

# Operator Survey

# KING AIR 300/350

It's a reliable "fill the tanks, fill the seats" workhorse, but maintenance woes persist.

Paul Bowen Photography

Raytheon King Air 300-series operators are among the most pragmatic people in the business aircraft community. For them, the King Air 300 or 350 is the ultimate airborne passenger van: It's reliable, it's versatile, and its capabilities are unmatched by any other type of aircraft.

We spoke with more than 40 operators, and asked them what they liked, what annoyed them and how well the aircraft is supported by Raytheon. Their responses were surprisingly consistent, taking into

account individual variations in day-to-day use.

Most operators told us that no other business aircraft so closely suits their travel needs. Frequently we heard, "It's a workhorse." "It fits as well as your favorite pair of shoes." "There's nothing I'd rather fly than a King Air."

All but a few 300-series operators had previously flown older King Air models. Some operators told us they briefly looked at light jets, particularly the Citation II and V/Ultra. In

the final analysis, though, turboprop aircraft couldn't carry as many people as far as the 300-series aircraft. And the King Air 300-series offered far superior fuel economy, according to respondents.

But, operators also told us that 300-series aircraft were afflicted with the same recurring problems from the time they were first introduced. The aircraft just haven't outgrown their "teething pains." The same components fail all too often.

One operator summed up the com-

ments of many others when he carped, "Technology has passed up the King Air." Just as poignantly, many operators didn't hesitate to say that Raytheon's support for the aircraft could be improved.

### FAVORITE FEATURES . . .

Almost all King Air 300 and 350 operators with whom we spoke say that these are the only business aircraft in their class capable of carrying full tanks and full seats. That's largely because of the P&WC PT6A-60A turboprops. The -60A engines are rated at 1,050 shp for takeoff, thereby providing the 300-series aircraft with the highest power-to-weight ratios of all the King Airs.

As a result, operators laud the 300-series King Airs for their short-field, one-engine-inoperative (OEI) takeoff, climb and cruise performance. Notably, the SFAR Part 41 rules under which the King Air 300 was certificated and the FAR Part 23 Com-

to 25 knots faster and carry more than twice the payload with full fuel. Similar to the King Air 200 operators, 300-series operators praise the aircraft for their handling ease and dispatch reliability.

Many operators—particularly those who fly later serial number aircraft that have matured through the digital adolescence of the early to mid 1980s—praised the aircraft's Collins avionics systems. "There is nothing better than Collins," one operator commented.

The one exception was the dated Collins FMS-90 installed in some early aircraft. It received low marks for ease of use. In contrast, operators were highly complimentary about the performance of the AlliedSignal GNS-XIs installed in some aircraft. They were downright zealous when asked to rate the performance of the Universal UNS-1M fitted to some 300-series King Airs.

Cabin volume, passenger comfort

told of delamination, cracks and failure of the anti-ice heating elements. This is not new to the 300 series, according to previous King Air operators, who say that for decades, it's been a problem with earlier models as well. "We've replaced four in three years," remarked one operator. "It's no different than it was with our [King Air] 200," carped another. In a written response, Raytheon officials claim the firm "has been working with PPG for the past few years" to improve the windshield. Two years ago, PPG introduced an improved edge seal that is designed to prevent moisture intrusion and delamination. Raytheon says the upgraded windshields have been in service too short a time to adequately evaluate any improvements in longevity.

The Parker-Hannifin Airborne electronic flow-control valves were another sore point. These devices meter the bleed air into the cabin for pressurization. They were introduced on the King Air 300 to solve problems operators experienced with the mechanical flow-control valves installed on King Air 200 aircraft. Operators claim the electronic flow-control valves have proven to be even less reliable.

Several operators also remarked about pressurization bumps associated with power changes or adjustments to the pressurization controller. It's not clear whether these symptoms are related to the electronic flow-control valves or to the chronic door seal leaks that some operators say they experience.

Similar to the way it handled windshield problems, Raytheon claims it has been working with the vendor to improve the reliability of the flow-control valves. Parker-Hannifin, according to Raytheon, has made some internal changes to the valves to improve reliability.

Early King Air 300 operators reported problems with the hydraulic power packs that actuate the landing gear. Some of these problems were traced to electronic components that failed to shut off the electrically driven hydraulic pump when the landing gear had fully retracted. To remedy the problem, Raytheon changed the vendor to Vickers and improved the up and down micro switch system. As a result, King Air 350 operators and later-model King Air 300 operators report far fewer problems.



Collins avionics received high praise from operators. They were satisfied with the optional AlliedSignal GNS-XI and downright exuberant about the Universal UNS-1M FMS.

muter Category rules used for King Air 350 certification require much the same OEI takeoff performance as Part 25. The takeoff performance numbers of earlier models are based on all-engine data. The King Air 300 and 350 appear to have longer takeoff distances than 90-, 100- and 200-series King Airs because of the apples-and-oranges OEI versus all-engine takeoff performance comparisons.

When compared to King Air 200 aircraft, the 300-series models can climb directly to FL 350 at MTOW, cruise 20

and interior cabin quiet also ranked high on 300-series King Air operators' lists of favorite qualities, especially when compared to the King Air 200.

### . . . AND THE LEAST FAVORITE

What are the five worst qualities of these airplanes? Operators weren't reluctant to voice their gripes. However, they told us that seldom, if ever, do the problems they encounter cause dispatch failures.

Several operators reported problems with the PPG glass windshields. They

## OPERATOR SURVEY



Fred George (4)

**Some operators felt wheel brakes were undersized, causing premature wear.**



**Early 300-series aircraft were afflicted with landing-gear power-pack problems.**



**Soot deposits require frequent aircraft cleaning, especially on the wing and the nacelle downstream of the stack. Raytheon offers a stack fairing and vortex generator kit to reduce soot deposits.**



**The 1,050-hp PT6A-60 engines enable the 300-series to climb directly to FL 350 and cruise 25 to 30 knots faster than King Air 200 aircraft.**

King Air 300 and 350 operators spend plenty of time wiping off engine-exhaust soot. That's a blend of the higher powered -60A engines and the forward-nacelle location of the PT6A exhaust stacks. The result is not only a cosmetic mess, but also corrosive deposits on the nacelle and wing paint that shorten its life. Raytheon has developed exhaust-pipe fairing kits and vortex generators that the firm claims "dramatically reduce" soot deposits. Operators concede the kit is an improvement, but not a solution.

Other problems voiced by operators are not as widespread in the fleet. Some operators mentioned that they have experienced cracks in the engine nacelles. Raytheon claims that "today's higher-power engines and energy slipstreams" are tough on engine cowlings. Some cracks "are unavoidable," according to Raytheon, but the firm is "investigating cowling fit and durability."

Early King Air 300 operators report annoying electrical problems, especially those traced to moisture contamination in pin connectors and poor airframe grounds. With respect to electrical problems, one operator said, "They are annoying because there are so many of them."

Raytheon says that the glitches are "common to almost all [makes of] aircraft; we believe we are making progress." The fuel-quantity indicating system, for example, has been a "focus of improvements" to make it more immune to moisture contamination.

Outside of the least five favorite attributes, agreement was not universal on other gripes. A few King Air 350 operators commented that the pressurization, heating and air-conditioning systems are not robust enough for the largest-cabin King Air. Raytheon responded that a properly functioning system provides a "comfortable environment." The firm points out that the cabin altitude at FL 350 is 10,500 feet. Raytheon commented that its engineers are "looking at improving distribution and circulation" of the cabin air flow.

Some early 300-series King Air operators complained that they've experienced engine-oil film deposits on the inside of the side windows. The problem was traced to engine-oil vapors carried in the bleed air used to defog the windows. Raytheon found that the problem only occurred at low engine power. The solution was to incorporate defog bleed-air shutoff valves in later model aircraft that prevent bleed air from flowing to the windows on the ground. For earlier aircraft (prior to FA-0221, FL-0073 and FM-0004), the shutoff valve kit is available as SB 2273 REV II, fully covered by warranty.

High-utilization King Air 300 and 350 operators have encountered some unique wear problems. A few complained about the wheel brakes being too small. Newly available BFGoodrich brakes now are available to reduce the cost per landing.

An experienced King Air 300 owner/

pilot with whom we recently flew claims that pilot technique accounts for most brake wear problems. He demonstrated the aircraft's short-field landing capabilities. He gradually reduced the power over the numbers to slow from VREF, touched down at 82 KIAS and used ground fine propeller pitch to decelerate the airplane to taxi speed in 2,000 feet of runway—without ever touching the brakes.

This owner/pilot also makes wide radius "fire engine" turns on the taxiway to reduce brake and tire wear. He reports using only one set of brakes in more than 700 landings.

A few other high-use King Air 300 and 350 operators told us that their passenger seat tracks are wearing, along with the cabinet drawers and aisle-side chair upholstery. Some operators said the aircraft's paint was not wearing well. These operators believe that a \$4.5-million airplane "should have been built better."

None of these gripes appear to adversely affect overall reliability, but they are annoying. "We have a

## OPERATOR SURVEY

stack of warranty claims you wouldn't believe," remarked one. But another manager said, "We've never had a dispatch failure."

### PARTS PRICES AND AVAILABILITY

Raytheon parts prices and availability was a recurring gripe we heard again and again. "It's really hard to swallow compared to the [mature] design," said one. "Parts are grossly overpriced," complained another. "If we can go around Raytheon, we can save as much as 50 percent," remarked yet another operator.

For example, one operator said that an engine-fuel-control component was priced at \$7,300 by Pratt & Whitney Canada, \$11,000 by Airwork and \$16,700 by Raytheon. (However, these claims were not substantiated to us with written documents.)

Larger fleet operators, especially turbofan aircraft operators, tended to be less vocal on the subject of parts cost. One fleet operator in the northeastern United States said that parts prices are about "what he expects" from a turbine business aircraft manufacturer.

Raytheon claims its "parts price and availability are competitive"—a view not widely held by most one- and two-aircraft operators with whom we spoke during the survey. One operator, though, expressed optimism. "Raytheon now is making great efforts



Fred George

**PPG windshields can cause problems for operators. The heating elements frequently fail and the glass is subject to cracking, but Raytheon and PPG are working on a fix.**

to listen to us," he noted.

There is evidence that Raytheon has been working on parts prices and availability, especially during the last two years. Raytheon officials commented, "We have had an ongoing program to address the cost of ownership, of which parts cost is a subset."

Until recently, windshields were priced at \$9,900, not including 10 hours of installation time. Now, they've been reduced to \$7,562. Electronic flow-control valves were priced at almost \$11,000, according to operators. Raytheon has reduced the price to \$6,310 for new valves, dropped the overhaul price to \$5,495 and set the list price for repaired valves at \$1,858. Even wheel brake prices have dropped six percent. Raytheon claims that in the last three years, it has reviewed

prices on 30,000 parts and "adjusted prices" on two-thirds of them. King Air owners are invited to fax their concerns to Jeff Flack in Product Support at (316) 676-3471.

### OPERATOR PROFILE

King Air 300 and King Air 350 operators actually fall into different classes. A large number of Model 300s are owner flown, and they are more likely to be single-aircraft operators, according to our sampling. If a company operates multiple aircraft, one of which is a King Air 300, the fleet tends to be small. A significant number of the owner-flown aircraft are operated by a single pilot.

Many King Air 350 aircraft, in contrast, are operated as part of a company's fleet. Those fleets tend to be larger than the ones with which King Air 300s are associated. Relatively few King Air 350 aircraft are owner flown. Very few King Air 350 aircraft are flown by a single pilot.

All King Air 300 aircraft flown by people in our survey are configured with a four-seat club section, one additional facing seat on the left of the cabin and a two-place, side-facing divan on the right side.

On average, King Air 300 operators fly 200- to 300-mile trips, but there is wide variation. With the exception of a few low-utilization owner/operators, people who fly King Air 300 aircraft told us they log 300 to 400 hours per

Paul Bowen Photography



**Fill up the seats, fill up the tanks and go flying. The King Air 300 and 350 offer unmatched range/payload flexibility, along with excellent short-field performance, according to operators.**

## OPERATOR SURVEY

year. On shorter trips, they climb into the mid-twenties, cruise at 300 to 310 knots and burn about 600 to 670 pph in cruise. On longer trips, they climb up to FL 350, cruise at 290 knots and burn 550 to 580 pph.

The average passenger load is four people, but several operators—especially some corporate operators with high annual utilization—say they routinely fill all the passenger seats.

Pilots say they are comfortable flying the King Air 300 1,000 to 1,100 nm in no-wind conditions. However, they also said that passengers are ready to get out and stretch their legs in 2.5 to 3.0 hours.

According to most operators, the hourly operating cost of a King Air 300 is \$500 to \$575. However, a significant number reported operating costs close to \$440 per hour. Both groups claim that their operating cost numbers include fuel, engine reserves, maintenance labor and parts.

Operators told us that all of their King Air 350 aircraft are configured in double club. Several said their aircraft are fitted with belted potty seats. A few said they occasionally use one or both optional jump seats in the aft cargo compartment.

King Air 350 operators also typically fly 300- to 400-mile missions on average, but there is even greater variability. For some, the average trip is 150 miles, and for others, the mean is 870 miles. Many of these aircraft work as corporate shuttles.

Operators said that their King Air 350 aircraft cruise at 290 to 295 knots. Similar to the King Air 300 operators, the 350 community cruises in the mid-twenties on shorter trips and FL 330 to FL 350 on longer missions. On longer trips, cruise speeds top 300 knots. The average fuel burns of the King Air 350 are virtually identical to those of the King Air 300.

King Air 350 operators may use different cost-accounting methods. Most told us their average hourly operating cost is \$550 to \$575, but some people said it's closer to \$700 without warranty protection. Only a few operators reported direct operating costs of less than \$500 per hour.

Most King Air 350 operators told us



The average passenger load is four people. However, many operators routinely fill all the seats on business trips.

they fly four to five passengers on an average mission. One operator told us he fills all the seats at least 25 percent of the time.

Both King Air 300 and 350 operating groups give high marks to Raytheon's approved flight manuals, cruise performance book and maintenance manuals. They told us the book performance numbers are accurate, if not a touch conservative. Some commented that while the maintenance manuals were well written, they didn't adequately address troubleshooting, especially with regard to those nagging electrical glitches.

Many operators say they use the CAMP STARS maintenance-records system. "It's a big step in the right direction," one operator said. Many operators who don't use STARS have created their own spreadsheet programs, or use other computerized maintenance-records systems.

### OVERALL SCORECARD

The volume of gripes from operators, and their willingness to talk about them, are somewhat misleading. King Air 300 and 350 operators, as a group, are fiercely loyal to the brand. One operator spoke for many when he said, "There's no other aircraft that can do the job for the money." "It's a great airplane. We would definitely buy another 350 [if we had to replace this one]," praised another.

Their rationale is clear and convincing. "There are no range/payload tradeoffs," we were told by more than one operator. A King Air 300 owner/operator claimed, "If it fits, it flies." Another explained, "Dollar for

dollar, it's a great airplane. For us, a jet wouldn't be right. The 300 has good short-field performance, great speed for a turboprop, and we can fill all the seats [without reducing range]."

The emerging light-to-medium jets are going to offer the 300 and 350 stiff competition. Many operators said they are carefully watching the Learjet 45, Citation Excel and Raytheon Premier I programs. As the new generation of turboprop aircraft becomes available, the blend of cabin size, short-field performance and operating economics is going to be tempting, especially for Model 350 operators.

In the interim, the new Citation Bravo and Ultra, along with older light jets such as the Citation II and V, seem to be having an effect on the resale value of the King Air 350. The light jets are holding their value quite well. Operators told us that their \$4.0-million to \$4.5-million King Air 350 aircraft command only \$2.2 million to \$2.6 million on the resale docket. One King Air 350 operator seethed about his \$2-million loss of equity on an aircraft with less than 800 hours total time, "Its resale value isn't worth a [expletive deleted]."

King Air 300 aircraft, have held a much higher percentage of their original price, according to operators. The performance numbers of the 300-series indicate there will continue to be a need for such aircraft in the business aircraft community. Few, if any, competitively priced, current production turboprop aircraft can fly so many people so far, for so little operating expense, as the King Air 300 and 350. Stepping up to a new light-to-medium jet with comparable range/payload performance won't be possible until mid year at the earliest. And that decision is reserved for those who can pay the \$6-million to \$7-million asking price.

For many, the 300-series King Airs offer an unbeatable blend of range, speed, payload and operating economics. To use the words of operators, these flying "pickup trucks" just "run and run and run." "Nothing else can do the job for the money." ■

By Fred George