

Inventor combines race car and aviation technology to design the perfect bush plane

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WASILLA -- For a man hard-wired to go wicked fast, former motorcycle and sprint-car racer Bill Montagne sure gets a charge out of going slow. The airplane he's engineered can poke along, lightly loaded, power off, at 24 mpr -- slower than a motivated salmon can swim -- before going into a stall.

Montagne's invention, the Mountain Goat, can book, too, at about 2¹/₂ times highway speed with tundra tires on, which is a whole lot faster than the venerable Super Cub, a staple among Alaska bush pilots.

And that's not the half of it.

This experimental,



The Mountain Goat follows a Piper Super Cub toward Pioneer Peak. The tandem Mountain Goat can go faster -- and slower -- than the venerable Super Cub. *(Photo by Bill Roth / Anchorage Daily News)*



Self-taught inventor Bill Montagne takes off from an airstrip near the Butte in his Mountain Goat bush plane. *(Photo by Bill Roth / Anchorage Daily News)*

180-horsepower, high-wing, tandem-seat tail dragger can hold more fuel, carry more gear, land and take off in more dicey situations and do its job quieter than any other comparable airplane, according to published specs.



Montagne's invention will be featured with other specialty planes in a History Channel show Dec. 23. *(Photo by Bill Roth / Anchorage Daily News)*

These are big claims for a self-taught inventor living alone in a hangar in Wasilla with no degree in aeronautical engineering attached to his name. But then the Wright brothers were bicycle mechanics.

"Most people do not believe that it will do what he says it will do," local flier Dan Whatley said. "That's because they haven't seen it fly."



The Mountain Goat, foreground, can carry more cargo over a longer distance, has a slower stall speed and cruises faster than the Super Cub. *(Photo by Bill Roth / Anchorage Daily News)*

The Mountain Goat and other Montagne innovations -- such as his effort to build the world's first propeller-driven airplane to go supersonic -- have drawn design awards and media attention for years. This was long before he moved from California to Alaska with hopes of going into full-scale airplane production here.

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Producers of the Discovery Channel did an "oh wow" segment on the Mountain Goat a few years ago. And the History Channel's "Tactical to Practical" program will include the plane in an upcoming episode on specialty planes and Alaska pilots. Besides Montagne and his Mountain Goat, the program will feature other Alaskans, including Greg "Coop" Cooperman, formerly of Hudson Air Service; Jim Hitchcock, who flies for Ingram's Base Camp at Cooper Landing; and Terry Smith, who owns a Grumman Albatros. Pilots Whatley and Jim and Jonathan Kincaid flew chase planes for the film

crew.

The program will air at 8 p.m. Dec. 23 on Channel 35.

This hourlong program explores invention, technology and product innovation developed for the military but with civilian applications and vice versa, such as the Global Positioning System and night-vision technology.

" 'Tactical to Practical' is a tribute to the talented men, women and organizations that have earned a place on the pages of history as originators of important contributions to our modern society," is how the program's Web site explains it.

It's the airfoil Montagne designed, with help from friends at NASA, that makes his plane so usual. His airfoil produces more than twice the lift and less than half the drag of airfoils on conventional planes, he said.

The aerodynamic struts he designed play a big role, too; Montagne says they increase cruise speed 9 mph.

Former Navy fighter pilot Hunter Ellis, host of "Tactical to Practical," paid Montagne a visit in late September. After more than 2,000 hours in F/A-18 Hornets and other high-performance aircraft and with 433 landings on aircraft carriers, he took the Mountain Goat for a test drive from the co-pilot seat up Knik Glacier and into Lake George gorge. He gave the plane a big thumbs-up.

"We did a lot of handling tests," said Ellis, caught by cell phone while awaiting a flight. "I'll tell you, I was really impressed. The controllability at slow speed was amazing. We were able to fly 25 to 30 knots and have full control.

"It really is very capable to levels other aircraft can't reach. It's really an amazing airplane. I would want one."

Join the club.

Montagne says he's already received nearly 1,000 orders, although he's just now beginning to take deposits. To date, he's built three, not counting the prototype, and he has two more under construction.

"It's definitely going to have a market up here," said Dee Hanson, executive director of Alaska Airmen's Association. "Four or five years ago, when he made a trip up here and parked it over on Lake Hood, about 30 guys were standing around going ooh and ahh, like when are you guys going to

start production?"

Chip Lewis, who flies 747 cargo planes, is among the impressed. He says he would have bought a Mountain Goat had one been available when he was ready to buy. Instead, he went with a Super Cub.

"I think if he could get the money together, he'd do just as well as the Husky."

That's the Federal Aviation Administration-certified Aviat Husky he's referring to, which gets mentioned by local pilots more than most other comparable designs on the market.

According to Montagne's specs, the Mountain Goat can go a top cruising speed of 159 mph, while the Aviat A-1B Husky lists its top speed as 145 and the Piper Super Cub is at 115. Under certain conditions, the Mountain Goat can take off in as little as 50 feet and land in 120. The other two typically need at least twice as much room.

You get the picture. Faster, slower, sportier. Safer, too, Montagne said.

Because it can fly at slower speeds, crashes are more survivable, he said. (Cub Crafters' PA18-180, with a lowest stall speed of 38 mph, has the closest specs.) Plus he's added a special feature inspired by his sprint car days.

"I used to race; I like a roll cage."

And 300-mph race car restraints.

Montagne (pronounced *mon-tan-ya*) has no doubt he's on to something bigger than big here. All it would take to get a manufacturing facility going, to create hundreds of jobs and pump hundreds of millions back into the state and local economies, is that elusive little detail called start-up money.

He's been trying for several years to land the loans, grants and investors it takes to get FAA certification and go into production. City officials and potential investors from Fairbanks to Ketchikan have expressed interest in having the Mountain Goat plant in their towns. But Montagne has found that financial backers stall a whole lot faster than his plane does.

It doesn't take a bush plane scientist to tell this is not a favorite topic for him.

"It's really been quite an awakening," he said.

Montagne moved to Alaska from California a little over a year ago, settled into a hangar on Wolf Lake and started searching for machine and sheet metal shops with equipment sophisticated enough to make parts for his plane. He found none. That means he'd have to bring equipment up and start training people to use it.

Despite many setbacks, he remains optimistic.

Montagne believes he could get his plane certified in about a year, maybe even less, and that it would cost about \$1 million. Others believe it would take longer and cost more.

"I hate to rain on anybody's parade but ... those kinds of projects tend to be much more difficult than people who've never done this before can envision," professional test pilot Penny Nixon said.

Nixon tells of a current certification project putting an already certified engine into an already certified plane, and so far it's been a three-year, \$1.2 million effort.

The problem is what he gently calls "overregulation ... the depth of regulation that has been imposed on new airplane designs."

Nixon is one of only two Alaskans besides Montagne who has flown the Mountain Goat from the front seat. (The plane has dual controls for the back.) About five years ago, the now-defunct Alaska Science and Technology Foundation asked him to evaluate whether the plane was FAA-certifiable. He determined that it was but only with changes in configuration.

"The basic concept of the airplane is sound," he said.

Montagne has made changes since then. And no matter what anybody says, he expects certification to go smoothly. He says that with confidence because he's already done the testing himself, which is not the usual way of doing things. But then he tries hard not to do things the usual way. He has put in more than 1,600 hours of flight testing, pushing it loaded and unloaded "substantially beyond FAA limits."

Testing your own airplane does have its adrenaline moments. Nothing compared to racing, though.

"Everything about racing is at or beyond the limits of engineering, the limits of what a man can do," Montagne said. "I'll tell you how some people describe the ultimate race. You win the race, and as you cross the finish line, all

your tires go flat, the motor blows up, the frame breaks and the driver dies of a heart attack."

Bottom line, Montagne loves Alaska and is determined to stay whether this venture gets off the ground or not. While an inordinate amount of his time goes toward courting potential backers, he's building a Mountain Goat here and there, licensed as experimental, for the kit market, offering a chrome-moly alloy or titanium airframe.

There's a titanium with Dan Whately's name on it in the works right now.

Whatley, who grew up in the Butte area, is one of those guys who had an airplane before he owned a car. He heard about the Mountain Goat about five years ago and was intrigued enough to call Montagne in California to ask about it. Since Montagne has moved up here, they've become friends and go flying at least once a week. Whatley is the only Alaskan, besides Nixon and Montagne, to fly it from the front.

As a result, Whatley has seen the plane in action more than anyone else.

"I've watched it perform, watched it leave me in the dust," he said. "It's so fast and has such a higher rate of climb than mine, it blows me away."

In August, he and Montagne headed across Cook Inlet to go fishing, taking off from Whatley's airstrip within minutes of each other, for about a 100-mile flight.

"He arrived at the Kustatan River and was fishing 25 minutes before I landed," Whatley said.

"The biggest complaint all Super Cub pilots have is, it's a great airplane, fun to fly, it will get you in and out of tight places, but it just takes so blasted long to get there."

How Montagne has managed to do what others have not is no big mystery. He's smart, "very, very smart," according to Nixon. He's driven, competitive, and he likes to go really, really fast.

"He's taken race-car technology and airplane technology and combined them," Whatley said. "He's pretty radical. You can see the wheels turning in his head."

Montagne's resume shows a long history of developing racing technologies as well as work in Silicon Valley designing and engineering computer disk drives, automated manufacturing

equipment and other high-tech products. Besides the airfoil and struts, he has designed his own exhaust and intake systems, cooling system and propellers.

Montagne sees his plane going beyond Alaska Bush applications. He sees potential for search-and-rescue missions, remote-control wildlife management and border patrol.

He also thinks the Mountain Goat could serve as an Unmanned Aerial Vehicle for the military, far outshining the controversial Predator drone. A report from the Pentagon's top systems testing officer outlines the Predator's many shortcomings, including a top speed of 84 mph (only about 10 mph faster than a canvasback duck) and problems flying in wind and rain because of a touchy airfoil.

"The Mountain Goat has been tested in winds up to 100 knots. It's been iced up, in the rain, in the snow, dirty, bugs so thick you can't see out the front of it, and it trucks along just fine -- with big fat tires on it. It's twice the speed, I don't need a runway and ..."

Anyway, one thing at a time.

He recently overhauled his business plan and put the finishing touches on a promotional video. In fact, he's meeting with more potential investors today.

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MOUNTAIN GOAT SPECIFICATIONS

Power plant: Lycoming IO 360B2E

Horsepower: 180

Seats: 2 tandem

Maximum gross weight: 2,500 pounds

Useful load: 1,250 pounds with 4130 chrome-moly alloy airframe; 1,330 pounds with titanium airframe

Payload with fuel: 830 pounds with 4130 chrome-moly alloy airframe; 910 pounds with titanium airframe

Fuel capacity: 65 gallons

Baggage area (volume): 32 cubic feet

Baggage area (maximum weight): 350 pounds with 4130 chrome-moly alloy airframe; 430 pounds with titanium airframe

Take-off: 100 feet with light load; 300 feet at gross weight

Landing: 120 feet at 1,670 pounds, 275 feet at gross weight

Rate of climb: 2,200 feet per minute with light load; 1,200 feet per minute at gross weight

75 percent cruise: 159 mph at gross weight

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