KID STUFF

The Super King Air proves again that money makes it simple.

BY EDWARD G. TRIPP

It creeps up on you. Age, that is. If you are critical in the morning, you see the lines and the sags, the hair that is going lifeless gray and a tad thin. The eagle-eyed fighter pilot with what used to be a 20G-body wheezes a bit now and tends to blackout in an accelerated stall.

Oh, well. The smarts and the accumulated experience make up for the lost half step and the half-second reduction in reaction time. But, you have to show them who is boss without pressing too hard. After all, there are a few thousand hours of flight experience spread over a couple of hundred types and a lot of geography; and enough hangar stories to fill a long retirement of lies to help stay ahead of them.

These kids haven't any taildragger time, let alone turbine time. So, just play big daddy and let them crawl into the left seat. That is certain to fill them with a bit of humility, which is a lot better than trying to fill them with awe as they watch you do it, thinking all the time to themselves that it is just another airplane and why does the boss take it all.

That was the plan for the day, at least. The new King Air was the mission for the day.

The ramp was full of the normal assortment of corporate jets and medium twins, with a few singles scattered, ignored, here and there. A few hundred feet back on the ramp were the unlikely combination of a mini-Herky-Bird—a Transall C-160—a Vickers VC-10 in Royal Air Force markings, a Boeing 707 in Luftwaffe colors and, standing all by itself, a sparkling new T-tail Beech Super King Air dubbed the B200 in patriotic red, white and (two shades of) blue.

The kids were already out there, crawling around, poking through the nacelles and various inspection ports. These kids were far enough beyond the

PHOTOGRAPHY BY THOMAS A. HORNE AND MARK M. LACAGNINA

how-long-'til-we-get-there stage to show their impatience in terms of how long until we get up.

They—the kids—did not have to wait too long to get up, so to speak. A very cooperative fuel truck driver backed and filled with one of them on the top while the empennage was inspected and photographed.

The walk-around was turbine simple (and Plastic Man complex if you want to check the hinges in the horizontal stabilizer without a very tall ladder).

The wind was whipping through a couple of very thin coats, so the other four boarded the airplane. The cabin was long and sumptuous, with flushing potty, hot and cold running water and a vanity for shaving or primping.

The check pilot and I went on up to the flight deck to begin the prestart procedure while the others played captains of industry in the back. My time between King Air flights was almost a year, so it made sense to use the time to see what changes or tricks might be there to be avoided during flight.

There is a lot there, but it is all very logically arranged and grouped. The word is functional, and the end result is greatly reduced pilot work load.

It takes a little time to learn your way around the dials, gauges, switches and levers that control and help monitor the flight, power, electrical, environmental and nav/com systems. Beech provides familiarization training for both flight and maintenance crews as part of the purchase price to help prepare them for the serious business of corporate transportation.

While I would not want to be responsible for the operation of such an aircraft with nothing more than a study of the operating manual and a flight check, it is possible to do so. That is a credit to the inherent good flying characteristics of the 200 series and to the excellent systems and cockpit design.

It is a truism, which applies to practically all of the sophisticated, turbine general aviation aircraft, that the pilot is a systems manager, one who sits and analyzes the performance of the complex bundle under and around him rather than one who forces it through a flight. The pilot's job is to make sure all is going well unless something goes wrong. Then he, his skill and training and judgment, take over—as we were to demonstrate a little while later.

It certainly was not always that way. Even the pilots of the first designed-for-general-aviation turboprops were pioneers in their own way. There were a great many unknowns that only operational experience provided. Those experiences, some of which were exceedingly hairy (including double engine flameouts in icing conditions), got back to engineering departments in a way that unfortunately happens all too seldom with lighter aircraft. The lessons were applied, and many of the operational and human factors problems were analyzed and largely fixed.

Beech Aircraft's family of King Airs is a good example of consistent development aimed at systems reliability and reduced pilot work load, as well as at improved performance under a wide variety of operating conditions.

That particular day, we were flying the latest version of the top of a product line that currently consists of five different models. All five stem from the original Model 90, introduced in 1964, that moved corporate transportation into the turbine age with a rush.

It is not lonely at the top. Demand is such that King Air production has required increasing manufacturing space at the main plant and moving smaller models to other locations. Production scheduling for the King Air line has been increased from 26 to 35 units per month in just the past year. That, unfortunately equals or exceeds the production rate for many light, general aviation aircraft.

The B200 is a development of the first T-tailed aircraft in the Beech line. The most significant element of the "B" model designation is the uprated engine. It is the latest in the venerable line of PT6 engines made by Pratt and Whitney of Canada, the PT6A-42. A development of the original PT6-41 used on the first Super King Airs, the -42 can produce the rated 850 shp at higher altitude—full power at up to

106°F at sea level or, 6,500 feet on a standard day—as a result of a new first-stage compressor built to withstand higher temperatures and higher inlet air pressure. The important results are better performance on hot days and higher available power at efficient operating altitudes.

The B model can get up there faster, too. Climb rate at gross weight is improved at higher altitudes: by 200 fpm, to 1,750 fpm at 15,000 feet; and by 300 fpm, to 1,000 fpm at 25,000 feet. Single-engine climb and single-engine service ceiling are improved, also. And, of course, the higher performance at altitude provides an incremental improvement in cruise speed at altitude. For instance, cruise speed at 31,000 feet, using normal cruise power setting, is 13 knots higher in the B200 compared with the 200, at a 20 pph (2.99 gph) higher fuel flow.

Beech also has increased cabin pressure differential from 6.0 to 6.5 psi, which makes operation at higher altitudes more comfortable. For instance, cabin altitude is 10,000 feet at a pressure altitude of 33,500 feet compared to 31,000 feet for the previous model.

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Up front, the pilots simulated emergencies. In back, the kids played captains of industry.

Zero-fuel weight has been increased by 600 pounds, from 10,400 to 11,000 pounds, which provides more flexibility in range/payload exercises.

The engine tune has had no effect on the recommended time between overhauls of 3,000 hours. It has added to mission flexibility and to flight planning choices.

While the Super King Air may not be as sexy as a propeller-less corporate aircraft, it is certainly competitive over a typical stage length (under 500 miles) in both speed and operating costs.

And on the ground it sits high on the gear, and the T-tail towers above most other general aviation aircraft. It looks very businesslike.

Close inspection of the T-tail is the most difficult part of preflight. Once the airstair door is secured, the prestart and start procedures are primarily a process of checking systems and monitoring largely automatic processes. The pilot goes to work if something does not operate in normal sequence or just does not operate.

The pilot has a regal view of the surroundings from his seat high over the ground. Ground handling is good; the Super King Air does not feel like a 12,500-pound airplane.

Pretakeoff procedures are a continuation of the process of checking normal and emergency systems. These include: rudder boost, which is very helpful if an engine fails during takeoff; anti-icing; auto-ignition; autofeather; and, for the paying customers back in first class, pressurization; heating and air conditioning options and related features.

One example of the complex systems that result in operational simplicity in normal circumstances is the fuel system. There are six fuel cells in each wing that are interconnected, and there is an auxiliary tank in the center section. Transfer of fuel from the auxiliary to the main tanks is automatic using electric pumps. Fuel is gravity-fed from the main tanks to the engines after passing through filtering systems. The fuel is heated by engine oil.

There are four fuel pumps for each engine: a high-pressure, engine-driven pump; a low-pressure, engine-driven boost pump; an electric, standby boost pump; and an automatic motive-flow transfer pump for the auxiliary tank.

Normal operation requires the pilot to open the fuel firewall valves before starting, to ensure the standby pumps are off and that the auxiliary transfer

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The B200 cockpit is simple complexity. Gear retraction time? Four seconds.

switches are in the automatic position.

There are lots of annunciators to monitor the fuel and other systems and to call the pilot's attention to any malfunction or if things are neglected while covering the check list.

Weight was right at gross for our first departure. The 1,700 shp felt good. Strong, but not aggressively so; after all, you want to keep the folks in back happy.

Rotation at 95 KIAS started the nose up while the mains rumbled along for a few seconds. There is a tendency for the aircraft to continue to pitch up as it flies off, if the pilot does not anticipate the characteristic. This can make for an abrupt departure, which is followed by an equally abrupt pitch over as the pilot tries to regain a more normal climb attitude. A higher rotation speed can help avoid the tendency at the cost of a longer ground run.

I was a bit slow in catching it, but soothed myself by deciding that the kids were too busy playing big wheels in the plush cabin chairs.

The gear comes up very quickly (four seconds, according to the book), and acceleration through the best-single-engine-rate-of-climb speed is almost as fast. Deck angle is high, and forward visibility is poor at this speed. Even a more sedate cruise climb of 140 knots produces a rate of nearly 2,000 fpm and a high deck angle.

We stopped at 10,000 feet, which put us above the crud that blanketed the area, having been assigned an area by a cooperative ATC to try slow flight and single-engine operation, as well as simulated approaches in a variety of configurations and situations followed by missed approaches.

Pitch stability and overall control response, as well as control harmony, are excellent. The ease of operation belies the size and the weight of the airplane. It makes the pilot appear to be very smooth, very precise and very much in control of the machine.

Even with simulated engine failure during takeoff, the kids in back were not paying any attention. There were no wide diversions or humongous noises to distract them from their game of big time in the back.

After a climb to 28,000 feet (FL 280) and some cruise checks, we went through another series of simulated

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After a climb to 28,000 feet (FL 280) and some cruise checks, we went through another series of simulated emergencies, slow flight and everything we could come up with to give some sense of distress. Nothing doing.

A funny thing happened during a maximum rate of descent to shoot some approaches. We selected approach flaps at 200 knots. The flaps continued to extend beyond the detent-limit, and there was a lot of activity in the cockpit while we disconnected the flight-control system (a very sophisticated Sperry with altitude alert, altitude preselect, airspeed hold and a lot of other goodies), reduced power and leveled off to reduce airspeed to the full-flap maximum of 157 KIAS.

As we descended, we troubleshot the electrically actuated flaps to no avail. The flaps retracted; however, each time the approach position was selected, they went down all the way (the flaps have an automatic sensor and disconnect to prevent asymmetric flap extension or retraction).

Communications and navigation work loads were increasing at the same time, as ATC worked us toward the first approach, wanting to know why we had not kept up our speed.

It all worked to demonstrate that lots of aids, thorough training and two pilots help to keep abnormal situations under control. But it also reinforced the observation that two—or more—pilots can be worse than one if good coordination is not established and maintained. Fortunately, in this case, it was.

The errant-flap situation cleared itself as we descended. The problem was later attributed to a wash job just before departure, with remaining water freezing during our rapid climb on a day of below-standard temperatures.

We went through a series of coupled and hand-flown approaches, missed approaches, simulated emergencies and landings. The airplane behaved much better than many smaller ones.

What's more, it was a lot of fun to fly a heavy airplane with such good manners and such mild behavior. We stayed in a close pattern for a series of visual approaches and landings. It was almost like flying a trainer, and it was not at all like flying a strange airplane.

Then it was the kids' turn. They went through much of the same routine with a heavy concentration on work in the pattern.

I sat back in the chairman's position (right rear, facing forward), chatting with the other passengers. I clutched the armrest during the third departure, which was flown at something close to best-single-engine-angle-of-climb speed (115 KIAS) and made it look as though we were entering a loop, and tried very hard to look nonchalant.

The most disturbing part was the landings. And, to my chagrin, our check pilot confirmed it: One of the kids was consistently making the best.

Oh, well, they are just beginning to get taildragger time. But, don't look sideways, Satchel; I'm right along side.

I walked out to my car alone, after we all said thank you, trying to remember how to whistle John Wayne's tune in *The High and the Mighty*. These newfangled airplanes can make just about any kid look hot. □

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BEECHCRAFT SUPER KING AIR B200

Base Price $1,535,000

Price as tested $1,843,881

AOPA Pilot Operations/Equipment Category: Global

Specifications

Powerplants	2 Pratt & Whitney Aircraft of Canada PT6A-42, 850 shp
	Recommended TBO 3,000 hr
Propellers	2 Hartzell, three blade, constant speed, full-feathering 98.5 in
	Recommended TBO 3,000 hr
Wingspan	54 ft 6 in
Length	43 ft 9 in
Height	15 ft
Wing area	303 sq ft
Wing loading	41.3 lb/sq ft
Power loading	7.4 lb/shp
Seats	8 to 15
Cabin length (excluding cockpit)	16 ft 8 in
Cabin width	4 ft 6 in
Cabin height	4 ft 9 in
Empty weight	7,538 lb
Empty weight (as tested)	8,103 lb
Useful load	5,052 lb
Useful load (as tested)	4,487 lb
Payload w/full fuel	1,407 lb
Payload w/full fuel (as tested)	842 lb
Max ramp weight	12,590 lb
Max takeoff weight	12,500 lb
Zero fuel weight	11,000 lb
Fuel capacity	3,645 lb/544 gal (usable) (turbine fuel, 6.7 lb/gal)
Oil capacity ea engine	14.2 qt
Baggage capacity	410 lb/53.5 cu ft
Max cabin pressure differential	6.6 psi
(10,380 ft cabin alt @ 35,000 ft actual alt)	

Performance

Takeoff distance (ground roll)	1,942 ft
Accelerate/stop distance	3,364 ft
Takeoff over 50 ft	3,345 ft
Rate of climb, sea level	2,450 fpm
Single-engine ROC, sea level	740 fpm
Max level speed,	24,000 ft 294 KIAS
Cruise speed, max cruise power (1,800 rpm, 11,000 lb)	
18,000 ft	289 KIAS
31,000 ft	279 KIAS
Fuel consumption, ea engine	388 pph/57.91 gph @ 18,000 ft
Cruise speed, normal cruise power (1,700 rpm, 11,000 lb)	
18,000 ft	282 KIAS
31,000 ft	271 KIAS
Fuel consumption, ea engine	373 pph/55.67 gph @ 18,000 ft
	239 pph/35.67 gph @ 31,000 ft
Maximum range power, 1,700 rpm, 11,000 lb	
18,000 ft	214 KIAS
Fuel consumption, ea engine	223 pph/33.28 gph
31,000 ft	231 KIAS
Fuel consumption, ea engine	184 pph/27.46 gph
Range @ max cruise power (1,800 rpm), w/ 45-min res, std fuel, best economy	
18,000 ft	1,192 nm
31,000 ft	1,760 nm
Range @ normal cruise power (1,700 rpm), w/ 45-min res, std fuel, best economy	
18,000 ft	1,210 nm
31,000 ft	1,790 nm
Range @ max range power (1,700 rpm), w/ 45-min res, std fuel, best economy	
18,000 ft	1,510 nm
31,000 ft	1,974 nm
Max operating altitude	35,000 ft
Single-engine service ceiling	21,735 ft
Landing distance	
no reverse obstacle over 50 ft	2,845 ft
	1,760 ft ground roll
propeller reversing over 50 ft obstacle	2,074 ft
	1,120 ft ground roll

Limiting and Recommended Airspeeds

Vmc (Minimum control w/ critical engine inoperative)	86 KIAS
Vsse (Minimum intentional one-engine inoperative)	104 KIAS
Vx (Best angle of climb)	100 KIAS
Vy (Best rate of climb)	126 KIAS
Vxse (Best single-engine angle of climb)	115 KIAS
Vyse (Best single-engine rate of climb)	121 KIAS
Va (Design maneuvering)	181 KIAS
Vfe (Max flap extended)	
40%	200 KIAS
Full	157 KIAS
Vle (Max gear extended)	181 KIAS
Vlo (Max gear operating)	
Extend	181 KIAS
Retract	163 KIAS
Vmo/Mmo (Max operating)	259 KIAS/.52 mach
Vr (Rotation)	95 KIAS
Vsi (Stall clean)	99 KIAS
Vso (Stall in landing configuration)	75 KIAS

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, at sea level and gross weight, unless otherwise noted.

Operations/Equipment Category for aircraft as tested; see June 1981 Pilot, *p. 103.*