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# Big-Engine

By LeRoy Cook



# BARON

## Turns Fifty



The Beechcraft Baron C55, the first of the Baron line to use Continental's big-bore IO-520 engines, achieved certification on August 18, 1965. In the half-century since, it continually retained its status as the foundation of fast personal transportation, and was eventually expanded into stretched-cabin and pressurized variants. Further upgrades with a new panel and 300-hp engines came along with the 1984 Baron 58.

The C, D and E version of the Baron 55 is often overlooked, viewed as something thirstier and heavier than the smaller B55 but less capable than the Baron 58. Given that it's not as suitable for a six-seat mission, it is, in all other aspects, a great business and family traveling tool, often priced near, or below, single-engine competitors. Admittedly, its upkeep and training needs are fully multi-engine requirements. But older Barons still represent near-turbine capability in a compact package with relatively simple systems.

To review, the foundations of the Beech Baron were laid in 1957, when Beech Aircraft certificated its first

true "twin Bonanza", in the form of the Model 95 Travel Air, originally called the "Badger" until someone realized NATO had tagged a Russian bomber with the same name. To create the Model 95, the Bonanza airframe was given the T-34 trainer's tail and a 180-hp Lycoming on each wing. A good little airplane, the Travel Air was limited by its small engines, but its type certificate #3A16 was later amended, in late 1960, to create the Model 55 (technically, 95-55) Baron, with a massive swept tail and 260-hp Continental IO-470 engines.

### Going Up A Size

Growth, in the go-go days of the 1960s and 70s, was a given. By 1964, Continental had reworked the IO-470 into the IO-520 and, suddenly, everyone building Continental-powered airplanes had more horsepower to work with. The Baron C55 was introduced as a 1966 model with a foot-longer nose than its B55 sibling, a one-piece windshield and 200 pounds more gross weight. The tail span was increased to 16 feet, versus the B55's 13.75. The better-looking profile and extra useful load made it a hot seller from the outset.

The C55 was changed to a D55 designation in 1968 and the E55 came along in 1970, concurrent with the introduction of the Baron 58. A steady seller, the E55 remained in the line until production ended in 1982. Some 1,200 C55 through E55 Barons were made (serial number prefix "TE"), most of them produced at a 150-200 per year clip in the first four years, before the Baron 58 drove annual demand down to 25 or so in the 1970s.

Our subject airplane is the personal transport of Kansas City entrepreneur Chris Hall, a stock 1966 Baron C55 which has seen careful tending over the past five decades and still serves splendidly. Hall flies a King Air

C90 in his business, but uses the C55 for proficiency and for runs requiring only one or two seats. He is an A&P, so he's able to keep up with the occasional aging issues, like the recurring spar web inspection on the wing's carry-through section, a balky heater and intermittent instrumentation. As a well-populated aircraft, with strong type-club support from the American Bonanza Society ([www.bonanza.org](http://www.bonanza.org)), service and parts are readily available.

The IO-520/550-powered Barons are distinguished from the IO-470-driven airplanes by a small induction



air scoop atop the nacelles, missing on the B55. A large electrically-adjustable cowl flap is under each engine. The tight cowlings feature hinged side panels for maintenance access; the two batteries are in the lower portion of the nose. Three-blade propellers were an option on the early Barons, although ultimate efficiency was actually found with two-blade props. Many 1960s Barons had alcohol de-iced propellers, along with a windshield spraybar, and non-FIKI pneumatic boots were on the wings and tail. Landing/recognition lights are located in the outboard leading edges, with a taxi light on the nosegear strut.

While using many Bonanza-derived components in the wings, cabin and landing gear, the Baron C55 had more robust structure to handle its 5,300 gross weight. The electrically-actuated flaps have extended chord length beyond the outboard trailing edges; the left aileron has an adjustable trim tab, with servo action to lighten yoke forces. Fuel is contained in interconnected bladders, using leading-edge cells like the Bonanza but with added tankage behind the spar. The de-facto optional system holds 136 usable gallons, 74 in the mains and 62 in an auxiliary selection. Starting in 1974, the E55 eliminated the auxiliary tank management with a 166-gallon interconnected system.

The electrically-operated landing gear zips up and down in 4.5 seconds with 28-volt power, carrying 6.50 x 8 main tires and a 5.00 x 5 on the nose. As with the Bonanza, the gear is fully enclosed when stowed, the inboard gear doors opening and reclosing as it cycles. Backup extension is via a manual crank.

A large baggage door (optional but always ordered) is aft of the boarding wingwalk, allowing aft baggage or fifth and sixth seat occupants to be loaded. Typically, 55-series Barons are operated with one or both rear seats removed, due to the difficulty of ingress. Most baggage goes in the 300-lb capacity nose compartment, accessed by a swing-up door on the right side. The prominent mast under the nose carries a still-installed ADF sense wire that extends aft to another post under the tailcone.

The impressive Baron tail stretches 9.2 feet into the air and spans 15.9 feet. Dual elevator trim tabs are fitted for symmetry, augmented by small fixed tabs. The rudder has its own trim tab for engine-out conditions. A fresh-air inlet is located in the large dorsal fin, feeding the cabin's overhead vent system. Heating is supplied by a 50,000-BTU Janitrol combustion heater in the nose.

### Fast Flying In The 1960s

Boarding via the wingwalk, we entered the time-warp cabin of N48SC. The dual control wheels are mounted on a single crossbeam, obscuring much of the lower panel. Bonanzas and Barons frequently came with a single throw-over yoke, giving more room for the front passenger, as evidenced by fold-away rudder pedals, with

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no brakes, on the right side. The tight confines of the Baron cockpit is the secret to its 200-knot top cruise number. Accordingly, power controls had to be placed high in the center panel.

Much has been made by self-appointed correctionists over the odd placement of cockpit controls, to which Walter Beech would have said “what’s odd about it?” The Baron’s throttles are in the center of the quadrant, with props on the left and mixtures on the right; the gear knob is right of the yoke, with flaps on the left. This arrangement was bequeathed to the Travel Air and Baron from the Twin Bonanza, which had carried it forward from the Beech 18, itself patterned after the front offices of 1940’s two-pilot airliners. It remained so until the 1984 redesign of the Baron 58. One adapts easily enough.

The fuel selectors are beside the knee, giving main, aux and crossfeed settings with schematic portrayal. Ignition and starting switches are on the left sidewall, guarded by a key-operated master switch. Trim wheels are on the lower quadrant, with cowl-flap switches on the subpanel. The electric cowl flaps were changed to manual levers midway through the E55’s production, to eliminate maintenance. Dual-needle power instruments are located directly above the levers controlling them, at eye-level for easy scanning during takeoff.

The door absolutely must be checked for latching before takeoff; if it pops open in-flight the noise level is dramatic and it cannot be closed without landing, although the airplane is safely flyable. The middle windows feature Bonanza-style prop-open ventilation for ground operation, and double as emergency exits if a release pin is pulled.

Starting requires boosting up a bit of fuel pressure, then beginning cranking with throttle at idle and advancing it slowly until the engine catches. An adroit application of boost pump overcomes reluctance and the second engine follows in due course. Taxiing is a pleasure with positive nosegear steering, although the tall glareshield presents some challenge. At runway end, the usual piston-engine checks are best followed by reviewing a checklist, due to the 1960’s scattering of target items. Controls, cowl flaps, trims, doors and windows are confirmed, followed by a runup, beginning with prop exercise at 2,200 rpm, reducing to 1,700 for mags test, and reduced further to 1,500 rpm for a feathering check.

### Takeoff Planning

While the big-engine Barons are about as capable as any piston twin under engine-out conditions, takeoff planning should always begin with consideration of “what if...” Early Barons were grandfathered out of the airspeed indicator markings of Vmca and Vyse, but most have been retro-marked. On N48SC, a blue radial

## SPECIFICATIONS

### 1966 Beech Baron C55

<b>Powerplants</b>	Seats	6
	Fuel	142 gal. usable
<b>Performance</b>	Service ceiling	20,900 ft.
	Single-engine ceiling	7,100 ft.
	Max. cruise speed	200 kts.
	Stall speed	67 kts
	Takeoff distance (50 ft. obstacle)	968 ft.
	Landing distance (50 ft. obstacle)	1,414 ft.
	Max. range (w/reserve)	955 n. mi.
	Climb rate-2 engines	1,670 fpm
<b>Weights</b>	Climb rate-1 engine	335 fpm
	MTOW	5,300 lb.
	Landing	5,300 lb.
	Empty	3,015 lb.
	Useful load	2,285 lb.
<b>Dimensions</b>	Wingspan	37.8 ft.
	Height	9.2 ft.
	Length	29 ft.
	Cabin length	11.75 ft.
	Cabin width	3.5 ft.
	Cabin height	4.2 ft.
	Baggage	420 lb.

denotes the 100-knot Vyse, but there's no red line for the Vmc of 80 knots. Knowledgeable Baron pilots pitch up to a climbout attitude comparable to that attained at single-engine best-climb speed, accelerating rather than zooming skyward exuberantly. Barons don't like to stay on the ground near liftoff, tending to wheelbarrow if held down, so lifting off at close to the Vxse of 96 knots and getting the gear up with positive rate places the aircraft in safe territory. Beech's handbook numbers, on the other hand, are based on liftoff at Vmc + 5 knots.

The Baron climbs well, particularly if lightly loaded with both engines on duty. Expect 1,500 fpm or more at full chat, brisk enough that one pulls power back to 25 square and accelerates into a cruise-climb of 130-140 knots to prevent ear-popping pressure changes. Quickly reaching optimum cruising altitude in the 8,000 to 10,000-foot range, the cowl flaps are buttoned up and

trim is fine tuned. The superlative 200 knots supposedly comes at 75% power and 6,500 MSL, but most trips will see 185-190 knots on 65% power, where fuel burn runs 28 to 30 gph.

While a stable, comfortable cruiser, the Baron C55 seriously enjoys being maneuvered, with light controls and quick response, particularly with the aerodynamically-boosted aileron circuit. Beech always built nice-flying airplanes, and the big Barons, even the 6,000-lb 56TC, are all fun to fly.

Slowed down, the Baron C55 handles well, even at 80 knots; approach flaps and gear can go out at 152 knots and full flaps are allowed below 122 (the C55 was certificated around mph indications, which will be used in equivalency for its operation). Even an approach stall was tolerated well, coming at about 70 knots.

An approach and landing starts by leveling at 140 knots, often with first-flaps extended to improve visibility, putting the gear down to initiate descent and using 120 knots for pattern maneuvering, then slowing to 105 on final and perhaps 95-100 over the fence. Barons roll out enthusiastically and, while an 1,800-foot landing over a 50-foot obstacle is quoted, doubling that distance is a wiser policy. Precision, however, is easy to achieve with the responsive handling.

If one is prepared for its geriatric maintenance requirements, a 50-year-old big-engine Baron is a great old traveling machine. With modern avionics, it delivers fine value and performs as it always has. There is a 500-hour recurring AD inspection for cracks in the center-section spar web that can be eliminated with a kit, the rest of the maintenance depending on the state of neglect and wear. Beechcraft products are well built, but parts can be pricey.

A half-century seems to come along before we realize it. It's worth taking note of such a milestone, recognizing a great airplane. 

