



2008 AIN product support survey



JOHN LEWIS

PART 3 | ENGINES

Except for a shuffle of the turboprops, this year's engine overall rankings look similar to last year's, with Williams again claiming the top spot among turbofan OEMs.

by Nigel Moll

In the jet-engine manufacturer category, Williams International this year retains the top spot it earned in the 2007 AIN survey for the quality of the support it provides. In fact, other than a position swap by Pratt & Whitney Canada (moving up to fifth this year) and Honeywell (moving down to sixth), all seven manufacturers ranked the same as last year. In the turboprop segment there was more churn, with a shuffle of all four players that puts Honeywell at the top and Rolls-Royce at the bottom.

We devote the majority of this report to the reader comments that add flesh to the bare-bones numbers, and care is taken to spotlight a fair and representative cross section of feedback. Terse input such as "great"... "no complaints"... "atrocious"... or "never again," while taken into account at the writing stage to contribute to the overall hue of the picture, adds little to the narrative and is left out.

Among jet engines, Honeywell's HTF7000 scored the highest overall average, with readers rating the engine (it powers the Challenger 300) tops for parts availability, AOG response, technical manuals, technical reps and overall engine reliability. Pratt & Whitney Canada's PW600 series (Cessna Mustang, Eclipse 500) scored highest for factory service centers; Rolls-Royce Spey authorized service centers scored highest in that category; Williams' FJ44 earned the best ratings for cost of parts and warranty fulfillment.

Among turboprop engines, Honeywell's TPE331 made a clean sweep by earning the highest score in every single category, improving on its 2007 performance overall by more than 14 percent. Number-three-

ranked Turbomeca made the greatest improvement, however, jumping 22 percent overall to lift itself off the bottom rung.

WILLIAMS

Williams International bumped Rolls-Royce from the top spot among jet manufacturers two years ago and has held onto the number-one position this year too.

Authorized service centers: "Very few available in Europe," said Mischa Kipping in Austria, the only non-positive comment. Eddie Yell, aviation department manager for Boyd Aviation, said, "Usually accomplished at a Cessna Service Center," but Dan Schiebel, chief pilot/v-p for Interstate Warehousing, singled out Duncan Battle Creek as "outstanding."

Factory service centers: All comments were brief but effusive in their praise.

Parts availability: All positive, except "Repairs possible only in authorized service centers" (Kipping in Austria, again) and "Poor when out of U.S." from Robert Williams.



Williams FJ44

Cost of parts: A mixed bag. "Very expensive when out of U.S." and "Too high! Long-life igniters would be a blessing" among "good" and "fair."

AOG response: All favorable, except from Kipping in Austria and Robert Williams. Kipping: "If and when AOG, then I believe the aircraft will stand for a relatively long time; few service centers and, due to our maintenance plan, our engineering department is not allowed to maintain the engine." Williams: "Poor when out of U.S."

Warranty fulfillment: All favorable ("Best I have ever seen"... "TAP program really helps") except for Robert Williams again: "Poor when out of U.S."

Technical manuals: All positive except this, from maintenance manager Stefan Wetl: "The technical manual provided on CD-ROM runs only very poorly on Windows Vista. Because the CD-ROM uses Internet Explorer as the browser, before opening the CD the browser searches endlessly on the Web to find the requested path. Tried to describe and solve problem with Williams phone hotline, but without success."

Technical reps: Positive, without exception. "Mahyar Heshmat was truly outstanding," noted one chief pilot.

Overall engine reliability: Mostly highly positive: "Absolutely no issues in nearly

1,700 hours of operation," wrote Per Lan-deck, chief pilot for Yates Petroleum. "Great little engine" and "No experience of service providers—four years with no problems in either engine," wrote others.

Suggestions included: "Williams and Cessna need to find a fix for the P2T2 heater probe failures and the FADEC channel faults"... "Very good save for FADEC problems"... "After a hot-section inspection, the N1 fan seized. This is a known issue. Troubleshooting and good response from the support hotline solved the problem in two hours"... "Good, but there is a software glitch that approximately every 10 hours results in an engine control unit maintenance code that has to be reset within 10 hours of operation. As there are no conveniently close service centers, this has been a regular nuisance and expense," wrote Robert Long, director of ops and chief pilot for Paragon.

ROLLS-ROYCE

Authorized service centers: All earned high grades, with StandardAero consistently singled out for particular praise for the AE3007 and Dallas Airmotive listed for Spey work. For the R-R 250 turboshaft/turboprop, "the network maintains a high degree of excellence," according to one



Rolls-Royce AE3007

director of aviation. But pilot Roland James was not impressed with the UK facility: "It does not have my recommendation. We now go to Canada for engine work."

Factory service centers: Many positive comments, such as this from ParaffinAir director of maintenance Ken Brackett: "Although we had some unfortunate delay issues with both engines [Tays] in mid-life last year, it was due to some unforeseen computer software issues that were difficult to avoid. However, Rolls-Royce Canada pulled out all the stops to help us and alleviate a bad situation. I think their work and support is unmatched in the engine business, except perhaps by another Rolls-Royce facility." Some complaints, specifically: "Engines [Tays] overhauled at R-R Canada were not delivered on time, and we were given a runaround when we asked why. Customer service was not very good."... "Results not adequate or acceptable for a factory center" (AE3007 operator)... "This is the biggest disappointment: there are many R-R-powered aircraft on the West Coast yet there is no R-R-owned/operated repair station [there] to support the mass quantity of engines," wrote a Tay operator.

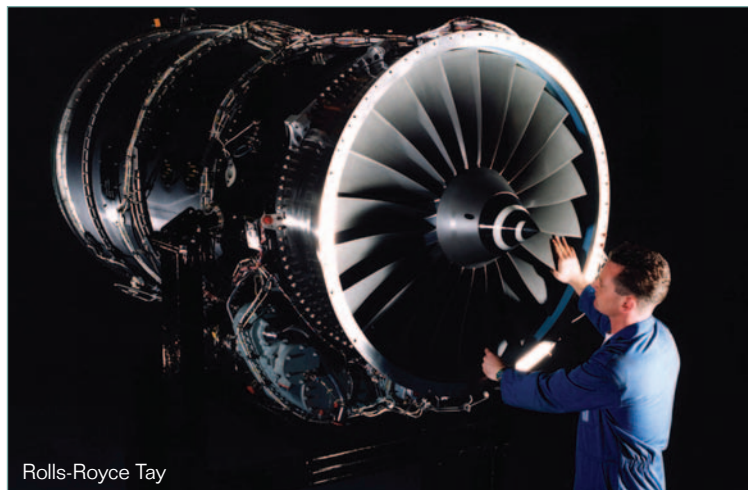
Parts availability: Mostly positive comments, but readers had suggestions for improvement. "Tough to order—no proper channel to order parts [for AE3007]"... "Not enough effort is being made by R-R to stock [Tay] parts in the U.S."... "Sometimes this has been a problem for R-R Canada in the past, but I experienced none of this during my most recent visit (July/August 2007)." For the R-R 250, the comments spanned the spectrum.

Cost of parts: The usual preponderance of "too high" and "expensive" for all models, but for both the Spey and Tay, "Very expensive when they break, but they don't break often." R-R 250 parts costs are "Excessive for an engine series that has been around since the ark," wrote Roland James.

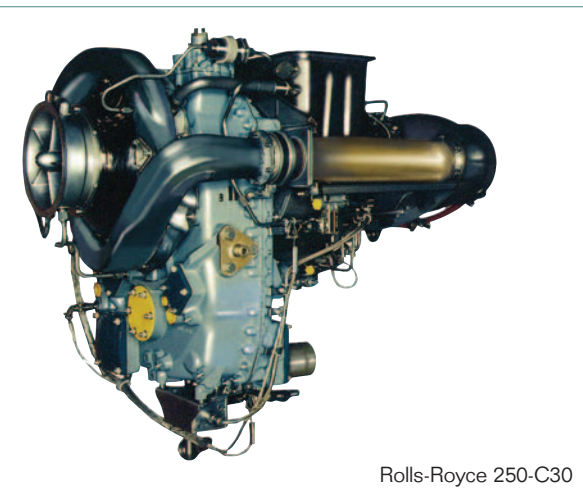
AOG response: Earned high praise except for these from two AE3007 operators. "I had an AD to complete and had AOG come to do it. I had to order parts despite not knowing exactly what I needed. This should have been a function of AOG, especially since I'm a Corporate Care customer. Then I had to get the parts from Cessna because Rolls did not have them available," wrote Larry Adams, director of maintenance for HealthSouth Aviation. Greg Hamelink, manager of aircraft maintenance for Pfizer, wrote, "Needs work. Too many layers to get a decent AOG response from R-R; they need dedicated individuals to handle AOG."

Warranty fulfillment: All positive or highly positive.

Technical manuals: Generally positive or middle of road, but some unhappy. AE3007: "Gotten better but still hard to navigate"... "With manuals on paper, it's hard to follow numbering system. Software for CD is clunky. Nice to have it online"... "Way too expensive"... "Very difficult to navigate through CD"... "Process to register online is tedious"... "Ridiculously expensive compared to other engine manufacturers in this category."



Rolls-Royce Tay



Rolls-Royce 250-C30

Spey: "Manuals well documented but expensive to maintain"... "Room to improve."

Tay: "Overly expensive"... "Difficult to use—worst in the industry." R-R 250 manuals are "extremely expensive, which I bet has caused some accidents," suggested chief pilot Enrique Bougeois, "due to the operator trying to save some money and not purchasing them."

Technical reps: Generally satisfied. Mary Cote, Jennifer Laing and Malcolm Pollack were named "outstanding" or "best in the business" by some Tay and BR710 operators. For R-R 250, mostly positive.

Overall engine reliability: Unanimous praise for AE3007, except for this after a good start: "Great reliability. Requirements on the AIE need to be re-evaluated. R-R has millions of hours of data on this model and cannot come up with a solution to the oil debris requirement. Would you buy a \$25 million+ aircraft with a 70 flight hours or seven days requirement that has to be performed by a certified mechanic?"

Spey/Tay: Unanimous raves—"Legendary reliability"... "Hey, it's a Rolls"... "Just keep the oil level up where it belongs and [Tays] will run forever"... "Good, solid, old-school engines"... "Bulletproof, and more economical than we thought"... "Best engine manufacturer, hands-down." Mostly high grades for R-R 250: "Excellent"... "Legendary"... "Good, but a few niggling ADs and extra limitations/cautions coming in of late."

ROLLS-ROYCE DEUTSCHLAND

Authorized service centers: A northeast Global Express operator regards them as "more competent than factory service centers," which he now refuses to visit "due to many poor experiences," but did not identify ASC locations. Most respondents satisfied but in general did not venture more than mentioning facility name, including Ruag Oberpfaffenhofen and Jet Aviation.

Factory service centers: "Excellent work in Montreal, but back-office administrative issues are apparent. Layoffs and lots of change in R-R management and an arrogant attitude by R-R Canada overshadow an outstanding engine [BR710] and great service center," wrote one director of aviation. Otherwise comments positive.

Parts availability: An even split between good and otherwise. In the latter camp: "The parts are always on the wrong side of an international border, it seems. They're in either Canada or Germany.

There is no such thing as getting a part overnight unless, by some chance, the part is in Savannah"... "Not enough of the right parts here in the U.S. Always waiting for something to come from Germany. Also still having problems with vendor-supplied (Aircell) parts"... "Poor unless you pay extra annual fees to belong to Corporate Care. Then you are allowed to get your parts quickly from the U.S. If not, you must wait for them from Europe"... "All warranty parts need to go through tech rep. This has slowed our orders"... "If we didn't have to use OMAT, as listed in the EMM, it probably wouldn't be an issue. Great in Europe but useless when the engine is based in the U.S. We needed some wire for a repair based on a technical variance. It took the better part of six months to determine the wire part number and for R-R to obtain the wire. If you need an oil filter, they have that, but anything out of the ordinary appears to be a nightmare"... "Very complicated procedure to obtain parts."

Cost of parts: The usual griping, with this the most expansive, from Michael Magnani, director of maintenance for Central Management Services: "Since they have no competition on the BR710, the markup is 30 percent higher than the market is willing to bear."

AOG response: Satisfied outnumber the others two to one. The others had this to say: "Goodrich makes it difficult. R-R should be the point of contact for the engine so the customer experience is

one-stop shopping"... "Very slow if you need help involving Germany"... "Poor if you are not a Corporate Care subscriber"... "Marginal at best. Currently the system and processes do not work if the aircraft is based in the U.S. We have had several opportunities that required technical variances to be issued, and it was as if R-R Deutschland had never done this before"... "You need to push hard."

Warranty fulfillment: A close to even split between satisfied and not so satisfied. The latter camp had this to say: "When the GV had all the fan disc problems, R-R stood behind its product. When it figured out that it was the fan blades that were causing the problem, it paid to have the transition strips installed and it replaced the fan hub. Now that we're having annulus filler problems, which it claims have nothing to do with the aforementioned fixes, Rolls is...making the operators pay for an eddy current inspection of a clearly defective part"... "They are still having problems with the fan and fillers and they expect their customers to pay for this"... "Questionable, [said maintenance chief Alex Goodwins]. I believe service bulletins should be covered under my Corporate Care agreement, but some are not. They won't pay to prevent a problem by retrofitting for a known problem part, but instead will wait for that part to fail and then, when you miss your flight, they will repair the part free of charge!"... "It seems that Corporate Care is more interested

Continues on next page ►

Engine Manufacturer Rankings

Companies are listed in the order of the highest 2008 rankings

Turbofans	Overall Average 2008	Overall Average 2007	Percent Change
Williams	8.23	8.16	▲ 0.86%
Rolls-Royce	8.09	8.05	▲ 0.53%
RR-Deutschland	7.97	7.79	▲ 2.32%
CFE	7.72	7.77	▼ -0.64%
P&WC	7.63	7.53	▲ 1.35%
Honeywell	7.61	7.74	▼ -1.74%
GE	7.51	7.21	▲ 4.14%
Turboprops/Turboshafts			
Honeywell	7.98	7.15	▲ 11.60%
P&WC	7.57	7.58	▼ -0.11%
Turbomeca	7.30	5.98	▲ 22.12%
Rolls-Royce	7.17	7.34	▼ -2.37%

Compiled by Jane Campbell with data provided by Forecast International of Newtown, Conn. **Bold type** indicates the highest rating in each category.



2008 AIN product support survey

► Continued from preceding page

in arguing every repair than just doing what they are supposed to"... "It is not a good warranty compared to Honeywell or GE, but Rolls does what it says it will do."

Technical manuals: Comments from those who like them just say "excellent" or "very good."

However, they were slightly outnumbered by unhappy operators, who were more talkative: "Using the online system to gain access to manuals for the BR710 is worse than unearthing the great tombs of antiquity. Very frustrating. The system needs a vast overhaul"... "Some of the poorest and most difficult to use in the industry"... "The worst [said Michael Magnani]. If I could, I'd have rated them minus

10. In the last two weeks, I have personally been involved in three international conference calls with various managers of tech pubs or Aeromanager, and it's like talking to a brick wall. No one can tell me how or when they're going to make improvements. The text is confusing or wrong, and the hyperlinks may or may not take you where you need to go. There is no such thing as a task card that takes you from

start to finish on a job. I'm always wondering if I have downloaded all the data off either the 'net or the CD-ROM. I'm told by R-R that the new BR725 manuals for the G650 will be better, but the BR710, which looks set to remain in production for many years, will retain the old format manuals. The key phrases I've gotten from many conference calls are 'It's the best we can do' or 'It would take a lot of time and money to improve the manuals.' All of us customers pay \$10,000 per year for our manual subscription."

Technical reps: North American reps earned high praise, particularly the aforementioned [see R-R entry above] Cote, Pollock and Laing, for the jobs they do despite the cross-border obstacles listed above.

Overall engine reliability: Operators are generally in awe of the reliability of their BR710s, which means they don't have to call on R-R support too often.

CFE

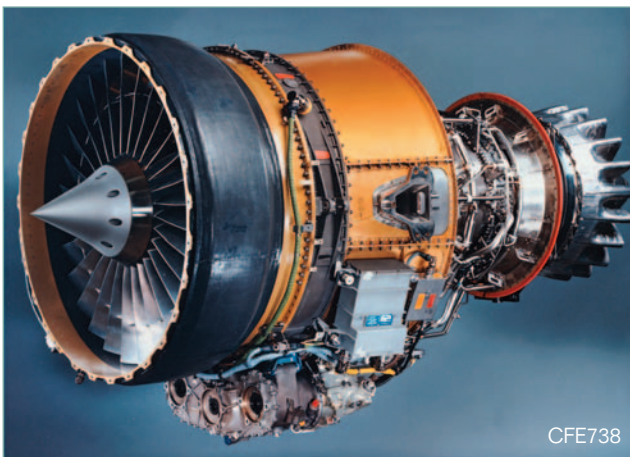
Operators generally satisfied. "Good quality, but too slow" was the only comment that fell short of satisfaction with both authorized and factory service centers.

For parts availability: "The European pool is managed in Poland, and availability

is sometimes poor." For technical manuals, one operator found the new inspection schedule "very confusing."

PRATT & WHITNEY CANADA

Authorized service centers: JT15D facilities named were satisfactory. They included Dallas Airmotive, Landmark KGSO, Atlantic Aero KGSO, STS Butler and Atlantic Turbines. Likewise with PW300-series facilities Jet Aviation, GDAS MSP and Dallas Airmotive, but an operator in Asia noted there is little or no support available in that region. For the PW500, Citation service centers got high marks, along with Duncan Aviation, Jet Aviation Dallas and Stevens Aviation. Facilities named for PT6 work:



Dallas Airmotive; Elliott Moline ("by far the best maintenance facility" in chief pilot Kenneth Smith's book); Lider, Brazil; Standard-Aero; Stevens; Hawker Beech Tampa.

Factory service centers: Operators generally happy with service, except one who said he was told his JT15D hot sections were on their way to the aircraft, "when in actuality all parts had not even been received from manufacturer. Calls were never returned by rep."

For the PW300 series, Burlington, Vt., "does an outstanding job," according to one chief pilot, and line captain Boyd Roberts said the Orlando center "is a good place to go."

Among those who expressed an opinion (rather than just a location) about factory support for the PW500 series, these comments: "As with Cessna, the factory service centers are not as customer service-oriented as the authorized centers are"... "Good response, but the billing process is too slow"... "PW overhaul was a nightmare at West Virginia"... "West Virginia and Vermont are great"... "Orlando service center is top notch"... "Difficulty with P&WC's failure to assemble the PW545A properly during initial production [said Will Gray] is now costing us big bucks. Loose bolts in the

interior of the engine caused a complete unstack of the engine and a big charge to us."

PW600 factory support was highly rated. For PT6 facilities, mostly good grades, although Elliott Moline fan Smith was not impressed with P&WC Orlando ("When I got it back I couldn't even take off, the engine rigging was so far out").

Parts availability: Generally well regarded for JT15D but with a couple of exceptions. For PW300, good "as long as it does not have to come out of Canada" or, for maintenance scheduler Mike Sleightholme operating in Asia, "parts have to come from the U.S., so you have at least a one-week wait."

For the PW500, overwhelmingly positive, although for director of aviation David Lyall "P&W parts for this engine are expensive and fuel controls are an issue because of a lack of availability." PW600 gets high marks. The PT6 earned generally high grades, but not from a couple of overseas operators in Brazil and Australia.

Cost of parts: Mostly "too high," but for one chief pilot "ATI was very reasonable [for JT15D parts], especially compared with P&W factory shops." Mostly "too high" with PW300, PW500 and PW600, too, with one director of maintenance sounding off



Pratt & Whitney Canada PW600

JIM UPTON



Pratt & Whitney Canada PW500

thus about the PW500: "Cost of parts replaced at overhaul became staggering. As more of these units are overhauled in the fleet, P&WC has to do a better job of keeping total overhaul cost under \$500,000 (and under \$400,000 would be even better)." A \$350,000-second overhaul for one chief pilot's PT6s was "way too high, at Dallas Airmotive."

AOG response: The vast majority of operators rated this as satisfied or better, but the odd "Poor"... "Questionable"... "Slow." The vast majority of PT6 operators were happy with AOG response.

Warranty fulfillment: Generally satisfied, but PW300 operator Sleightholme, in Asia, "not happy. Major issue at the moment with the LUI schedule and the inability to obtain inspection cost coverage under our

ESP Gold plan. A sliding scale of coverage would be good, given the extra costs associated with shipping and rental coverage. What's the point of being on the top table if no effort is made to give you any coverage when they (ESP) change the rules? Difficult when you are a single, small, private operator"... "Terrific warranty! Industry standard," said one director of maintenance about the PW500 and PW600. Said another PW500 operator, "Warranty is one of the best things Pratt does." PT6 operators were almost unanimously satisfied.

Technical manuals: Generally good grades for all engine models, with some suggestions. Of the JT15D, pilot Michel Hebert said, "This pair of engines had some real issues related to tech manuals in the past, but Pratt made it right!" The PW300 manuals "badly need indices and a label on each chapter saying what each contains. Now, you have to open each file to see what's in it," said maintenance chief Bruce Haugsdal. For the PW500, the manuals are "the weakest part of the program" for David Lyall. "Parts cross-referencing between Cessna and P&WC part numbers can be very confusing and problematic." For one director of aviation also operating PW500s, "P&WC needs to simplify its manuals." PT6 operators were almost unanimously satisfied.

Technical reps: Singled out for commendation were Tim Critchfield with EMS; Jim Robbins, Cleveland; Tracy Gandy and Robert Steele; and Francis DeGruchy. Overall, nearly all operators were satisfied or better, but a few gripes. The loudest: "Some were arrogant, self-serving, patronizing and in denial when we met and discussed our engine fire!" PT6 operators were unanimously satisfied.

Overall engine reliability: JT15D: predominantly excellent or very good, with exceptions. "Internal corrosion issues at 5,800 hours"... "Premature failure of a certain life-limited part caused our engine to be destroyed but because it was out of warranty it became our problem."

PW300: Satisfied operators accounted for about 70 percent of responses. Others had their doubts: "Engine dispatch reliability is good," said Don Roller. "The PW305 has numerous issues with cracking blades, corrosion and various

miscellaneous engineering problems. Pratt is reluctant to take responsibility for these problems and seems to take the stance of 'close your eyes and hope it goes away.'" Said a pilot: "Engine reliability has been good. However, over the past few years we have experienced several issues, including internal FOD and corrosion of the intermediate case that we are still dealing with." Wrote a director of aviation: "The engines perform well, with low maintenance [needs]. However, did you ever understand how difficult it is to have a P&WC engine and a Honeywell avionics system, both of which talk only in 'proprietary information'?" Shame on Dassault for creating such an unworkable albatross of partners

Continues on page 46 ►



2008 AIN product support survey

► Continued from page 44

whose ultimate result is to provide the user with no performance information for a sophisticated avionics system.”

PW500: operators are now overwhelmingly wowed by these engines, except for oil leaks (“a constant battle,” according to chief of maintenance Kevin Smith) and the dubious claim by chief pilot Robert Whittenburg, who said, “It is my understanding that our engine is the only PW535A that has had a main bearing failure. After being repaired, it is functioning perfectly.”

PW600: High grades, with aircraft manager Mark Gardner saying, “Excellent. P&WC has made a major step forward in regards to product support.” This comment from Mike McNamara summed up the consensus for the PT6: “Thank God for those reliable PT6As. I haven’t had any problems in over 30 years and thousands of flying hours.” One maintenance controller did complain, however, that “Some continuing problems with PT vane cracking and CT zone deterioration drags down overall reliability.”

HONEYWELL

Authorized service centers: The following came in for special recognition for TFE731 work: Dallas Airmotive (“Gets the whole customer service thing”...“Great

AOG team”...“Does a better job than Honeywell”); Duncan Aviation Lincoln and Battle Creek (“Keeps all of our issues resolved before they ground a flight”...“Always stands behind the great work it does”); Landmark/StandardAero Augusta (“Can’t be beat”); GDAS (“Always great for us”); Jet Aviation Basel, Geneva and Zurich; but “none in Australia/New Zealand, which is a real pain.”

For the TPE331, facilities named included Dallas Airmotive (“very positive”); Duncan (“excellent service”); Intercontinental Jet, Tulsa (“great, and can help when Honeywell falls flat”); National Flight, Toledo; and Tenix Aviation.

Factory service centers: Largely good grades for TFE731, with a couple of exceptions. “Honeywell moves at the speed of continental drift”...“Need better supervision by more knowledgeable managers.”

Parts availability: Generally good for TFE731 (“much improved over years past”), but not without problems. “Hard to get parts for older engines”...“Always the biggest worry when completing major scheduled events. Always drives the downtime”...“Never have parts needed to complete a CZI [says Chris Trautman]. The Honeywell Web site is in need of an overhaul. If parts are not AOG, you’re sent to India or somewhere you can’t understand them for help....They need to speed up

their exporting procedures.” For TPE331, unanimously good comments.

Cost of parts: Other than the usual majority of comments such as “too high” and “better have MSP,” one director of maintenance had this to say: “Honeywell appears to have a genuine interest in the customer experience and has adjusted prices and come up with some creative programs to assist operators.”

AOG response: Generally good grades (“They were able to get us a part from Teterboro to our hangar in Dallas within six hours.”) but one maintenance chief not so sure (“The service centers do a good job at this. I don’t think the factory has an AOG response team.”). In regard to the TPE331, for Pat Cannon, “Honeywell has lost the edge on product support except through its authorized centers.” Remainder of TPE331 comments were all positive.

Warranty fulfillment: HTF7000 gets

Continues on page 48 ►



Honeywell TPE331



Honeywell HTF7000

2008 RATINGS

Manufacturers are listed in the order of their 2008 overall averages.

Turbofans	Overall Average 2008	Overall Average 2007	Percent Change	Authorized Service Centers	Factory Service Centers	Parts Availability	Cost of Parts	AOG Response	Warranty Fulfillment	Technical Manuals	Technical Reps	Overall Product Reliability
Honeywell (HTF7000)	8.35	8.19	1.98%	7.83	8.14	8.27	7.29	8.31	7.94	8.50	8.72	9.41
Williams (FJ44)	8.23	8.16	0.91%	7.98	8.35	8.19	7.30	8.18	8.42	8.20	8.36	8.94
P&WC (PW600 Series)	8.15	N/A	N/A	7.93	8.40	8.06	6.92	7.93	8.29	8.37	7.89	8.96
Rolls-Royce (Spey)	8.14	8.01	1.60%	8.04	7.96	8.24	7.00	7.96	8.13	7.94	8.43	9.19
Rolls-Royce (AE3007)	8.09	8.22	-1.57%	8.00	8.19	8.23	6.96	8.23	8.30	7.55	8.06	9.17
Rolls-Royce (Tay)	8.08	7.99	1.19%	7.94	8.03	8.15	6.65	8.19	8.16	7.66	8.50	9.28
RR-Deutschland (BR710)	7.97	7.79	2.34%	7.88	8.21	7.80	6.56	8.00	8.11	7.35	8.43	9.16
CFE (CFE738)	7.72	7.77	-0.59%	7.79	7.97	7.54	6.32	7.68	8.00	7.58	7.95	8.64
P&WC (PW300 Series)	7.64	N/A	N/A	7.43	7.43	7.62	6.65	7.75	7.87	7.32	7.88	8.61
Honeywell (TFE731)	7.63	7.73	-1.39%	7.79	7.61	7.53	6.34	7.62	7.89	7.44	7.76	8.55
P&WC (PW500 Series)	7.62	N/A	N/A	7.67	7.92	7.70	6.10	7.59	7.61	7.57	7.50	8.79
GE (CF34)	7.61	7.36	3.46%	7.59	7.81	7.70	6.38	7.54	7.19	7.46	7.48	9.02
P&WC (JT15D)	7.54	7.43	1.48%	7.66	7.70	7.64	6.06	7.22	7.42	7.48	7.75	8.71
Turboprops/Turboshafts												
Honeywell (TPE331)	8.10	7.09	14.16%	8.47	8.12	8.07	6.61	7.74	7.80	8.33	8.42	9.23
P&WC (PT6)	7.57	7.62	-0.15%	7.61	7.50	7.74	6.06	7.48	7.38	7.62	7.67	8.95
Turbomeca (all models)	7.30	5.98	22.12%	7.20	7.24	6.83	5.67	7.47	7.24	7.53	8.22	8.27
Rolls-Royce (250)	7.17	7.31	-1.84%	7.07	6.79	7.16	5.89	7.20	7.19	7.30	7.43	8.38

Compiled by Jane Campbell with data provided by Forecast International of Newtown, Conn.

Bold type indicates the highest rating in each category.





2008 AIN product support survey

► Continued from page 46

good grades. For TFE731, Hormel maintenance chief Bruce Haugsdal thinks service is “good, but operator should not have to start paying into MSP until warranty period is over.” Line captain Hemet Patel likes the service, calling it “no-questions-asked warranty.” For the TPE331, “honorable” and “excellent” were the themes of all comments.

Technical manuals: A mixed bag of opinions, ranging from “excellent” to “tech manuals are hard to use; must be checked on the Web site, which is the worst in the industry if one can get on it.” For TPE331, top marks from all.

Technical reps: Those working on the HTF7000 get high grades. Singled out for their TFE731 expertise were Jack Wolf, Andrew Patton and Clark Rogers—“some of the most knowledgeable people in the industry are Honeywell tech reps,” wrote one aviation manager.

However, asked one maintenance director, “Why does my tech rep live in Tucson? I’ve got three of his engines on a brand-new airplane and I’ve never seen him. He rarely even answers the phone. Then when I call the help line, I get sent to India. Are you kidding me?!”...“Do I have one?” asked another maintenance chief. “They change constantly—great supply of business cards,” wrote another. Despite these, more than 80 percent of comments were favorable. For TPE331, top marks from all.

Overall engine reliability: “Honeywell hit a home run with [the HTF7000]. As close to trouble-free as you can get,” wrote maintenance director Stephen Stodolski. And as for the TFE731, the engine once known as the Garrett Grenade, customers are for the most part highly satisfied. To wit: “Good motor. Kept my keister safe for many many years”...“Terrific [wrote chief pilot R. Rose]. We have not lost a flight to engine problems in six years and over 8,000 flight hours”...“It is hard to fault Honeywell on this magnificent piece of engineering”...“Good engine, very reliable, but reached the limit in age and performance”...“This engine is bulletproof.”

But you can’t please them all: “They run very good until they fail [sic]”...“There’s a reason they put three on this airplane”...“I have experienced several failures with 731s [wrote chief pilot William Redick]. It is a good engine but not as reliable as it could be”...“We have had two new engines. One ate itself during pre-delivery testing, and one had a major deviation

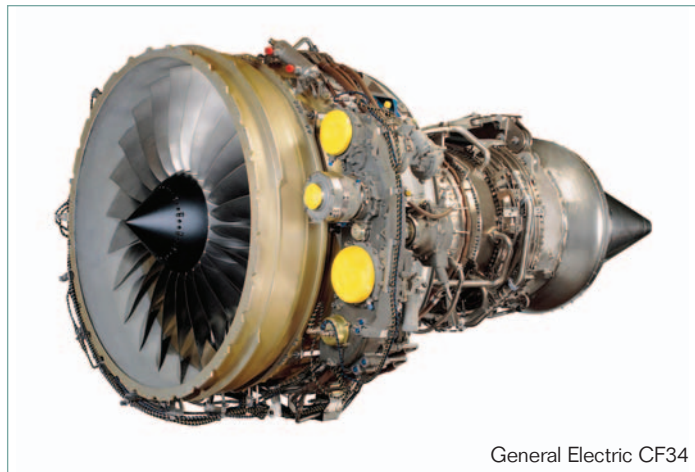
post-delivery”...“It’s OK but I’m surprised that on our newest platform (Falcon 900EX) with -60 engines we worry more about its reliability and unplanned maintenance than we do our other and far older models”...“Not good [wrote pilot Mark Fraser]”...“Frequent issues with engine air/oil seals and a handful of other areas in our last 10 years. Our current three relatively new -40 engines have low time but we expect similar results”...

“One of our new engines didn’t make the aircraft delivery without a removal and warranty exchange. Of our original 15 engines [wrote this director of maintenance], many did not reach the scheduled MPI or CZI without an earlier removal. MSP is a good thing.” The TPE331 is “excellent when operated carefully and conservatively,” according to pilot Cameron Heathwood and an opinion shared by all respondents. For Ken Wolf of Wolf Eye Associates, “Three canceled trips in 15 years—that speaks for reliability.”

GENERAL ELECTRIC (CF34)

Authorized service centers: Facilities singled out for good service include Duncan Aviation Lincoln, Midcoast, Premier Turbines, StandardAero and Jet Aviation STL. A Challenger operator in the Northeast, however, was not so impressed with his (unidentified) facility: “Last visit was miserable. Many service bulletins and maintenance inspections scheduled during a paint visit. Engine fuel controls were inadvertently removed when the tech ‘thought’ we were doing an FCU bulletin that was not on the workscope. One of the FCUs was subsequently damaged and had to be replaced. The rigging was so poor that I am surprised it was released from the facility.”

Factory service facilities: GE in Strother, Lufthansa Bombardier and Bombardier Dallas all earned good grades: “Bombardier and Lufthansa were incredible when they changed my engines for loaners



General Electric CF34

and sent mine out for overhaul done in four days. No problems”...“Dallas arranged for GE to perform a FOD repair in 2007 [wrote head of aviation operations C. Fortmann] and GE came and made all the necessary repairs on wing and were very helpful with explaining details to the aircraft salespeople, new owner and the insurance company”...However, “paperwork for overhauls [at unidentified facility] is not very accurate,” wrote one maintenance manager.

Parts availability: Generally good. Negative feedback accounted for only 8 percent.

Cost of parts: “Pretty steep”...“The costs are high [wrote chief pilot Edward Borowy] but the quality and reliability are superb”...“Normal inspection parts prices are good but fuel control prices are outrageous considering they get the core back.”

AOG response: Highly regarded.

Warranty fulfillment: All positive except for one from a chief of maintenance: “Filed one minor claim in three years and was denied after prior approval.”

Technical manuals: Generally positive reviews, but chief pilot Edward Borowy is “disappointed that the paper manuals have been discontinued. Quality and usability of both the digital and paper versions remains among the best”...“Good and getting better, especially the instant updating of revisions over the Internet”...“Could be a little more user friendly, but since [this director of maintenance doesn’t] need to dig into them much, maybe I need a little more exposure to their way.”

Technical reps: Readers were split about evenly here, with a good sampling of brief but positive opinions: “Very helpful when we call. Don’t ever hear from them except when the engines are nearing hot section or overhaul...Good...Top-notch...Always helpful...” And then the not so fuzzy: “GE seems to be going the way of Honeywell when it comes to support. Dial our 800 number and wait, ‘cause we really don’t want to spend the money to support you and the engine is reliable enough that we don’t have to...Impossible to get anyone on site to evaluate a problem in a timely manner”...“Short on FSRs”...“When the tech rep is out of the office there is no one else on site and the question or concern will not be addressed until he returns.”

Overall engine reliability: Admiration for the reliability of the CF34 was almost unanimous among the respondents, with one exception from a director of maintenance: “These engines are making the news more frequently than I feel comfortable with”...“We are just approaching 2,000 hours with zero complaints”...“So far these engines have been bulletproof. All

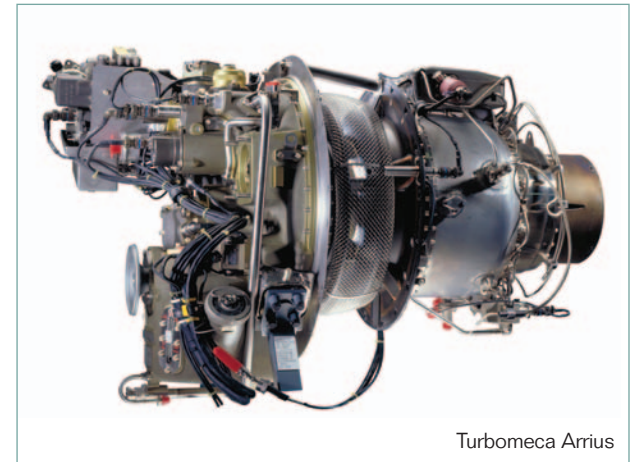
we do is add oil when needed, and they just keep running”...“Most reliable engine I have ever operated”...“No operational issues in 18 years of running this engine”...“We have had two instances of broken fire detection loops. Otherwise, an extremely reliable engine”...“Overall, great engine and support.”

TURBOMECA

Authorized service centers: A third of the respondents were happy (“good”...“very helpful to customers”), another third were not (“poor”...“very expensive”...“slow”), and the remainder were either middle-of-the-road or ambiguous. For example, does “Don’t use” mean “We do not use” or “Don’t touch them with a 10-foot pole”?

Factory service centers: No clear consensus, with comments largely mirroring those for the above question.

Parts availability: Operators were largely unimpressed. “Modular concept looks good on paper but getting a module close to your engine times is impossible”...“Spares availability is poor.”



Turbomeca Arrius

Cost of parts: Despite one “remortgage the house!” the percentage of “fair” or “good” was higher than usual.

AOG response: The satisfied were slightly outnumbered by the unsatisfied. “Great service when parts are available”...“A delay of two to three days”...“Sometimes slow”...“Horrible.”

Warranty fulfillment: No complaints, with all respondents rating it average or good.

Technical manuals: Majority “good,” but also “Slow to deliver new revisions”...“Very hard to follow”...“Confusing.”

Technical reps: Majority satisfied; remainder “never see him.”

Overall engine reliability: Impressive for most respondents, with some caveats. “It’s very reliable and powerful but we are experiencing degraded performance on the power checks lately. It used to have better performance before 2,000 hours”...

“Operational reliability of Arriel is outstanding in our opinion. On par with PT6”...“Poor in the S-76C+”...“Reliable but expensive to operate”...“Very good engine but parts hard to get.” □

This year’s survey was devised by AIN’s editors and designed and administered by Newtown, Conn.-based Forecast International in collaboration with AIN.