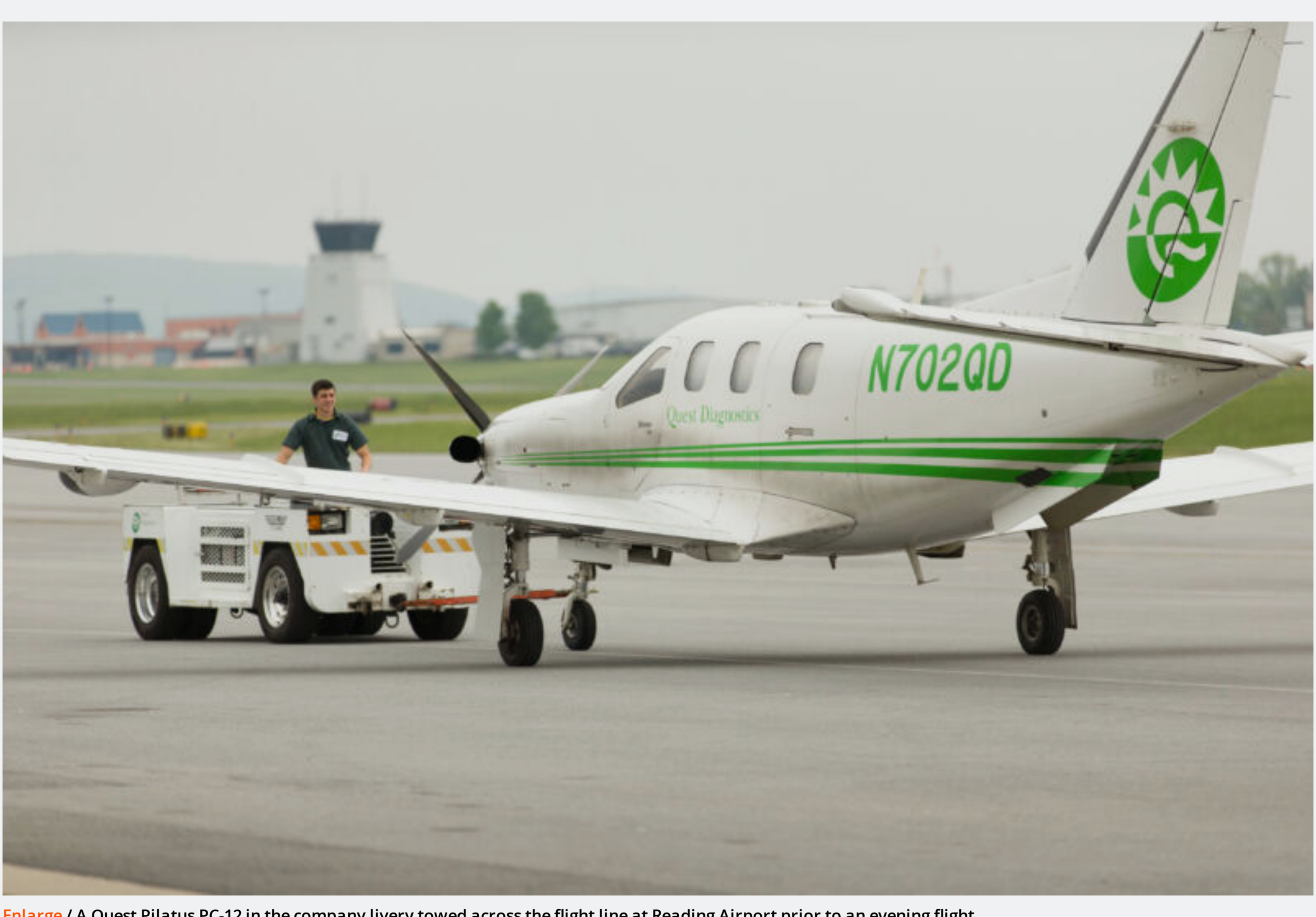
PC-12 AHOY —

Appearing nightly, the Quest Diagnostics Air Force

Your lab results fly first class after dark.

ERIC TEGLER - 4/29/2020, 11:57 AM



Quest Diagnostics

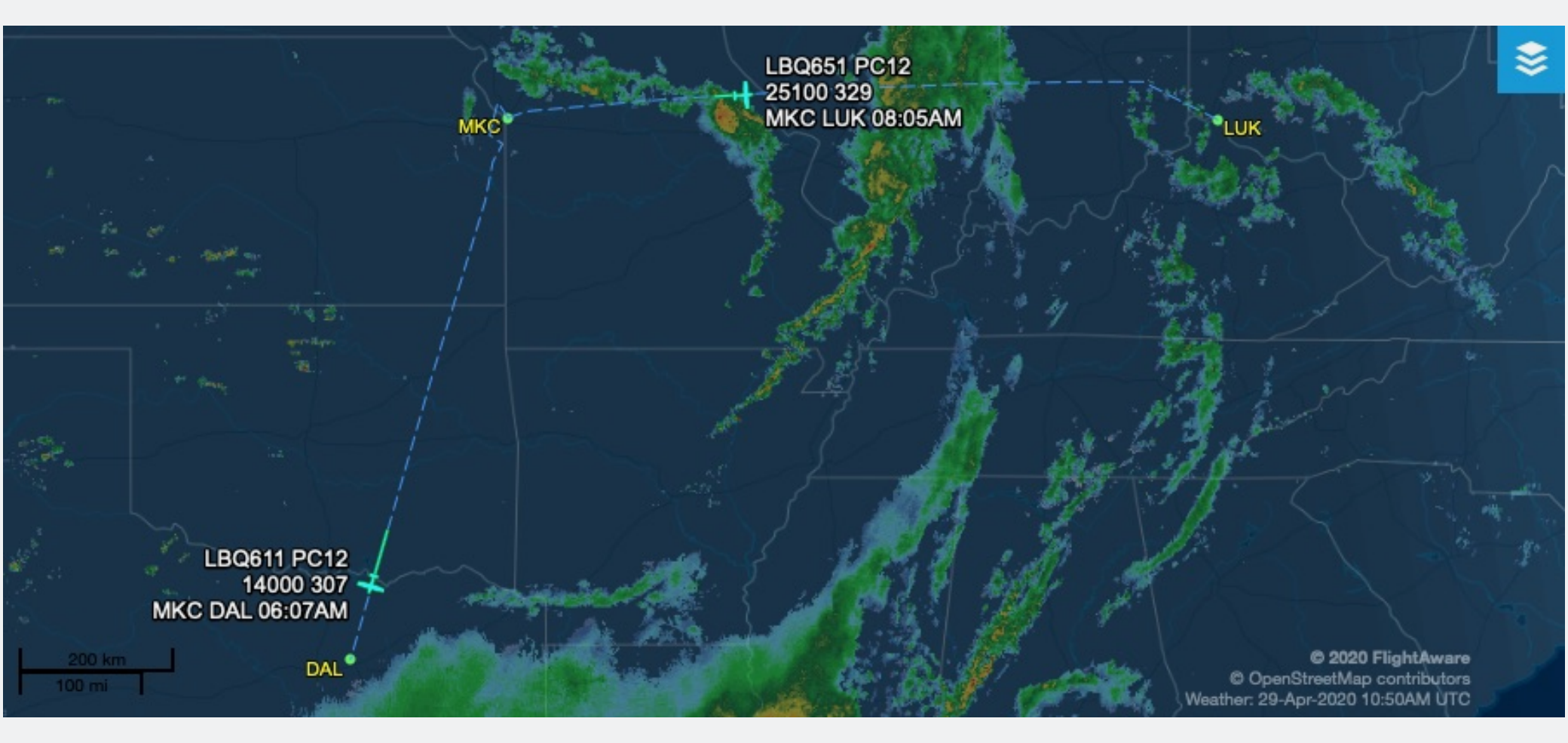
Enlarge / A Quest Pilatus PC-12 in the company livery towed across the flight line at Reading Airport prior to an evening flight.

It's pretty quiet out there these days, particularly after you've gone to bed. But somewhere above, a pilot bathed in the glow of avionics is looking up from his instrument panel into the night. Behind him are 76 soft-sided coolers holding the physical data on which modern medicine depends—samples of blood, urine, and tissue from individuals around the country.

They're aboard a Pilatus PC-12 turboprop business aircraft, collected from airports where they've been delivered from laboratories, doctors' offices, and hospitals. The airplane is part of the 25-strong specimen-transport fleet of Quest Diagnostics, one of the two leading companies in the medical lab services market.

Quest pilots' mission to collect and transport this valuable cargo has the same goal every night: to gather the material and get it safely back to one of Quest's labs by 2am. That way, the lab results for the person from whom the specimen comes are available by 8am a day or two later.

There are remarkably few aircraft in the air over America at night in this time of COVID-19. Take a look at FlightRadar24.com or FlightAware.com at 10 or 11pm in the evening and you'll see.



FlightAware

Chances are, if you click on the icon of a small aircraft, it will have the identifier "LBQ" and the call-sign "LabQuest. With each Quest PC-12 aloft in the darkened skies ride the hopes and anxieties of patients waiting for results.

Always aloft

Quest aircraft have flown in empty skies before, on September 11, 2001, for example. "We were just about the only ones in the air outside the government," Quest Senior Director of National Air Logistics Scott Borton remembers. "We actually ran under life-guard status on that day." Quest airplanes were intercepted by fighters several times for positive identification, but they kept on moving specimens. That was well over a decade after the genesis of Quest's fleet.

It was launched in 1988 as part of the lab operation of the pharmaceutical company SmithKline Beecham. In the beginning, pilots flew twin-engined Cessna 310s, though they were later joined by faster turboprop TBM 700 business aircraft. When SmithKline Beecham sold its lab operations to Quest Diagnostics in 1999, the specimen-transport fleet went with it.

By that time, demand for lab work and samples had grown so much that the company decided to acquire the PC-12, a larger Swiss-made single engine turboprop that can carry more cargo and cruise at 270 knots (310mph/500km/h) with excellent fuel efficiency. Today, Quest flies nine PC-12s along with nine Beech B58 Barons and five Embraer Phenom 100s.

Able to cruise at 200 knots (230mph/370km/h) at about 7,000 feet, the piston-twin Baron is suited to shorter flight legs, while the twin-jet Phenom 100 is more efficient on longer routes in the western US, cruising above 30,000 feet at 400 knots (460mph/740km/h).

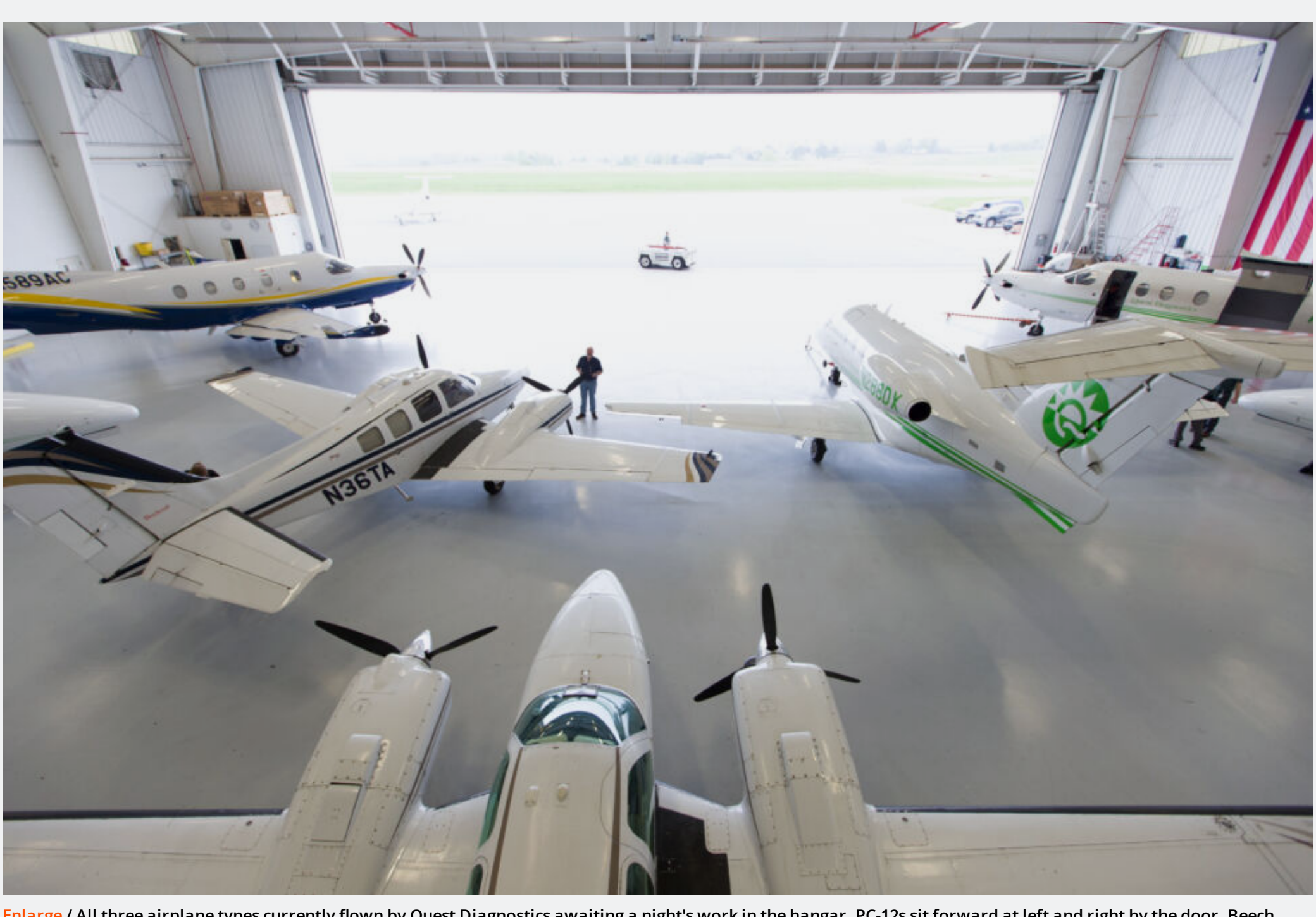


Photo by Steve Hockstein/HarvardStudio.com

Enlarge / All three airplane types currently flown by Quest Diagnostics awaiting a night's work in the hangar. PC-12s sit forward at left and right by the door. Beech Barons are in the foreground at left and center. An Embraer Phenom 100 is in the foreground on the right.

But the PC-12 is likely the future of the Quest fleet. Its load capacity and middle-ground speed/altitude/fuel consumption qualities are encouraging the company to acquire more. It's a good fit in terms of size for an operation that's always assessing its efficiency, including the utilization of cargo space.

Well over a decade ago, Quest recognized that the traditional hard coolers it transported specimens in had a lot of "empty air" inside, Borton says. "So we went ahead and patented our own soft-sided coolers [in 2003]. That freed up about 50-percent capacity in all of our aircraft." All specimens are packaged for the aircraft in the same sterile format, including the many COVID-19 specimens that Quest has been transporting to and from 12 different laboratory facilities during the crisis. Like more routine samples, they're managed with competition-like teamwork.

NASCAR at night

"It's like a NASCAR pit crew when we land. There's a ground team waiting for us, and there's a hand-off [of specimens]," Borton explains. Quest's pit stops (the aircraft make 88 daily landings in 63 domestic locations) often see planes simultaneously being re-fueled and unloaded/loaded while pilots do their next pre-takeoff checks and any flight plan updates. The company aims to "turn" each aircraft 20 minutes after it lands.

The broader process starts after daylight each morning. Maintenance crews show up at Quest's home airport in Reading, Pennsylvania, to inspect and/or repair the fleet, most of which returns each night. As they do so, Quest dispatchers in Tampa, Florida, are looking at the weather, the schedule, possible delays or diverts, and aircraft availability.

A conference call is joined at 2pm Eastern time by Quest's chiefs of maintenance and dispatch, its safety officer, chief pilot, and Scott Borton himself. "There's always something out there that we're assessing," he says. That could include forecasts for thunderstorms, Nor'easters, snow, or even hurricanes that could not only disrupt aircraft operations but broader logistics, from ground delivery vehicles to hospitals or labs.

Quest pilots generally arrive at the airport 30 to 40 minutes before their flights, around 5:30pm Eastern. They check in with dispatchers and walk to their aircraft to go through their pre-flight checks. The routes they fly are relatively standard, as are their flight plans, which are already loaded electronically into the airplane's avionics.

Each pilot consults a "route sheet" that shows the legs they'll fly round-trip and how many coolers will be placed in their aircraft for transport to a destination. Normally, the first departures from Quest's bases (also in Georgia, Texas, and Missouri) are empty of specimens. Pilots talk with maintainers about any issues or about weather/new stops with dispatchers, then roll out for takeoff with a plane full of empty coolers. If it sounds chill, it isn't.

Quest pilots fly single-pilot IFR (instrument flight rules) operations. These are demanding in any airplane, particularly at night in bad weather. Not surprisingly pilots are generally high-time multi-engine- or turbojet-qualified operators, usually with air transport certifications. "It takes a special kind of pilot to do this," Borton acknowledges. "They're very skilled, but they're not looking to fly for the airlines and do a conventional job. They like the independence and the team atmosphere we try to build here. They're also home every night, which is pretty rare."

On the way to Elmira, New York, or to Denver, Colorado, in the darkness, Quest pilots are well-known to the air traffic controllers who also work the third shift. When switching to a new frequency en route, pilots often recognize the voices of controllers they work with nightly and vice versa. "We're very professional, and that translates to being treated well by the controllers," Borton says. "In our business, time matters, so any shortcuts or direct routing they can give us help a lot."

Pilots check in with their dispatchers when landing at a destination, but they are masters of their own ships while flying their routes.

Specimens are people

Quest's pilots tend to stay put. The company includes a number who have been there for 20-plus years, including the pilot who made the first SmithKline Beecham specimen delivery flight 32 years ago. The flying challenge, personal latitude, and security of the job are appealing. But the sense of mission, even in more settled times, gives them—and others within Quest's aviation department—additional motivation.

"Whether it's the pilots, maintainers, dispatchers, or even administrative people, they look at every specimen as a person," Borton affirms. "Patients are waiting on results, and some of them are critical to their health, to life and death. We keep that in perspective. It's a great thing to be a part of. That's why I think a lot of people have stayed with us."

He adds that during the pandemic that feeling has been more pronounced, the work even more compelling.

By 2am, airplanes are returning to Reading and to Quest's other bases with full coolers. The specimens are handed off for ground transport. A few hospital-related flights will continue until about 11am. But most pilots are taxiing in, shutting down engines, switching off the avionics, and—like truckers or NORAD controllers—taking a break until the sun comes up and goes back down. Then they'll appear, nightly as always.

Promoted Comments

onychomys / Ars Centurion / et Subscriptor — JUMP TO POST

In comparison, both Labcorp (the second largest private testing firm in the country) and the Mayo Clinic just use FedEx for their sample delivery. (....source: I've worked for both)

207 posts | registered 11/17/2015

NKX3-1 / Smack-Fu Master, in training — JUMP TO POST

My lab started running several aircraft in the last few years. Our experience with one of the major international shipping companies in some of our regions was less than satisfactory. Having to make a call that a bone marrow or tissue biopsy specimen has been lost is something no one wants to do.

This also gets the specimens to our lab about 4-6 hours earlier than the shipping company. A minor benefit when dealing with a multi-day oncology specimen (you might be able to get morphology out the same day), but major improvement in TAT with more specimens such as coronavirus, blood work, etc. Now those results can get back to the office mid-morning to early afternoon instead of late afternoon to after the office closes.

We adapt our transportation needs by client and location. I'm reasonable confident all the major labs do as well. Couriers, line haul, commercial shipping, private air, all of it is required to get the specimens to the labs.

Ars and readers may also be interested in Angel Flight, private pilots that volunteer time and resources to transport patients and, here in the time of SARS-CoV-2, acute care specimens for analysis.

2 posts | registered 2/18/2016

NWade / Smack-Fu Master, in training / et Subscriptor — JUMP TO POST

> junrbarnes wrote:
> Curious why they are mostly all turbo-props instead of small business jets like you see executives and movie stars moving around in. Do they not need the higher speed? Or is the operating cost of jets significantly higher than turboprops?

Lots of factors in this decision. Most importantly, jets are pretty inefficient at low speeds: They tend to require longer runways for takeoff, they burn more fuel on the ground and while getting up to speed, etc. They become *much* more efficient and effective at high speeds and altitudes, but you have to get there first. If Quest flies shorter hops (say less than 500 or 1,000 miles per leg), they will spend little time flying in those efficient zones of speed & altitude. And the difference in top speed may only mean saving 5 minutes per leg (versus a turboprop like the PC-12). Even over the course of a night that might only add up to 30-45 minutes of savings. If it doesn't change the time that lab samples get processed then the extra expense and fuel burn isn't worth it. Jets do have an advantage in that they are relatively simple to maintain (very expensive to buy, but simpler to maintain).

Propellers are great for takeoff and slow speeds, but have severe limitations on size and rotation speed (you can't spin them too fast or the tips of the props go supersonic and that ruins the prop's efficiency). You can make the propeller blades "fatter" and tweak their shape to produce more thrust, but then you need a powerful engine to drive it. Piston engines (like the ones in your car or a small Cessna) can be relatively fuel-efficient at smaller sizes, but become heavy and complicated at larger sizes - causing all kinds of extra wear and waste and maintenance. Each individual part in a piston engine may be cheaper than a jet; but there are an awful lot of them to inspect, maintain, and potentially fail.

This is where turboprop aircraft come in. A turboprop is essentially a jet (turbine) engine driving a propeller, with a gearbox to turn the propeller at the proper speed. A plane like the PC-12 gives you the best of both worlds: You get great takeoff and climb performance with a propeller (so you can get into and out of short runways at small airports), and you don't *have* to climb super high to get good speed & efficiency. But you *can* if you want, and if you do you will get some of the advantages of that turbine engine.

Lastly, note that most small biz-jets are designed around carrying passengers in extreme comfort. The ability to load cargo and secure it is not a big design consideration. The PC-12 is a very special design in that it _can_ carry people in comfort, but it was designed from the beginning with cargo in mind. It has a big cargo door and the ability to strap down cargo inside in a variety of places - both of which are pretty unique.

19 posts | registered 11/30/2018