

Driving Drones

Being part of the next big thing

BY **BOB HOWIE** info@lonestardrones.net

By the time most folks reach age 62, they're planning for retirement. Me? I'm more interested in writing my next career chapter. And when a small, unmanned aerial vehicle (UAV) — a drone — flew past my hotel window during a vacation in Turkey two years ago, I knew how that chapter would begin. I was hooked.

Since I was kid, flying is just about all I ever wanted to do. Oh, there have been diversions along the way — writer, photographer, radio news, municipal management — but all those roads sooner or later led right back to the airport.

I've been interested in drones since they first started popping up five years ago. At the outset, the FAA warned that small UAVs were aircraft, not models, and that "careless and reckless" operation of all aircraft carried potentially stiff — and likely career-ending — penalties. At that, I decided to wait to get involved; I wasn't going to risk my piloting credentials and my livelihood messing about with toys.

The FAA, though, started acting more like a partner than a policeman and it became clear to me that the agency understood these small aircraft were truly the "next big thing" in aviation and wanted to cultivate the industry. When I saw that, I ordered my first drone.

Before FAR Part 107 was created, the only way one could make money legally flying drones — technically labeled "small unmanned aerial systems" (sUAS) since they involve an operator, remote control device and the UAV — was to receive exemptions to the existing regulations. After all, a drone is absent an onboard pilot, transponder, two-way radio — all required for an aircraft to navigate in the national airspace system, as clearly stated in Section 333.

And so, would-be commercial drone pilots seeking to be paid for their services had to submit an application for exemptions to those rules and wait for the FAA's blessing. For me, that waiting period involved 258 days, not the 120 the agency had indicated. Turns out the FAA had been overwhelmed with applications like mine.

During that downtime, my wife, Jackie, and I spent more than \$15,000 in legal fees related to setting up our Lone Star Drones LLC — yup, we're proud

Texans — as well as purchasing the equipment. The business we had in mind was to record aerial images of things — buildings, bridges or whatever — for clients. Our \$1 million in liability insurance costs us \$1,100 annually along with an additional \$400 a year for every drone we add to the fleet.

Research into which drones we wanted did not take long. We quickly concluded that the machines built by Chinese drone-maker DJI provided the reliability and dependability we required. In due course we bought two DJI Phantom 3 Professionals capable of capturing high-resolution still images and taking 4K video, one as primary and the second as backup. Shortly thereafter we added a DJI Inspire 1 since its ability to mount a variety of cameras and other sensors would make it the workhorse of our little fleet.

These machines are easy to fly and have numerous safety and fail-safe features such as a programmable return-to-home (RTH) capability that comes into play at low battery levels or when communications are lost with the ground-based operator. You can program safe altitudes for the RTH function — we use 250 ft. — and newer models even have obstacle avoidance capability using sonic "cameras" to effectively "see and avoid."

To date, we've had no problems with drone reliability and we periodically test their safety features to ensure they work as advertised. The drones have yet to fail to return home when we activate that sequence at the touch of a button.

The Phantoms have been relegated as backups now to the



Bob and Jackie Howie are flying a DJI Inspire 1 with a standard Zenmuse X3 camera, 16 MB, 4k video.

LONE STAR DRONES LLC

Inspires (we bought a second) and we use them mostly for operator training. However, the Inspires are so reliable that I trained Jackie to fly them without her ever having flown the Phantoms first. That underscores my philosophy of training on what you'll be flying.

So, who trained me? YouTube.

Having spent years as a kid flying radio-control and control-line fixed-wing models, I learned to fly drones by watching the manufacturer's YouTube tutorials, which, by the way, are very good. After that, I went out to some wide-open spaces, of which Texas has plenty, to give wing to what I had watched. And it worked! A business jet pilot flying drones for business.

I spent several months — while waiting on the FAA paperwork — just going out and flying the drones. Good days, bad days, early, late, windy, calm . . . every day was a training opportunity. Takeoffs, landings, maneuvers, shooting stills, video, downloading imagery into the laptop and studying it for foul-ups, bleeps and blunders. The flight software has various modes and I flew them all just to learn what the drone would do, what conditions it liked and disliked.

When I could finally operate the drone so it could take off from and land back on top of a 48-qt. ice chest, I felt like all that practice had paid off.

I later introduced our operation to an FAA National Resource Inspector who agreed to attend a drone flight demonstration. When that day arrived, I went over mission and flight planning, start-up, takeoff, inflight maneuvers, emergencies, landing and post-flight inspections and mission review.

I briefed the inspector on basic quadcopter operations and invited him to conduct a mini-flight from takeoff to landing, a totally new experience for him. Once all that was concluded, the inspector said he was impressed with our program and signed my logbook.

I think it's important to build such relationships. I believe in long-term transparency. And while the FAA isn't as experienced with drones as it is with manned aircraft, it's catching up fast.

The need for exemptions to the FARs ended with the creation of Part 107, the "Small Unmanned Aircraft Rule," last June. In my view it comprises the most flexible set of regulations issued by the agency. It's far from perfect. Matters such as exactly what skills a commercial drone pilot and/or drone operation should exhibit are lacking but perhaps that's by design more than by default.

Commercial civilian drone operations are so new, the FAA may be waiting on the industry itself to better define regulatory needs, and then it will modify the rules accordingly. Overall, I'm pleased with the effort the FAA made in putting together Part 107 and I'm sure it's going to evolve as the industry moves forward, but so far, so good.

Even though, Lone Star Drones is but a year old, and we've already seen a lot of our competition come and go. There's always going to be competition, but we're not all that worried.



LONE STAR DRONES, LLC

Drones visual provide support to construction companies for the documentation of progress made at their sites, and also for contract compliance and financing.

Texas is a big place, and Houston, our base, is the fourth largest city in the U.S., so there's going to be plenty of work for everyone.

We focused initially on serving the heavy construction industry and that remains a cornerstone of our business today. I know enough about the work to appreciate that documentation is key to contractors getting paid. And what better way to document a project's progress than with aerial photography? Happily, the results sell themselves; well, my enthusiasm as a pilotman probably helps.

What we see, though, is a lot of folks who buy into the babble about making a lot of money by flying drones and then quickly fall out when they realize flying a drone is more grunt work than glamour. As an example, my first paid drone job involved taking images of a luxury apartment complex right after it rained. It was me, my Inspire and an ocean of mud. Luckily, mud doesn't ruin jeans, but it will dull the shine on your boots.

With any new business start-up there's excitement as to what the future potentially holds, but overnight success is the by-product of hard work . . . even in an industry as new and as evolving as drones.

About that earlier reference to the product selling itself . . . well, I first spent a lot of time knocking on doors and hanging around construction sites. I conducted many show-and-tell flights for free just to show how effective drones could be, and to illustrate the kinds of perspectives they generate that traditional aerial photography cannot duplicate.

Getting a drone on site is faster and more economical than using airplanes or helicopters. But those operators are getting into the drone business, too, and we often get calls from them to ask us questions about drones, and we're glad to share what we know. They're fellow aviators, after all.

Then, too, there are rogue operators, the "drone paparazzi," and they're bad for the business. They care more about finding the fast buck than doing things the right way. I haven't heard about anyone getting violated or fined, but those guys are out there, and always will be. At Lone Star Drones, we focus on what we are doing, doing it the right way and just carry on.

So just what have we done? Over the past year, we've flown more than 500 missions for more than a dozen customers.

We don't disclose our customers' names or details about our business arrangements with them. We consider that

information proprietary. However, I'm proud to report that between April 2016, when it became legal to charge for our services, through the end of the year, we recovered all our costs and made a small — a very small — profit.

Jobs we won't do? Nothing sneaky. No peeking in windows, over fences; nothing to do with divorces or missions of that nature. There's a market for that, I'm sure, but it's not for us.

So, with a day job as an air charter pilot for a large Houston operator, how do I keep up with the ever-changing drone industry? I have help. A lot of it. My wife handles clerical duties. Three contract pilots handle projects when I'm out of town as well as projects we have in Dallas and Austin.

Yes, flying charters takes up a lot of my time and it does take priority over the drone operations. As long as that continues, my company has no complaints with what I choose to do in my spare time. When I get home, though, flying drones and building the business is my focus. I don't play golf and I don't fish. I still manage to play a few games of tennis and Jackie and I still head out in our boat when we have time. But our drone work takes precedence over any of that.

What have kept me up at night are the questions that nag: Is our little company headed in the right direction? We've spent a lot of capital, but will we recover it all? Is this a real business or a hobby with offsets?

We've self-funded every nickel to get us up-and-running, to pay the legal bills, equipment costs and marketing. When it's your own money you're gambling with, you agonize in

the spending of every penny, praying that your faith in such a nascent industry isn't misplaced. So far, it hasn't been, but the process is sort of brutal and it's not for the faint-hearted.

Self-motivation is a necessity, too.

It really doesn't matter how slick the website is; if you don't put boots on the ground and burn shoe leather by going out, meeting people, shaking hands, building contacts and maintaining them, no business will realize its full potential. You can't be timid, and I've never been.

Furthermore, I've found it's better to under-promise and over-produce than vice versa. And while we fly the very best and latest technology we can afford, we don't chase the latest-and-greatest. We'd go broke if we did.

What's next? We decided that building credibility and political clout in the marketplace is necessary for our company's continued growth. We have to go beyond Part 107's bare-minimum requirements to be taken seriously, to set ourselves apart. What we needed was a credible, well-respected third-party to say to service buyers, "Talk to the folks at Lone Star Drones. They have proven they know how to do it right."

On the "manned" side of aviation, I am quite familiar with the industry auditing and rating companies, so I initially began talking with ARG/US and we are moving in a very promising direction with them. However, ARG/US is just now moving into the sUAS-auditing business, so we sought out additional



There are perspectives gained by low-altitude drone-based photography that previously were unavailable to developers.

affirmation and Lone Star found it down the road in College Station, Texas, home of Texas A&M University.

It was March 2016 when the university established its National Unmanned Aircraft System Credentialing Program (NUASCP) through its engineering extension service. It did this in concert with the Lone Star Center for UAS Excellence and Innovation. The program is intended to satisfy the demands of commercial drone operators for vetting.

A first of its kind in the U.S., Texas A&M's program focuses on many of the same safety and operational aspects familiar to the manned side of aviation, including flight operations maintenance manuals, safety management systems, emergency response plans, pilot credentials and experience, and best business practices such as an oral exam and a flight check. All of that is aimed at assuring potential customers that drone service providers are qualified.

"The industry came to us and said what they were finding out was that drone service providers, when examined beyond their websites and marketing, were not measuring up in terms of experience and expertise sufficient to be operating in, say, refineries or chemical plants," said Steve Williams, Texas A&M's director of operations and strategic development. As such, he's the man in charge of getting people involved in the NUASCP.

"Working with the various industry groups, we created a program under which drone operators enroll and undergo a process where we audit and test their knowledge and skills," Williams said. "Once they pass the audits proving they are operating under best business practices, they must pass an oral and then a flight check that demonstrates their abilities to safely plan and execute a drone mission.

"Once this is all successfully completed, Texas A&M issues them credentials and then supports them by holding them out to our industry stakeholders as qualified for consideration of employment for whatever projects the stakeholders may have," Williams said.

Today, we see prospective clients, including state and local governments, require drone service providers be credentialed. I believe such a requirement will gain in popularity. I also believe that as Part 107 evolves to allow full night and beyond visual line-of-sight operations, only those drone companies with specialized certifications and credentials will be granted waivers by the FAA along with insurance coverage.

A part of the attraction of drones is the inference that their use reduces risk. But on the matter of risk, there remain many unknowns. For example, are quadcopters sufficiently redundant and reliable to provide more benefit than liability? Are hexacopters? Octocopters? Is one battery enough or should there be two, or four, or six? Can a drone with a failed motor or burning battery be steered away from a sensitive environment and safely crashed? Can drones be sufficiently and affordably hardened to fend off magnetic interference?

The point is, no one really seems as yet to know what defines a truly commercial-capable drone. But many do say that size matters.

"I don't think you're going to get much consideration if you show up and the only thing you have is one of the smaller quadcopters," said Richard Murphy, Valero's senior manager for corporate aviation services in San Antonio. He added that while Valero is approaching incorporating sUAS services into its overall aviation activities, it is doing so "slowly."

"We support the credentialing program at Texas A&M because really they are the only ones doing that sort of thing right now," he continued. "What they are doing in terms of vetting drone service providers is important to us because, honestly, we've been inundated by too many 'Chucks in a truck' who will tell you they can do all these things when they really can't.

"We need a process through which we know the people who we want to hire can really accomplish what we want done without the risk of touching off a \$300 million fire," Murphy said.

Is Lone Star Drones where we want to be right now? Yes. However, it's been generating revenue for just one year. We've a long road ahead of us, one full of unknowns. Yet, in that short time we've formed solid business partnerships that want us to succeed and have delivered on our service promises. That's a good start. We're optimistic about our future; after all, we wouldn't have gone into business if we were not.

I took my first-ever flying lesson at age 14 on Dec. 26, 1969, at Robbins Airborne in Gulfport, Mississippi, with instructor Jaime Forbes sitting shotgun in N1988J, a Cessna 150 with a pull starter. I remember the excitement I felt that day as if it happened yesterday. And that is exactly how I now feel every time I launch one of our drones.

I firmly believe that drones are truly the "next big thing" in civilian aviation and that's why we at Lone Star Drones are so thrilled to be in the game. **BCA**