

TWIN & TURBINE[®]

FOR THE PILOTS OF OWNER-FLOWN, CABIN-CLASS AIRCRAFT

JANUARY 2011 \$3.95 US

VOLUME 15 NUMBER 1

Better than New **King Air C90B**

Three aftermarket providers
plus one savvy owner equals
superior performance

Also Inside:
New Ice Advice
Protecting your
Medical Certificate
AOPA Summit Report
NBAA Focus



SUCH A THING AS

“Better Than

by Tim Kern

A changed environment can change perspective, and the reality of our changed economy is being grasped – and embraced – by a few savvy owner-pilots. Companies that supply aftermarket performance modifications, including Blackhawk Modifications, BLR Aerospace and Raisbeck, are finding that by working together they can bring better value and convenience to the customer. The resulting conscious integration of improvements saves time and results in a superior performing aircraft.

“Though we do, in a sense, compete with each other for the customers’ budget, we don’t compete against each others’ lines,” said Edwin Black, director of marketing and

sales at Blackhawk. Dave Marone of BLR: “There is a clear message from the market that we’re in: It’s easy to get confused when you’re shopping, but what we’re doing here, consciously, is to build the best-in-class performance for the platform. It became clear to each of us what would provide best value to the operator, as a ‘package.’”

Scott Keefe at Raisbeck added, “The systems really do complement each other, and we’re seeing that it really does work together.”

“Show Me & I’ll Buy It”

When building materials distributor Dick Ski was searching for an all-weather aircraft that could fly out of his 2,000-foot grass strip (complemented by trees



an New?"



Photos courtesy Raisbeck, BLR, Blackhawk

and a cliff), solo but with full tanks, Blackhawk's Jim Allmon talked to him about a King Air. "Show me a King Air that can do this, and I'll buy it," he said.

Though there are highly capable turbine singles available, Ski is conservative. "When I'm on top, it's nice to be flying two engines," as he soon demonstrated in heavy rain, at night, in Brazil, over the Amazon, once the mods were finished.

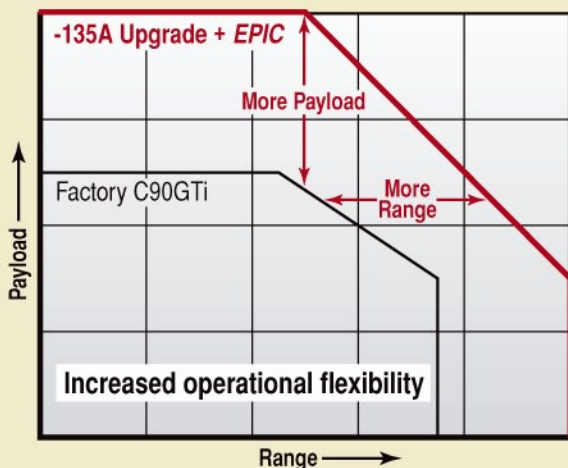
Ski's King Air C90B was displayed at Oshkosh 2010. He has flown it all over North and South America, and he's a happy man. With Raisbeck Engineering's increased gross weight, dual aft body strakes, Power Props, and full FAA-approved flight manual; BLR winglets and Blackhawk XP engines, he now has a high-performance, long-range King Air for literally millions of dollars less than new.

He started with a low-time, clean King Air. "I looked for three or four



C90 Series **EPIC** Performance Cruise Data with -135A Engine Upgrade

EPIC PERFORMANCE FOR RANGE AND PAYLOAD



**C90 SERIES ENGINE UPGRADE OPTION:
Upgrade to -135A Engines & Raisbeck's C90 EPIC**

months, and I found one with well under 1,800 hours. Changing engines didn't make economic sense, but Blackhawk's exchange policy helped; and I wanted the performance increases that only an upgrade would give me. I also re-did the interior and scheduled the Raisbeck mods; then we added the winglets. 'Low and slow' is greatly improved, plus it's really good at 20-22,000 feet: it trues out at 265 kt in cruise."

Thinking back on his previous airplanes, he

said, "It went from '414' performance to ... something much better."

It's the Calculus of Physics

Scott Keefe at Raisbeck explained how the end result of the performance modifications add up to more than the sums of their parts: "A more moderate investment lets the owner modernize and improve his airplane, so he can have the performance of a new C90GTx – with better-than-new takeoff and climb performance."

Dave Marone, vice president of sales and marketing at BLR, explained the same thing in slightly different terms. "We have flown compatibility flights with all Raisbeck equipment, and we have found no conflicts – all these are perfectly complementary.

Same with Blackhawk. That's why you see our technologies displayed together; and you see us at trade shows together."

Edwin Black of Blackhawk said that the PT6A-135A conversion "never hurts performance, in any corner of the envelope; and those engines increase performance over most of it, particularly in high-altitude ops and cruise. The Raisbeck props allow the extra performance

of the engines to be realized down low and even on the ground."

The Raisbeck/Hartzell props are 93 inches in diameter (up from 90 inches), and provide a big portion of the short-field improvement, with greater thrust and better braking action. (Ski also went to Cleveland brakes as part of his upgrade.)

BLR's Marone described the advantages: "Brakes locked, max

avail torque; brakes off – make short-field rotation speed and pull the nose up. You get a quicker response, and you're quicker to a positive rate of climb. The winglets add an effective 3.5 feet to wingspan – so you get more lift out of the same airspeed. He rotates at the same speed, uses less runway, and starts climbing sooner. Increase angle of climb and take off sooner – that's a big safety improvement.

"Additionally, his practical V_x improves: rate of climb increases by something like 250 fpm at sea level. (It's as much as 400 at altitude.) You get to cruise altitude faster, as soon as you're cleared."

He cited some numbers from memory: "Flight test data show that time to climb (depending on altitude) can be reduced 10 percent to FL200; if to FL250, reduction is 21 percent. Fuel burn, of course, is directly related, so you can save 5-15 percent in climb."

Ski purchased the six-year-old C90B with the Raisbeck wing lockers and body strakes (lower rear fins) already on it. He added the Raisbeck props and other aero bits, noting that ram air was increased to the Blackhawk XP engines. For better wing performance at all angles of attack and loading, he was convinced that the BLR winglets would be the way to go.

Marone pointed out that each modification Ski incorporated made the other modifications more effective. "Everyone can argue about the order in which these modifications should be made. The answer involves the phase of flight you wish to improve. To improve the overall mission profile, you do them all at once. Runway, cruise performance, and ride quality – everybody wants them all, in varying amounts. You get more stability in roll from the winglets; better yaw stability from strakes. The result is better ride quality. In cruise you get a reduction in drag from winglets and extra speed (or



LANDING GEAR DUE?

- ▶ OH / Exchange
- ▶ Complete Sets / Individual Components
- ▶ Removal and Installation

www.traceaviation.com

601.936.3599 **TRACEAVIATION**
FAA CRS R39R997X

Your Source for King Air Landing Gear

C90B Series King Air + Raisbeck EPIC + Blackhawk -135A Engine

TAKEOFF	C90B + Raisbeck EPIC + Blackhawk -135A Engine	Factory C90B	IMPROVEMENTS
Takeoff Gross Weight	10,500 lbs	10,100 lbs	400 lbs more
Takeoff Distance Over 50' @ MTOW	2,090 ft	2,710 ft	23% shorter
Accelerate-Go Distance	2,985 ft	3,650 ft	19% shorter
Accelerate-Stop Distance	3,790 ft	3,600 ft	5% longer with 400 lbs more payload
Takeoff Climb Gradient	5.0%	4.8%	4% better with 400 lbs more payload
CLIMB			
Single Engine Rate-of-Climb	525 fpm	495 fpm	6% better
CRUISE			
Cruise RPM	1,750 RPM	1,900 RPM	150 RPM less
Maximum Cruise Speed	276 kts	248 kts	11% faster
LANDING			
Landing Distance Over 50 ft (no prop reverse)	2,160 ft	2,290 ft	6% less runway
Landing Gross Weight	9,700 lbs	9,600 lbs	100 lbs more
OTHER			
Propeller	93" Raisbeck 4-Blade Performance Turbofans	90" McCauley or Hartzell/Beech 4-Blade	<ul style="list-style-type: none"> • More performance • Less noise • No shot peening

Travel in the United States is one thing; travel in South America is another. Ski's first international trip in his "new" King Air took him to the Caribbean, Manaus and Bela Horizonte, with considerable time over dense greenery in Brazil.

Jim Allmon of Blackhawk noted, "The system itself is sometimes tedious. It's good to have a handler for flight planning, weather, fees, stamps. ATC can sound pretty bad in some places; and with jet fuel at \$10 a gallon and no credit cards in most places, it's good to have a bunch of cash."

Still, flying beats driving. A lot of places simply aren't accessible; or the routes between "where you are" and "where you need to go" can take you far afield, and sometimes through dangerous territory. Allmon said, "If you have any money, you fly. If you drive, wear a cheap watch; drive a cheap car." He paused. "Never mind; just fly."

Ski added that he learned a lot on that trip, particularly "how good the flying is in the USA. It's really good, and that's whether you're talking expenses, clearances, fees..."

Each of the mods makes the airplane feel better and perform better. A look at the Raisbeck Airplane Flight Manual Supplement confirms an MTOW increase to 10,500 pounds (which is 400 to 850 above the original; maximum landing weight is also increased); max cruise ITT can be increased to 805 degrees. (Keefe notes, "Raisbeck

range, depending on how you fly) from the props and the engines."

There is no arguing the effect of all these modifications working together. Ski reports equal or better-than-before performance in all flight modes: low and slow, climb, cruise, fuel mileage, overall handling. Nowhere have the modifications hurt, though it is sometimes difficult to tell which mods help the most overall; each has its positive effect in varying degrees, at various times on each mission.

"It's just... better... everywhere," he said.

Capability Permits Flexibility

Ski is on several boards and is an active participant in many industry groups. His efficiency is directly related to his ability to be where he needs to be, when he needs to be there. A recent trip (when the King Air was in the shop for the mods) "took 13 hours by airliner," he said. "In the King Air, it would have been four."



