

Status Report: King Air C90SE

Beech's newest version of the King Air breaks the bottom out of the \$2-million price floor.

By **FRED GEORGE**

October 1994, Document No. 3302 (4 pages)

Beech Aircraft has been building and perfecting twin-turboprop King Air 90 airplanes for 30 years, earning a universal reputation for creating roomy, highly durable and exceptionally reliable business aircraft.

Three decades of product improvements have yielded substantive performance gains and even more comfortable passenger cabins.

King Air prices also have increased substantially. In 1984, a B/CA-equipped King Air C90A cost just over \$1.32 million. Today's C90B, albeit with more speed, less noise and better airport performance than the C90A, costs a million-plus dollars more than a Model 90 of a decade ago.

Business aircraft buyers, though, are more price-sensitive than ever before. The market is decidedly elastic with respect to cost increases, and a large number of potential buyers balk at having to pay a dime more than \$2 million for a new, entry level turbine airplane.

Beech's new King Air C90SE, short for Special Edition, is designed to appeal to such buyers. It offers the same cabin volume and cruise performance of the C90B, but it is priced almost one-half million dollars lower. Indeed, the C90SE, outfitted with most of B/CA's specified equipment, actually carries a price tag of less than \$1.9 million (\$1.7 million base).

MARKET NICHE

A high percentage of light turboprops are owner-flown and Beech has zeroed in on this market with the C90SE. Prospects include people who are ready to move up from high performance piston twins, such as the Beech 58P Baron, Cessna 414 Chancellor and 421 Golden Eagle, and the Piper PA-31P Navajo/Mojave. A second group includes those who are presently operating older turboprops and who want to trade up to factory-fresh equipment.

With this in mind, the C90SE is designed to be flown single-pilot, lacking a full complement of navigation instruments on the right side of the panel.

Beech marketers point out that some buyers are concerned about the image of operating a turboprop airplane in lean economic times. They believe that some buyers also will opt for a turboprop because its propellers give it a utilitarian appeal.

SYSTEMS AND EQUIPMENT

Squeezing the cost out of the C90SE wasn't easy. Beech's engineers and accountants sharpened their pencils. They began by crossing off equipment that wasn't essential in an entry level aircraft. Beech also worked closely with suppliers to shave costs.

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The C90SE, though, retains all the anti-ice and deice equipment needed for all-weather flying, including pneumatic boots, engine and prop anti-ice and electrically heated, glass windshields. A 22-cubic-foot emergency oxygen system is part of the package, enabling the aircraft to fly at or above IFR minimum en route altitudes in mountainous terrain in case of depressurization.

The aircraft will use the C90A's 93.4-inch Hartzell three-blade propellers instead of the 90-inch McCauley four-blade props fitted to the C90B. The tips of the larger props are closer to the fuselage, compared to the B model, resulting in more noise being transmitted to the pressure vessel, and the three-blade configuration causes it to be at a lower frequency.

The C90SE lacks the C90B's dynamic vibration absorbers (DVAs), but it has the B model's improved, bagged acoustic insulation. The result is slightly more interior noise than the C90B, but it's quieter than the C90A that used less effective acoustic insulation.

Notably, the standard package includes prop synchronization but not automatic prop feathering.

Changes to the avionics package (see sidebar) save both weight and cost, while making 16 cubic feet of baggage space available in the nose equipment compartment. The C90SE uses electro-mechanical flight instruments, but only the left side of the panel has a full complement of both flight and radio navigation gauges. The right side position has only flight instruments and no clock on the yoke. Electric pitch trim is not part of the standard package.

CREW AND PASSENGER AMENITIES

All six seats in the C90SE face forward and are equipped with lap and shoulder belts. The forward-most cabin chairs may be positioned to face rearward to create a club seating configuration. The four cabin chairs are fully adjustable in pitch, track, rake and height.

All the chairs are covered in the same leather used in all King Airs and the Beechjet 400A, providing everyone aboard with the same level of comfort. The standard interior has no folding work tables in the cabin side walls, no cabinets and no lavatory. Don't look for ashtrays. The Special Edition is configured as a non-smoking airplane.

The cabin environment will be comfortable for every person aboard in all four seasons. The C90SE has auxiliary heating and vapor-cycle air conditioning systems, both of which are electrically powered and may be operated on ground power prior to engine start. Air conditioning systems installed in 1995 and later will use an ozone-safe refrigerant.

The cabin is pressurized to a maximum 5.0 psi, resulting in a 12,000-foot cabin altitude at a 30,000-foot certified ceiling. However, at a typical cruising altitude

of 23,000 feet, the cabin altitude would be just under 8,000 feet.

VALUE INCENTIVE PACKAGE

It's not likely that the C90SE with base equipment will appeal to many buyers, other than a few flight schools. Most buyers, according to Beech, will opt for the \$170,000 Value Incentive Package (VIP) that includes many avionics upgrades (see avionics sidebar) and interior amenities. The VIP, which adds 183 pounds to the BOW of the Special Edition, includes a low profile, aisle-facing lavatory in the aft section of the cabin. The lav's belted seat is certificated, making it possible to carry a seventh occupant.

Other VIP accouterments include an aft cabin/baggage compartment partition, a privacy curtain and a cargo restraint web. There is no provision for refreshment storage.

Pilots are sure to appreciate the automatic prop feathering feature that is part of the VIP. Also included are strobe and entrance door lights.

B/CA's twin turboprop Minimum Equipment List also includes engine fire detection and extinguishing that adds \$16,874 and 31 pounds to the SE and is not included in the VIP.

LIGHTER WEIGHT, MORE PERFORMANCE

The benefit of foregoing the C90B's plush amenities is more payload for the C90SE. The C90SE, at a BOW of 6,639 pounds, including the VIP and the engine fire protection package, has 236 pounds more payload than a C90B. That equates to being able to carry at least one additional passenger. A C90SE, for example, can depart with full tanks, one pilot and five 170-pound passengers.

Beech also claims that the Special Edition will burn at least 15 percent less fuel than a light turboprop aircraft on a typical 350 mile trip. However, on long trips the fuel economy advantage over a light jet all but vanishes.

The C90SE's 2,579-foot, standard day takeoff field length is actually shorter than that for the C90B, but lacking the latter aircraft's ground-fine, flat-pitch prop detent, the SE's accelerate/stop distance is about 10 percent longer because of the props' residual thrust at flight idle.

The SE has the same all-engine rate of climb as the B model, but the SE has a performance edge during OEI takeoffs. The SE's Hartzell three-blade props yield about 10 percent more OEI climb rate than the McCauley four-blade props of the C90B, however, in day-to-day operations, the difference will be too small to see on the VSI.

Climb and cruise performance of the C90SE and the C90B are identical, according to the Approved Flight Manuals, but the new aircraft's lighter weight will allow

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it to cruise a touch higher, faster and more economically than the B model carrying the same payload.

Pilots can plan on consistent 240-plus knot cruise speeds and 200- to 225-knot block speeds, depending on stage length.

PRICE AND VALUE

Arthur E. Wegner, Beech's chairman and CEO, aims to take 30 percent of the cost out of Beech's aircraft during the coming years. The SE is tangible proof that he's one to keep his word. With a base price of \$1.7 million, the C90SE is not only the least expensive twin-turbine business aircraft (excluding non-pressurized models) in current production, it's also priced under some single-engine turboprops. Most assuredly Wegner has turned up the heat on the competition by cooling off the C90SE's price.

The newest King Air gains performance as well as cost advantages by shaving non-essential comfort and convenience items, plus using light-weight, panel-mount avionics instead of remote-mount equipment. The SE's lighter BOW results in an extra 150 nm of range with a heavy payload or an extra passenger on the longest trips.

The SE, as a result, could just as well stand for Superior Efficiency or Simple Economics, as well as Special Edition. From any perspective, the C90SE offers the best transportation value for the money than any King Air 90 in years. **B/CA**

C90SE Avionics

Panel-mount avionics are making a comeback in entry level turbine aircraft, after a hiatus of almost two decades.

The C90SE is the second small twin-turbine aircraft, after the CitationJet, to use AlliedSignal General Aviation Avionics Bendix/King CNI 5000 panel-mount radios. These rock-solid, high-performance radios are several generations removed from the 1970's vintage RCA panel-mount radios that caused pilots to gnash teeth and utter oft-deleted expletives over their poor performance and reliability. Ask any Baron or Bonanza pilot about the reliability of current production Bendix/King panel-mount equipment.

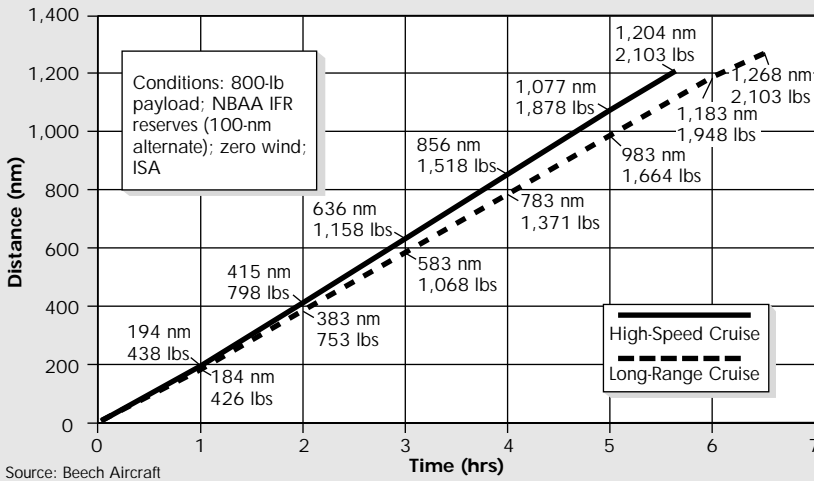
Additionally, using panel-mount radios frees more than half a cubic yard of space in the C90SE's nose that now can accommodate up to 350 pounds of baggage.

Behind the center instrument panel and tied to an avionics master switch, there are dual 760 channel comm transceivers, nav receivers (both with glide-slope receiver) and Mode S transponders, plus a single ADF, a single audio panel with an integral MB receiver (but no intercom function) and a remote-mount DME. The left side of the standard panel has three-inch instruments including an attitude indicator, an HSI for the Nav 1 radio, a second VORLOC/GS indicator for the Nav 2 radio, an ADF indicator and an encoding altimeter. Other equipment includes a Loral/Fairchild cockpit voice recorder, an ELT and dual 250VA inverters.

Beech believes that most buyers will opt for the \$170,000 Value Incentive Package (VIP) that includes many desirable avionics enhancements such as an RDS-81 weather radar, a four-inch electro-mechanical flight director and HSI, a KFC 250 autopilot with electric pitch trim and yaw damper, altitude preselection and alerting, and a three-inch RMI with VOR and ADF needles.

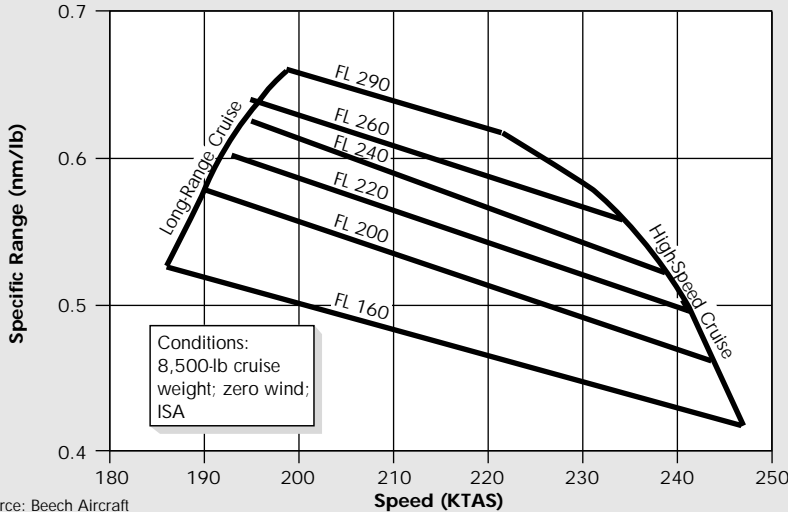
No flight management systems, GPS receivers, second DMEs, right-side nav instruments or intercoms will be offered as options. Those items may be installed and certified at local avionics shops.

TIME AND FUEL VERSUS DISTANCE



Source: Beech Aircraft

SPECIFIC RANGE



Source: Beech Aircraft

Specifications Beech King Air C90SE

B/CA Equipped Price \$1,882,874

Seating 1+5/6

Engines

Model 2 P&WC

PT6A-21

Power 550 shp ea.

TBO 3,500 hrs

Dimensions (ft/m)

External

Length 35.5/10.8

Height 14.3/4.3

Span 50.3/15.2

Internal

Length 12.4/3.8

Height 4.8/1.5

Width 4.5/1.4

Weights (lbs/kgs)

Max Ramp 10,160/4,572

Max Takeoff 10,100/4,545

Max Landing 9,600/4,320

Zero Fuel 9,074/4,083

BOW 6,425/2,891

Max Payload 2,649/1,192

Useful Load 3,735/1,681

Executive Payload 1,000/450

Max Fuel 2,573/1,158

Payload—Max Fuel 1,162/523

Fuel—Max Payload 1,086/489

Fuel—Executive Payload 2,573/1,158

Limits/Speeds

VMO 226

VA 169

PSI 5.0

VMCA 90

VDEC 79

VXSE 101

VYSE 109

Climb

All-engine (fpm/mpm) 2,003/607

Engine-out (fpm/mpm) 554/168

Ceilings (ft/m)

Certificated 30,000/9,091

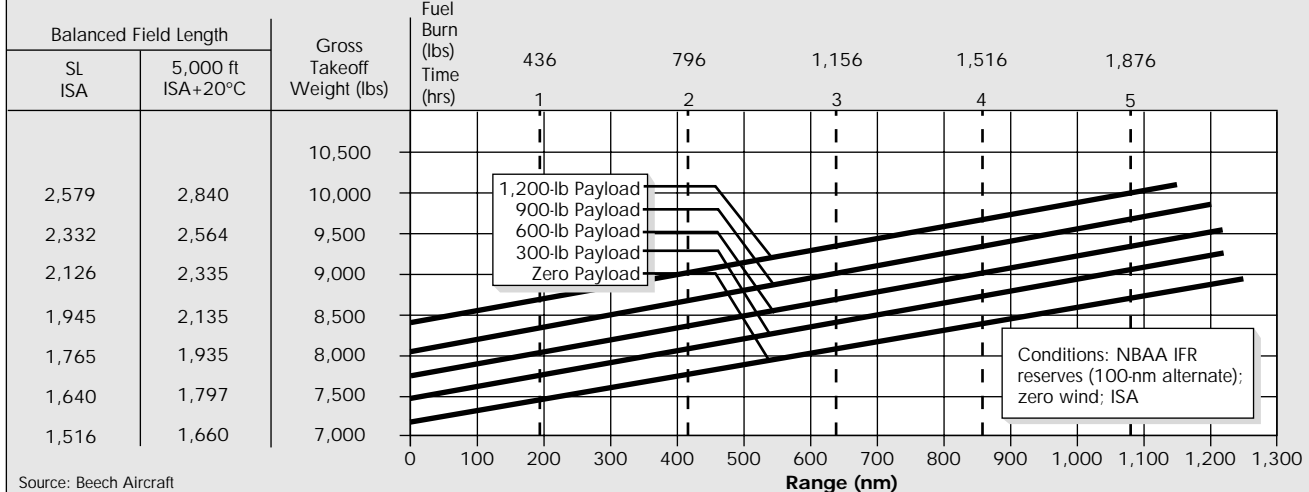
All-engine Service 28,900/8,758

Engine-out Service 14,260/4,321

Sea-level Cabin 11,065/3,353

Part 36 Noise Level 74.3 dBA

RANGE/PAYLOAD PROFILE



Source: Beech Aircraft