to pilots and engineers who actually work with the type of machine you are considering. Only those who have extensive experience with a particular type will know the sometimes-obscure pros and cons of operating that specific machine. You may find, for example, that your preferred model has a reputation for turbocharger failure, which then takes at least three

If you are borrowing capital and only ask for enough money to meet budget, it will be patently obvious you don’t know what you’re doing and any intelligent lender will not hesitate to show you the door.
days to repair because it’s hidden behind the engine, which in turn has to be completely removed. A different model of that type, however, could have similar work done in less than half a day, and doesn’t go wrong in the first place because the turbocharger is a more reliable version and not in such a stupid place. Similarly, a particular helicopter could be cheaper to run on paper, but its shorter range on full tanks means that you’ll be paying out more landing fees and non-revenue flying, thereby bringing the operating cost nearly equal to something more comfortable, with greater endurance.

In many cases, a simpler, cheaper aircraft will suit. For example, if you want a helicopter for corporate transport, by all means use a 206B-III, but for training or pleasure flying, where the weight-carrying capabilities might not be so critical, a 206A would not only be cheaper, but more cost-effective, as its C18 engine is not cycle-limited. Never lose sight of the fact that the aircraft are a business asset, not a status symbol.

You must also consider the data for rotor or engine TBO (Times between Overhaul), the Mean Times between Failure (MTBF) on avionics equipment and all other component duty limitations. The build-date of the aircraft you want can be largely irrelevant; what counts is the time remaining on its components, since they must all be inspected and replaced at specified times. Equally important is the documentation supporting it. It can take longer to verify the paperwork than physically survey the aircraft. In this respect, be especially careful with the many apparently “cheap” aircraft available, mostly confiscated from smugglers or drug dealers with no acceptable documentation. Their only value is scrap. If possible, buy from a company that can provide support, particularly an engineering-based one, and have an independent survey done by a competent engineer.

REMEMBER:
There is no such thing as a cheap aircraft; and more particularly, there is no such thing as a cheap helicopter.

OTHER EQUIPMENT:
You won’t just need to budget for an aircraft. Customers may expect you to have all sorts of goodies from slings to FLIR equipment. The total bill for ancillary equipment could be as much as that for the helicopter!
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THE AOC:

If, after the foregoing, you still think you’ll be some sort of success, you will need to obtain your Air Operator’s Certificate. This is required by all operators taking money for carrying passengers. It’s applied for on a form, accompanied by a large chunk of the money mentioned above, and must cover all aircraft types you wish to initially include. However, subsequent additions may cost the same again, so if you know you’ll be adding a new machine later, it could make sense to try and include it from the start. Unfortunately, this will cause its own trouble in the form of additions to the Ops Manual and further training costs, as pilots must be qualified on the new type as well, and beware of having too many types in different performance groups, because the paperwork strain may become enormous.

Under some rules, you can only hold one AOC in one State, and your office and aircraft must also be registered there, so if you want to go multinational, you need to be careful here! Carefully research the specific limitations and requirements in your chosen area of operation.

Although you don’t have to send the Operations-Manual with the application form, things will happen considerably more quickly if you do. If it’s ready when you apply, some parts of the application form need not be filled in; you can just refer them to the Ops-Manual. As it is the primary indication to an Authority of your operating standards, it makes sense to produce the paperwork in the best possible way. This is psychological. Usually, if an Authority sees a well-presented manual on the shelves, it is more likely to be convinced that the rest of the Company is likewise (well, wouldn’t you?). You are therefore
doing yourself no favors if you skimp on the Ops-Manual, no matter how tedious it may be to produce it!

In my experience Ops-manuals are usually badly written, often being a copy of somebody else’s (including their bad English). Be aware that “acquiring” Ops-Manuals is a favorite form of industrial espionage. You’ll probably also find items in the most illogical places, after being added willy-nilly over the years with little or no thought to context or usability. They also often seem to have been typed by someone wearing boxing gloves. It wouldn’t be so bad if you were given time to read it, but you’re usually expected to do so overnight, at the same time as learning the rest of the Company procedures and studying for the exams you will no doubt be expected to sit the following day.

**TIP:**

When it comes to software, try to avoid using word-processing programs—they are simply not capable of handling documents of this complexity, especially if you want to use lots of graphics, which often move every time you open a document! You will spend more time trying to fix the problems than learning to use proper desktop publishing software in the first place. It also pays to make your default printer a PDF writer and print to PDF files. You won’t then have the page layout changing when other people edit it on different computers (you can print to a normal printer from a PDF file).

**THE OPERATIONS DEPARTMENT:**

Operations are in immediate control of all day-to-day business, the focal point of their activities being the Ops-room where, depending on the extent of your activities, will be found the Operations Staff (secretaries and the rest if they can all fit in). The role of Operations is to ensure that the right aircraft is in the right place at the right time with the right people, and that everyone concerned is aware of what is happening and is pre-warned of any problems which may be expected.

One of the ways Operations keep track of events is with Movements Boards. These should be kept well away from the prying eyes of those who may pinch your business if they see destinations and customer names, so don’t put them near windows. Movements Boards should be constantly updated as they’re a major reference point. What goes on them is up to you—just use whatever information you think will be needed (the Authority will also like to see a board, or at least a pop-up reference, with pilot qualifications and times due).

My preferred system is to have a quotes file, which should be loose leaf, each page being filled in whenever a customer asks for a quote. If a trip looks like it’s going to happen, then that page should be put into a pending file until it’s confirmed, when it’s put into a Diary file. The Diary file is simply 32 file holders, representing each day of the month plus one (for stuff coming up in the next month), and all prepared documentation for a flight is placed in the file for the relevant day. The benefit of this system is that information that’s only valid for a day can be put in there as well, which makes it easy to bring it to the attention of the staff concerned. Don’t forget upcoming pilot and aircraft checks—a week or so before they’re due.

**STAFFING:**

Imagine you have 4 observers, 4 pilots and 4 machines. At first sight, you could assume that they are well-matched. Well, you would be wrong! What is actually needed is another observer and pilot, or one machine will be more or less permanently on the ground. There will be constantly updated as they’re a major reference point.
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always be one in for servicing anyway, but normal servicing outside of majors could be done outside working hours to minimize this.

Staff, unfortunately, have benefits, which include leave and public holidays, on top of their legally required rest days. You could have over 200 days a year where you will not have a full crew onboard, and that doesn’t include sickness! It should be remembered that ground-staff, too, will need replacement or relief from time to time, so no-one should be in a position of being the sole holder of knowledge regarding any aspect of your operation.

**THE CHIEF PILOT:**

The Chief-pilot should not be on the Duty Roster. Their position entails so much management that they become ineffective on both sides if they try to do too much; there’s simply not enough time. Any flying they do should be strictly to keep current; supervise where necessary and step in when there’s a shortage.

They will be the main point of reference for officialdom, because they dictate the flying policy of the company.

**BEING A BOSS:**

You will find that, left to themselves, most people do their job well enough without overt supervision and want to do it well. It’s your job as manager to create the environment in which this can happen, and then get out of everyone’s face. If you continually micro-manage, your staff will end up telling you what you want to hear just to make you go away, and you will be acting on false information. You will get the best out of your staff when you give them the ability to make decisions, or assume responsibilities, so that their goals align as closely as possible with those of the company. 99% of all organizational problems are down to bad leadership. Remember that you’re not as concerned with what people get up to when you’re there, but with what they do when you’re not there!

Despite what many people think, money is not a great motivator. If people are unhappy, they will be just as unhappy soon after a pay rise. Every major study in job satisfaction has found that recognition is a far greater motivator. If your staff feel genuinely valued and appreciated they will perform to an incredibly high standard. In short, if you want your staff to look after you, you have to look after them.

**WHY WOULD YOU BOTHER?**

So, is the whole process worth it? It depends. Running your own company is certainly a lot of work, as any self-employed person will tell you, but it can be immensely satisfying. It’s not for everyone, but for those who are prepared to pay the price of long hours of hard work, massive responsibility and the constant need to be adaptable, flexible and in three places at once, the rewards are a sense of self-fulfillment and achievement simply not possible for those who work for someone else. I once asked a company owner why he went through it all, especially when the profit margin was so small; after all it would only take one pilot to burn out an engine and the whole company would have worked the whole year for nothing. His reply was that he was keen on helicopters (fair enough), and that he ended up with an asset or two (the helicopters) that somebody else had paid for. I certainly can’t argue with that!
Gregg Rochna, owner of Maverick Helicopter, did not become the world's largest EC130 tour operator overnight. His attention to details such as engine reliability and customer service is the essential key to his success. His engine of choice – the Arriel.

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Pilot Error is a tough call, but it’s a factual reality of the aviation industry or any industry where there is human involvement.

We pilots all know this; we guard as much as we can against it, and when we slip and make that mistake and we catch it, we look into the mirror of our souls and vow to learn from it.

**SOME FACTS** that we all must face about Pilot Error:

*About 70 percent of helicopter accidents are caused by crew error.*

Most involve flight judgment errors, either Controlled Flight Into Terrain or mishandling of fuel or inappropriate weight/power. Most are not failures of control manipulation (the thing we practice most), nor are they failures of the aircraft (the thing we simulate most). Most accidents are caused by a judgment made minutes or hours earlier; a flaw in thinking that is then baked into the flight, casting the fate of the aircraft and crew like some ancient curse. Investigating accidents is like deciphering a detective story. Often reading the transcript of events is like watching a movie where you want to warn the characters of the fate that awaits, intervene and stop the inexorable course of events. But after the fact, you can’t tell the pilots to set the radar altitude bug, or check the terrain height more carefully.

**All pilots make mistakes, nearly all the time, but thankfully they are usually small.** Humans make mistakes, we are inconsistent. Once a day in the world, a hundred people win the Darwin award for some act that is atrocious in its stupidity while six billion do marvelously well. Similarly, the rate of error for a crew can be measured. The hundreds of thousands of judgments made each year by a fleet of pilots yield just a few really lame ones, the stuff of accidents. Nobody is immune, not astronauts, test pilots, or good line pilots. The stuff of flying stories told by honest pilots across the bar is the stuff of how we learn what can go wrong, and how we understand how human we really are.

**Airliner airplanes have perhaps ten times the safety record of helicopters, because the airlines learned a long time ago the key to elimination of errors is to completely standardize procedures.** Removing judgment from the equation will keep the human’s decision latitude as small as possible, and virtually eliminate the random human error from the safety equation. It is safe to say that every airliner lands on the same runway at every airport, a runway that is precisely like all others, down an approach path, from an airplane like all other approaches and airways. This makes airline procedures relatively repeatable, relatively well-rehearsed and in the end, nearly uniform as possible. Uniformity is the key to eliminating human error.

**For helicopters, there are no airways, no instrument approaches and the last 500 ft to a heliport is completely different for every heliport on earth.** The helicopter is particularly difficult because it is taken to odd, out-of-the-way places where judgment and skill are the tools. We have no airways, and literally no instrument approaches to heliports. The wind, weather, power, weight, temperature are all different every day. All it takes to design a heliport is how to spell H. With so little repetition and standardization in helicopter operations, it is a testament to the skill and judgment of helicopter pilots that we have as few accidents as we do.

**The size of a human error is proportional to the improbability of the error.** Pilots keep the aircraft within a few feet of the desired altitude for years, then in a moment of inattention, drift off by hundreds just once. Pilots make hundreds of thousands of fast accurate judgments about weight, wind, altitude, temperature and maneuver, and then slip in one bone-headed misjudgment that is a real killer. We pilots all know this; we guard as much as we can against it, and when we slip and make that mistake and we catch it, we look into the mirror of our souls and vow to learn from it. And we do. One great pilot I know brings a big wind-up alarm clock with him when he flies airplanes, so he can set it to ring at one hour intervals so he doesn’t forget to switch fuels. Why? The deathly silence he experienced once while IFR was a terrific learning experience. Every pilot can possibly make a major error – we struggle to make the probability of that event very low.

**Use the frustration and anguish of a pilot error accident to fuel the quest for better helicopters and better airways.** Pilot error accidents will be eliminated when we make the routes, approaches and procedures more supportive of “plug and play” operations. Ask, seek, demand better ways to guide helos on their missions, and don’t rest until they are in place. Accept fewer “features” of your helicopter, fewer foibles like LTE and jack stall, ask for more power, better instruments and more tools to fight CFIT.

**The bitterness and grief of a loss is perhaps worse when we finally realize that our loved one sowed his own fate.** But pilots know we fly unforgiving aircraft on difficult missions. We pride ourselves in knowing that, and stand a bit taller in our own eyes with the knowledge that we are truly responsible for our own fate. For a lawyer, a mistake is printed in a paragraph in some file somewhere; for an accountant, some dollars slip from one place to another; and for a doctor, a patient suffers. For a pilot, riding in the front of his craft, the rewards of a great flight are displayed on his windscreen – and the punishment for misjudgment comes through it.
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