

Katmai: The Skylane for Every Purpose Under Heaven

by Kevin W. Moore, CPA #41322



“There it is,” said Todd Peterson, pointing to a seldom used jeep trail, barely discernable from the dry brush on the crown of a hill in the endless Kansas ranchland. I gamely nodded as our Skylane cruised lazily at 55 knots, no more than 300 feet above rolling terrain that was clearly visible in all directions, especially straight ahead, over the nose. We rolled into a 30 degree bank in a single slow-motion turn through base to an abbreviated final over a pond into a short, straight part of the trail. Todd slowed to less than 45 knots, pitch attitude still barely above level, power a minimal 13”-14” manifold pressure. With a brief flare he planted the cushy 29” Bushwheels right on target at about 35 knots and braked to a stop well before the end of the straight segment, perhaps 120 feet from our touchdown point. As we taxied back through the brush I noted the smooth roll of the Bushwheels--with standard gear it would have felt like driving 55 mph through a lava bed in a Yaris. We lined up on the trail and departed in less than 200 feet, blazing off the hill like a cat-shot from a carrier. He grinned and I shook my head, incredulous that we had just flown nearly a ton and a half of airplane effortlessly into and out of less than 300 feet of dirt, brush, rocks and perhaps the odd cow pie.

Five decades after its debut, the Cessna 182 Skylane is still a remarkable design achievement. It has very forgiving handling, excellent takeoff and climb performance, and a comfortable cabin. The 182’s systems are simple with relatively few maintenance or operating issues. Many “legacy”—182R

and earlier—Skylanes are full fuel/full seats aircraft with cavernous CG envelopes. It is a fine IFR platform, reasonably fast, with one of general aviation’s best safety records. The Skylane’s rugged gear and short field performance confer competence for operations on unimproved runways. The value offered by the 182 shows in the numbers: well over 20,000 have been produced and more leave Cessna’s Independence facility each day.

The intrinsic capabilities of the airframe and large numbers of aircraft in the field have spawned numerous STCs, each aimed at enhancing some aspect of the Skylane such as cruise speed, range, takeoff, climb or STOL performance, or useful load. Owners who desire multiple improvements for their 182 face an intimidating array of choices, with uncertainties in how various modifications will function together. No longer. The “perfect” 182, augmented to perhaps the best level attainable by the platform just might be at hand in the form of Todd and Jo Peterson’s Katmai and King Katmai.

The genesis of this remarkable aircraft was in the late 1970’s when the Petersons acquired the STC and tooling for the Wren modification of the 182. Their Wren 460 utilized full span slotted flaps and movable control surfaces on top of the wings (“Wren’s teeth”) that enhanced lift and aircraft control at slow speeds. The most striking feature was a canard with moveable control surface bolted to the engine mount just a few inches behind the propeller. The Wren had remarkable slow speed handling and STOL





performance, with an astonishing 25 kt stall speed, but was expensive to produce. Both cruise performance and useful load were significantly compromised. After a few dozen were sold, the Petersons noticed that customers were not keeping them, citing a desire for greater speed and payload.

Thus after a several-year effort their second-generation aircraft, the 260se/stol (“260se”), was certified in 1986. Customers’ desires for additional speed were met by installing a speed kit to clean up “draggy” aspects of the landing gear and cowling, and a more powerful, fuel-injected engine (260 hp IO-470). The IO-470 provided better takeoff, climb and cruise performance than its carbureted sibling on virtually the same fuel burn and enabled lean-of-peak operation, further enhancing range and efficiency. The 260se retained a Skylane-like useful load of at least 1100 lb. It relied on the stock Cessna wing but kept the high-lift canard. With 35 kt stall speed and up to 153 KTAS cruise, the 260se markedly expanded both ends of the 182’s flight envelope. Through the next 20 years of a turbulent general aviation economy Peterson’s Performance Plus, Inc. of El Dorado, Kansas steadily produced more than 500 aircraft. That few or no used 260se’s are for sale at any given time testifies to the design’s appeal.

Gratified by this success yet still animated by the entrepreneur’s restlessness, Peterson created a new version of the 260se for his own use that would put him back in touch with his long-neglected Inner Bush Pilot. He appended three more feet of wing (Air Research Technologies, Inc. www.wingxstol.com) that improved rate of climb, lowered stall speed by 4 kt and reduced takeoff distance nearly 20%. A stouter nose gear fork was used along with larger tires and heavy duty brakes. Brake lines were sequestered behind the main gear struts, which were protected

by stainless steel anti-abrasion strips. Inside, he extended the baggage area (Selkirk Aviation, Inc., www.selkirk-aviation.com) to accommodate camping equipment and even a Honda generator. With rear seats removed, there is 8 feet of cargo bed for camp gear, hunting equipment, or a relaxing snooze after a tough morning levitating into and out of scruffy back-country areas whose designation as landing strips amounts to aeronautical identity theft. Peterson called the new plane Katmai, evoking the remote and wild Alaskan National Park, and emblazoned a bear print logo on the tail and wingtips.

Would the Katmai master its intended mission? Peterson flew it to Idaho and Utah, visiting the most difficult strips those states have to offer, including “Mile Hi,” “Dewey Moore,” “Lower Loon,” “Dirty Devil” and the appropriately named “Poison Spring.” On these trips he linked up with some experienced back-country pilots and returned delighted by the plane’s performance...and by more than a dozen orders he garnered from this hard-to-impress crowd.

The key to the Katmai’s amazing abilities is the canard. The aft surface deflects 7° downward at full aft yoke, or ~1° up when the yoke is forward. Below about 60 kt it generates lift at the heaviest part of the airplane, relieves the download



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on the tail, and thus enhances pitch authority. Stall speed is 31 kt, but more importantly the Skylane's low-speed performance is utterly transformed. Slow flight at 50-55 kt is in a virtually level attitude at a power setting of only 15"-16", barely above idle, with controls still crisp and responsive. Completely cross-controlled flight here offers no hint of stall or spin, and steep turns—trimmed, hands-off—at 45 kt are easily accomplished. The canard blesses the Katmai not only with short field performance but also the responsive low-speed maneuverability needed to safely negotiate the shortest, most confined back-country strips.

The Idaho and Utah experiences and discussions with back-country pilots convinced Peterson that a power increase could address the desires of some to operate out of the shortest strips even at high altitudes in the summer. Thus was the King Katmai born, with a 300 hp IO-550 turning a 3-blade prop of 82", 84" or 86" diameter. The greater engine and prop weight up front was balanced by a 4 lb counterweight in the tail, as used in the 182RG. Takeoff distance was now 290 feet or less and climb rate approached 2000 fpm at the medium weights typical of back-country flying. Nonetheless all of the low speed handling qualities of the Katmai were preserved. Peterson



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Author's "Pavement Queen"

is satisfied that there are few or no further improvements to make, and Katmai/King Katmai owners seem to agree.

Including me. A 260se pilot with 600+ hours in Todd and Jo's planes, I took an ownership sabbatical during a three-year entrepreneurial stint of my own and had now returned to the nest to pick up a new Katmai. Mine was the Urban Cowboy/Pampered Pavement Queen version with standard gear and speed kit: ideal for fast, comfortable, efficient cross-country flying but with all the short field and slow speed capability/safety I could ever want. I admired the new panel, the interior with its fresh leather smell and tried out the comfy seats...and might that be a Poodle Print on the panel instead of the Katmai Bear's Paw? No way--all that stands between me and my bush pilot fantasies is a few shop hours to install larger tires and perhaps a quick dash into a phone booth to emerge with plaid shirt, jeans, hiking boots and that knowing, distant gaze towards the mountains.

Todd had coaxed me away from bonding with my new bird for a King Katmai demo flight. Having made a trifle of that 300 foot jeep trail, we flew the 25 miles back to El Dorado over unpopulated terrain at 500-1000 agl.

"That one looked pretty long to me," he said, "the shortest strip I've been into with the Katmai is 150 feet."

We entered downwind for runway 33, then approached high and descended in slow motion at 45 kt towards the final 500 feet of the runway. I knew what was coming and mentally noted what would have been my own "chicken out point," but Todd continued down and landed softly with plenty of pavement to spare. "Still had more than enough room for a touch-and-go," he smiled.

Photos courtesy of the author, Peterson's Performance Plus, Inc. (www.katmai-260se.com) and www.br-ent.com with permission.

Peterson 182 conversion owners' website: www.260sepilots.org

Kevin Moore is an instrument-rated private pilot with 2100 hours, nearly half of it in Peterson 182s. His "day job" is biotechnology research and development.

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Katmai/King Katmai Specifications

Cost:

\$130,000 - \$160,000 (retaining the stock 230 hp O-470)

\$180,000 - \$380,000 with IO-470 or IO-550, depending on airframe (182N, P or Q) and options selected.

Examples are 1975 182P (Katmai) and 1977 182Q (King Katmai) airframes.

	<u>Katmai</u>	<u>King Katmai</u>
Engine:	IO-470F	IO-550D
Horsepower	260 @ 2625 rpm	300 @ 2700 rpm
TBO, hr	1500	2000
Propeller	Hartzell 82", 2 blades	McCauley 82"-86", 3 blades
Max takeoff weight, lb	3100*	3100*
Max landing weight, lb	2950	2950
Useable fuel, gallons	75	75
Oil capacity, qt	12	12
Useful load, avg., lb*	1200	1170
Full fuel payload, avg., lb*	750	720
Wingspan, ft	39	39
Wing area, sq ft	185	185
Wing loading, lb/sq ft	16.7 @ 3100 lb	16.7 @ 3100 lb
	14.6 @ 2700 lb	14.6 @ 2700 lb
Power loading, lb/hp	11.9 @ 3100 lb	10.3 @ 3100 lb
	10.4 @ 2700 lb	9.0 @ 2700 lb
Performance		
Takeoff roll, ft (2950 lb)	310	290
Landing roll, ft (2950 lb)	310	290 (heavy duty brakes)
Rate of climb, fpm (2950 lb) (sea level)	1380	1800
Service ceiling, ft (2950 lb)	20,000	>20,000
Cruise speed, 8000 ft, KTAS @ fuel flow**		
70% power, leaned to ~150° F rich of peak EGT		
Standard landing gear	148-154 @ 15.5 gph	155-160 @ 18 gph
29" bushwheels		135-140 @ 18 gph
70% power, lean of peak		
Standard landing gear	140-145 @ 12 gph	147-152 @ 14 gph
29" bushwheels		129-134 @ 14 gph
Endurance, with 1 hr reserve	5 hr	4 hr
Vs, kt	48	48
Vso, kt	31	31
Max. performance turn radius (45 KIAS, 45° bank, sea level)	181 feet	181 feet

*With "Fresh Pick" 3100 lb MGTOW STC for 182P & Q (www.trolltune.com)

** Block-to-block fuel consumption, including taxi, runup, climb and descent is generally 1-2 gph less than cruise fuel flow. Cruise speed varies with individual airframes.