

The Tundra:

A Bush Pilot's Dream

**Dream Aircraft's new Tundra
can handle any type of terrain:**



...lakes and rivers...

TEXT AND PHOTOS BY RICK LINDSTROM. ADDITIONAL PHOTOS BY RICHARD SAINT-GEORGE AND HOWARD LEVY.



...snow-covered runways...



...short (and long) fields...



...and mountain hideaways.



The Tundra is an all-metal, conventional four-seat, high-wing airplane meant to take the abuse dished out in the bush.

Imagine for a moment that you are a principal partner of a company that specializes in metal product manufacturing. You have state of the art CNC sheet metal cutting, robotic welding and computer aided design at your disposal.

Now imagine that you're totally hooked on back country aviation—the kind that requires rugged airplanes flown from floats and skis, competent pilots that have a keen sense of adventure, and a vast wilderness full of pristine lakes and remote strips. (That part wasn't so hard, was it?) What would you do?

Most likely, your thoughts would focus on building a metal airplane—one that's designed to put up with everyday abuse and simple to construct and maintain. It should be totally conventional in every regard without any unpleasant surprises awaiting a pilot flying deep into the bush.

Meet Yvan Desmarais, who found himself in that position nearly a decade ago. A metal-working specialist since his late teens, Desmarais is a senior partner in Desmarais and Gagné in Granby, Quebec. D&G produces all sorts of sheet metal and aluminum products for various uses. The company has more than 30,000 square feet of manufacturing

space and several million dollars worth of equipment available to meet this goal.

Making Plans

An accomplished floatplane pilot, Desmarais spent quite a bit of time at aviation conventions studying airplanes suitable for backwoods operations. His extensive background in metal work nagged at him as he walked the flight lines, examining the fine detail of metal aircraft construction.

Desmarais saw a lot of things that made sense to him and a lot of things that didn't. He began to think that he could use the best from current bush plane designs, improve on existing manufacturing and construction techniques, and create a plane ideally suited to backwoods operations from wheels, floats or skis.

What resulted from his five years of research and conceptual design is elegant in its simplicity: an all-metal, conventional four-seat, high-wing airplane that is meant to take the abuse dished out in the bush while remaining straightforward to build.

A few more years were invested in creating the drawings needed to build the prototype, refining the design with the aid of an engineering team and mak-

ing sure that the plane filled the needs of other like-minded pilots. After all, any kit airplane's continued existence depends on its ability to deliver to both its builder/owner and to its parent company.

"We started slow to stay long," Desmarais said. With no good reason to rush the design to market, the Tundra prototype debuted at the 2003 Sun 'n Fun EAA fly-in in Lakeland, Florida, a decade after the seed was first planted.

First Impressions

At first glance, the Tundra looks closely related to several classic, conventional airplanes. But upon closer inspection, the Tundra looks unlike anything else. From the front, the cowl and side-by-side seating evokes images of Taylorcrafts. From the side, the cabin area looks a lot like a Super Cub. The squarish fuselage tapers gently to a vertical fin that appears to have been stolen from a Cessna 185.

But make no mistake about it, this airplane is definitely all its own. Luc Pré-mont, head of sales for Dream Aircraft, said that great care was taken not to reinvent the wheel when it came to the Tundra design. The concepts that have worked well in other planes have found

a home in the Tundra, including a Harry Riblett wing, a large and comfortable cabin, a generous rudder, simple flaps and a hinged engine cowl that provides better than average powerplant access.

Powered by the venerable Lycoming O-360 and swinging a 76-inch Sensenich metal prop, the Tundra prototype has an empty weight of 1475 pounds. With a design gross weight of 2550 pounds, the Tundra yields a respectable useful load of 1075 pounds. With a 55-gallon fuel capacity, full tanks will allow for almost 750 pounds of people and other stuff aboard—better than many airplanes that call themselves four-place.

With a wingspan of 36 feet, a height of 10 feet, and a length of just more than 25 feet, the Tundra's dimensions are pretty much what you'd expect for the typical four-place light airplane. It sits tall on the shock-corded gear, but the main gear is being updated with a two-piece Grove cast aluminum system that is now installed on prototype No. 2.

The large tundra tires on Grove wheels give the airplane a tall, capable stance. The drooping fiberglass wingtips look right at home on this STOL design, and the horizontal stabilizer and elevator span more than 10 feet, insuring adequate authority no matter what choices are made in landing gear or floats.

Squinting a bit at the Tundra, the airplane has a profile that is almost svelte. Although the curvy paint scheme adds to this impression, the basic design completely departs from the boxy look of other strut-braced taildraggers, and it gently whispers, "So fly me, already." Who am I to argue, especially on such a beautiful day?

Flying, Tundra Style

Bromont Airport is picture perfect on this sunny November day, with a bit of snow on the ground, light winds and temperatures in the low 40s. Dream Aircraft pilot Robert Blais and I take the front seats and Prémont sits in the rear, providing answers to my questions as well as the necessary ballast to bring us near the gross weight of 2550 pounds.

On the original Tundra prototype, a triangular gusset connecting the bottom and the front edges of the door

frame makes getting in a bit tricky, preventing people with long legs and big feet (like me) from mounting up with grace. This gusset has been moved on the second prototype, making cockpit access much easier.

The gullwing doors fold up against the wing with a bottom cutout that perfectly accommodates the wing attach point of the V strut. Once inside, however, the 44-inch-wide cockpit seems spacious. The seats in the prototype are particularly nice, and Prémont mentioned that builders have been approaching Dream about purchasing them for other projects. Even the back seats are solid and comfy, as this is no bare bones, spartan backwoods beater.

The O-360 is a bit balky without preheat, but it fires up from its winter slumber after a bit of coaxing and some extra priming. Taxiing to the active, the conversations with Unicom are in French, so I keep my mouth shut and try to get a feel for the ground handling.

Sitting tall on the gear, I had expected the forward visibility over the cowl to be restricted, requiring S turns. But I'm pleasantly surprised to find that the view is adequate along the side of the cowl, although shorter pilots may want to S turn or sit a bit higher.

At the end of the runway, after a totally normal runup, the power comes in, and off we go down the centerline. I'd like to be able to report some "gee whiz" impressions at this point, but I

can't. The Tundra, with its large rudder and good visibility, doesn't want to do anything nasty or rude.

The tail comes up, the wing starts biting the cold air, and we're airborne in less time than it takes to describe. Given the lower-than-standard temperature, our rate of climb hovers in the 850 fpm neighborhood up to 3000 feet MSL, where we level off.

I remove my headset to get an impression of the cabin noise level, and I find that it's quieter than I expected from a kit aircraft. No weird air noises or howls; our IAS says we're moving along at just less than 120 mph. The visibility in level flight is quite good, with enough glass and a low enough panel to appreciate the beautiful, snowy countryside.

Turning my attention back to the Tundra, I again am at a loss for adject-



Demo pilot Robert Blais, designer Yvan Desmarais and sales manager Luc Prémont head the Dream team.



The author noted resemblances to the Super Cub, Taylorcraft and Cessna 185, and the Tundra's flying characteristics bear similarities to many certified factory-built.



When not in float configuration, the Tundra sports large tundra tires on Grove wheels.



Featuring four seats, the aircraft can carry nearly 750 pounds of people and baggage with 55 gallons worth of fuel.



The roomy cockpit includes center sticks and rudder pedals for both pilot and co-pilot.

Dream Tundra

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tives when attempting to describe its flying characteristics. How do you adequately convey the feeling of flying something that is absolutely solid and predictable without sounding trite and mundane? The floor-mounted stick fits your hand right where it should, and the cable-controlled surfaces feel rock solid. In the climb, it took all of three minutes for me to start feeling comfortable flying with rudder and trim only.

Initiating a few level turns at various bank angles, I find the Tundra feels like a larger airplane. The control pressures are firm but seem well-harmonized with the rudder pressures. The relationship between rudder and aileron pressures quickly becomes obvious, and then it becomes intuitive. It only takes a few degrees of turn to correct for the corresponding loss of lift. After that, the elevator correction becomes automatic for holding a level turn.

I turn and ask Prémont how long they spent tweaking the trim to get the airplane to fly so nicely, and I get a blank stare in response. Then he says, "This is the way it flew from day one."

At first I think he's kidding, but then I start to believe him. Flying the Tundra is a *set and forget* affair. Pick the attitude you want to maintain, put the airplane there, and enjoy the stability.

Stalls and Slow Flight

It was time to try approach and departure stalls. The power came off, the airspeed came down, and the flaps were deployed. As there's no aural stall indicator, I was curious to see what kind of cues are available before the wing admits defeat. As the stick became progressively nose-heavy, I held the steep deck angle and watched the airspeed indicator slowly drop to 40 mph, where the buffeting became increasingly noticeable.

Holding the stall for a bit, the ailerons remained responsive throughout with good rudder authority as well. When the buffet turned into a shudder, it was time to relax the back pressure, and the Tundra resumed its well-mannered flying characteristics as the airspeed increased and the flaps were retracted.

Highlights of this design include the reflexive flaps—they actually sit 5° up in cruise, enhancing cruise speed by 4 mph or so. In the first prototype,

the flaps are controlled by a manual VW parking-brake-style flap lever with button-selected detents. But it's a bit awkward to find the desired setting, so this control is being changed in the second Tundra.

The departure stall was equally benign, with the exception of a much higher deck angle as the airspeed dropped well below the 40-mph indication (near 20) before the Tundra said, "Uncle!" Of course, there's significant instrument error at that angle, but I really had to work to get the Tundra to quit flying while producing climb power.

Slow flight was another non-issue. Steep turns with flaps at slow airspeeds (less than 60 mph) were simple with good control authority throughout. Prémont said that the nose trim was a bit sensitive, but I found it only slightly so. It wasn't hard to quickly set the trim where I wanted once I got a feel for the input needed.

On the way back to Bromont, the Tundra just moseyed along over the Quebec countryside. Crossing above the runway for a downwind entry, the airplane still feels solid as it slows in the pattern and plunks down for a nice, slow landing. If you've driven an all-

wheel-drive vehicle, you'll understand the feeling of flying a Tundra.

Performance

By kit aircraft standards, the Tundra is not quick. You might expect that the O-360 would pull the airplane along faster than it does, but cruising around 120 mph is what the Tundra does with its 180 hp. If you're looking for a screaming cross-country rocket, then the Tundra is probably not the choice for your mission profile.

There's a fair amount of drag inherent in this design, lots of strut area and airframe intersections to pull through the air. But this airplane was not designed to fly from one paved airport to another as fast as possible. It was designed to operate from water, snow or unimproved strips with short takeoff runs and landing distances.

Tested on PeeKay 1800 straight floats, the Tundra performed well at gross, according to Prémont. He mentioned that 2500s would mostly likely be the ideal choice for someone building a plane for the water. All kits come with attach points for floats or skis—they're not even considered an option.

The second prototype will get another 20 horses with the brand new IO-360 that was sitting on a pallet in the shop, and I must admit that just seeing that engine and thinking about the Tundra on 2500 floats got my blood flowing with visions of what should be one heck of a capable floatplane.

Looking around the interior of the Tundra, I noticed something that had eluded me—there's a narrow shelf spanning the width of the cockpit where the top of the windshield intersects with the roof. It's the perfect place for things like charts, sunglasses, checklists, airport directories, airsick bags or anything else that you might need to grab at a moment's notice in flight. With niceties like this, it's easy to see the results of careful planning and the attention to detail that were invested in this design.

The Kit

If you're adverse to the realities of solid rivet construction, then the Tundra may not be the kit for you. Dream

Aircraft wanted the strongest fastener integrity possible and chose solid rivets over blind rivets.

The company does pre-punch all the holes, however, with the precision available only on its CNC punch press. The builder will need to drill out the rivet holes, deburr them and Cleco the assemblies together during construction. Dream claims better than 1-mm accuracy in hole placement, and peering down a row of perfectly spaced rivets along a wing under construction, this statement appears correct.

The Riblett wing has its 2° washout built into the ribs, eliminating the need for jigs. A lot of the parts are made in-house, such as the rudder pedals, control sticks, instrument panel and fuel tanks (which are prewelded and pressure tested). Grove landing gear components and wheels are used for the mains, and the builder has many choices when considering tailwheels.

Some of the most remarkable parts of the Tundra construction process are the color-coded exploded-view diagrams detailing which fastener is used in building each section. It sounds simple—color coding the rivets to the diagram—but the benefits of being able to instantly see which fastener is used where will save countless hours in determining which drill sizes and Cleco/rivet selection are used for what component.

"We've tried to make it *almost* idiot proof," says Prémont.

In the shop, the mostly built Tundra No. 2 was getting the attention of Nicolas Boisvert and Patrik Deladuroutaye, whose English was better than my French. Somehow we transcended the language barrier as they proudly showed me the results of their handiwork.

The second prototype features many refinements over the Tundra that I flew, including the addition of a good-size baggage door, moving the door-frame gusset for easier access, and the change to solid Grove main gear. The flap actuator handle is being redesigned and moved to a more convenient location, along with changing the trim wheel gear ratios.

Future options include prewired

and assembled instrument panels, fully tested and ready for installation with radios and avionics in place. Because the kits have only recently been made available, I expect Dream Aircraft will continue to refine the Tundra and respond to builder requests as more airplanes are completed. The quick-build option is already under development, recognizing the industry trend to get build times as low as possible. For a new kit, the Tundra seems to have a lot of real-world experience built in even before leaving the factory.

A complete kit for the taildragger version of the Tundra costs \$25,945. Dream also offers a nose gear version, which sells for \$28,150. If you're interested in building in stages, subkits are available for the wing, tail section and fuselage.

I would have loved to talk with some Tundra builders to get their impressions, but because the kits are just starting to go out the door, none are currently near completion. But from what I've experienced during my Tundra flight and seen at the Dream Aircraft plant, it appears that this Canadian bush plane has met its design goals while remaining straightforward to build—assuming you don't mind the sound of a rivet gun and air drill.

If the completed kits retain the low-workload flying qualities of the prototype, I wouldn't be surprised to find Tundras operating in ever-increasing numbers wherever there's a need for a rugged STOL bush airplane.

FOR MORE INFORMATION on the Tundra, contact Dream Aircraft, Inc. at 450/372-9929; web www.dreamaircraft.com.

