

# PRODUCT SUPPORT SURVEY

## Part I: Aircraft

In AIN's annual survey, readers rate airframe manufacturers on product support. The results of the avionics survey will appear in next month's issue, with engine ratings to follow in October.

by Matt Thurber



Embraer Phenom 300

DAVID MCINTOSH

## Embraer leads for jets, Mitsubishi remains in top turboprop spot

Readers responding to AIN's 2016 Product Support Survey rank Embraer at the top, with the highest combined overall average (8.4) for newer and older aircraft. Dassault Falcon and Gulfstream (both midsize- and large-cabin jets) tie for second place at 8.2. In third place this year is Bombardier's Challenger series at 8.1, up 0.1 but matching last year's third-place finish.

Two manufacturers tied for fourth place, both with a 7.9 rating, up 0.2 from last year,

and these are Bombardier's Globals and Textron Aviation's Citations. Bombardier's Learjet support climbed to a 7.8 rating, up from last year's 7.7, leaving it with a fifth-place ranking.

Textron Aviation's out-of-production jets see a divergence this year, with the smaller jets climbing by 0.2, to 7.4, but the midsize Hawkers dropping to 6.9.

In the turboprop arena, Mitsubishi's MU-2s climbed to 9.3 from last year's 9.1 to top this

category, followed by Pilatus's PC-12s (7.6) and Textron Aviation's King Airs (7.1), the same placements as last year.

Rotorcraft rankings start with Bell Helicopter at the top of the list (7.5), as it was last year, but with a lower rating (down 0.4), then Airbus Helicopters holding the number-two place (down 0.3 from last year). Sikorsky moved up one place this year to third with 6.5, up 0.2, followed by AgustaWestland with 6.3.

### Newer Jets

Three OEMs but an unprecedented four jet series earned an 8.4 rating to rank first place in the newer business jets category this year, and all showed an improvement from last year's rating. First-place rankings this year were Dassault Falcon, Embraer and both Gulfstream's midsize and large-cabin jets. Embraer and Gulfstream midsize saw the largest change, up 0.3 from last year; Falcon climbed 0.2 and Gulfstream large cabins were up 0.1.

Contributing to Dassault's

first-place finish this year were its top rankings for parts availability (8.6, up 0.2 from last year) and overall aircraft reliability (up 0.1 to 9.0).

Embraer's rankings were bolstered by an 8.6 for authorized service centers (up from 7.5), 7.3 for cost of parts (from 7.0 last year), 9.0 for technical manuals (up from 8.5) and 9.0 for overall aircraft reliability (up from 8.6).

Gulfstream midsize jets earned top scores as a result of an 8.4 for factory-owned service centers, up from last year's 7.7; 9.0 for AOG response, up from 8.6; and 9.2 for technical reps, up from 8.1. For large-cabin jets, Gulfstream received a 9.1 for warranty fulfillment, up from 9.0; 9.0 (up from 8.6) for maintenance-tracking programs; and 9.0 for overall aircraft reliability for large-cabin jets, up from 8.9.

Bombardier's Challengers moved into second place, up 0.2 from last year and also up two places from last year's fourth.

In third place this year was Textron Aviation for the



Gulfstream IV

Citations, climbing 0.3 to 8.1 and up from last year's fifth place.

Bombardier's Globals received the same 7.8 rating as last year, but this year moved up to fourth place from the fifth-place tie with the Citations. This year, the Learjets and Textron's Hawker 400XPs ranked in fifth place. The larger Hawkers climbed 0.2 points this year.

## Older Jets

In the older jets category, Bombardier made a big move up to first place with an 8.1 rating for the Globals.

The company's Challengers came in second place with the same 8.0 as last year, followed by Learjet in third, climbing 0.4 to 7.9, and tied with Dassault Falcon (down 0.1) and

Gulfstream's large-cabin jets (down 0.4).

The Globals and Challengers tied for top ranking in the factory-owned service centers category with 7.3, up from the Challengers' 6.4 last year. (The Globals did not receive enough ratings in the older jets category to be included last year.) Top ranking for authorized

service centers was for the Challengers at 8.1, climbing sharply from 6.4 last year.

The Globals secured an 8.2 ranking in parts availability and a 9.3 for technical reps. Challengers were ranked at 8.7 (up 0.3) for maintenance-tracking programs. Learjets achieved top rankings in cost of parts (6.3), AOG response (8.5) and technical manuals (8.4), up 0.3, 1.1 and 0.5 respectively.

Falcons also scored an 8.2 for parts availability (down 0.3 from last year); 8.6 for warranty fulfillment (up 0.5); and 8.9 for overall aircraft reliability (down 0.1).

Gulfstream's large-cabin jets tied with Falcon's 8.9 for overall aircraft reliability (down 0.2 from last year).

Textron Aviation's Citations garnered fourth place, the same position as last year, with the same 7.7 overall average rating.

In fifth place in this category were Textron's lighter jets at 7.0 (down 0.4), followed by the Hawkers at 6.7 (down 0.8).

## Turboprops

The results in the turboprop categories are the same as last year. (Typically AIN doesn't receive enough ratings to include the Daher TBM series. These categories could see some change when new turboprops such as the Epic E1000 and Textron single-engine turboprop enter the market.)

In first place in the

newer turboprops category was Pilatus's PC-12 series, with a 7.8 rating, up 0.1 from last year. Top ratings for the PC-12 included factory-owned service centers (8.5), parts availability (7.4), AOG response (7.5), warranty fulfillment (8.7), technical manuals (8.5), technical reps (8.6), maintenance-tracking programs (8.4) and overall aircraft reliability (the highest for any newer aircraft at 9.1).

In second place was Textron Aviation for the King Airs.

In the older turboprops category, Mitsubishi's MU-2s remain at the top of the list with a 9.3 rating, up from 9.1 last year, followed by King Airs at 7.0 (down 0.3). The MU-2s received top ratings in every category, matching last year's 9.8 ranking for overall reliability, the highest of any aircraft in the survey.

## Rotorcraft

The rankings of the rotorcraft manufacturers are not separated by newer and older airframes, but of note were the category rankings, with Bell Helicopter receiving top spots in factory-owned service centers (7.8), authorized service centers (7.4), parts availability (7.2), cost of parts (6.1), AOG response (7.6), warranty fulfillment (7.5), technical manuals (8.5) and maintenance tracking programs (7.2).

Airbus Helicopters was ranked at the top for warranty fulfillment (tied with Bell at 7.5), technical reps (8.5) and overall aircraft reliability (8.1). □

Combined Overall Average Ratings of Newer and Older Aircraft	Overall Average 2016	Overall Average 2015	Rating Change from 2015-2016
<b>JETS</b>			
Embraer (Phenom, Legacy, Lineage)	<b>8.4</b>	8.1	0.3
Dassault (Falcon)	8.2	8.1	0.1
Gulfstream (GII-GV, G300-G650)	8.2	<b>8.3</b>	-0.1
Gulfstream (G100-G280)	8.2	7.7	0.5
Bombardier (Challenger)	8.1	8.0	0.1
Bombardier (Global)	7.9	7.7	0.2
Textron Aviation (Citation)	7.9	7.7	0.2
Bombardier (Learjet)	7.8	7.7	0.1
Textron Aviation (Premier, Beechjet 400/400A, Hawker 400XP)	7.4	7.2	0.2
Textron Aviation (Hawker)	6.9	7.2	-0.3
<b>TURBOPROPS</b>			
Mitsubishi (MU-2, Solitaire, Marquise)	<b>9.3</b>	<b>9.1</b>	0.2
Pilatus (PC-12)	7.6	7.6	0.0
Beechcraft (King Air)	7.1	7.4	-0.3
<b>ROTORCRAFT</b>			
Bell	<b>7.5</b>	<b>7.9</b>	-0.4
Airbus Helicopters	7.2	7.5	-0.3
Sikorsky	6.5	6.3	0.2
Leonardo Helicopters (formerly AgustaWestland)	6.3	6.8	-0.5

\* Listed in order of the 2016 overall average; ties are listed alphabetically; **bold** indicates highest number in each category.



Bell customer support

## What have you done for me lately?

Each year, AIN asks aircraft manufacturers to submit summaries of key improvements in their product support implemented during the past year, and the following reflects the responses of those that chose to participate.

### Fixed-wing

#### Airbus

Airbus implemented its worldwide ACJ service center network last year. Owners of the 180 Airbus corporate jets in service can have their aircraft maintained at Airbus's own Airbus Corporate Jet Centre in Toulouse, France; Comlux America in Indianapolis;

Haeco Private Jet Solutions in Xiamen, China; Sepang Aircraft Engineering in Kuala Lumpur, Malaysia; at Jet Aviation Basel, Dubai and Singapore; and at ST Aerospace in Singapore. All of these facilities offer line and heavy maintenance, cabin refurbishing and cabin and system upgrades.

ACJ owners can now tap into the Camp Systems maintenance-tracking service under an agreement between Airbus and Camp. The new Camp for ACJ service combines Airbus's maintenance program optimization with Camp's computer-based maintenance management services.

Since the ACJ can host a

large antenna, another new option for ACJ owners is installation of high-speed Ka-band satcom, which is capable of data speeds of up to 50 Mbps. The Ka-band system became available for ACJ installations in this year's second half.

#### Bombardier Business Aircraft

Bombardier's focus, according to Andy Nureddin, Bombardier Business Aircraft v-p and general manager of customer services, "is on speed, capacity and technological innovation driving down the bottom line."

Bombardier says it tries to ensure that customers are as close as possible to a Bombardier facility, either factory-owned or part of its authorized service facility network. If one of those isn't available, then a service truck or mobile maintenance team can help take care of the customer. This drives

what Nureddin calls a "virtuous cycle," because customers appreciate nearby service and are then more likely to bring their maintenance to Bombardier or an affiliated facility.

To that end, Bombardier added six service trucks in the U.S. and two in Europe during the past year. This model doesn't work, yet, in China, where Bombardier has opened a new factory-owned service center in Tianjin, but that should change eventually. "You will find us rapidly coming up with a mobile operation that is appropriate for the Chinese market," he said.

In June, Bombardier announced that it [will establish a fully owned heavy maintenance service center at London Biggin Hill Airport](#). Operations should begin by this year's fourth quarter. The location will also boost parts availability for Bombardier's European fleet. "Biggin Hill is a market we couldn't afford not to be in," Nureddin said.

Newer Bombardier jets are now entering service equipped with its Smart Link data connectivity, monitoring and in-flight reporting service. The Learjet 75 is the first to be equipped, and Smart Link is rolling out on the Challenger and Global and will be standard on the upcoming Global 7000. Retrofit kits are available in Bombardier service centers. "Connected airplanes are able to give us reams of data," he said. "We can see trends and fine-tune the maintenance programs. It's revolutionary how it helps us support and respond and troubleshoot airplanes."

Efforts such as Smart Link, Smart Parts, Smart Maintenance and so on are not just about cost saving, he explained, but "more about budgeting and predictability, peace of mind. It's an ever-present struggle, how to take cost out and ensure [we] develop maintenance

#### By the Numbers 2016

Respondents who rated aircraft	809
Respondents who completed the survey in its entirety	720
Aircraft rated	2,927
Aircraft models receiving ratings	150
Minimum ratings required to be included in the data	20

2016 Category Ratings by Newer and Older Aircraft	Overall Average 2016	Overall Average 2015	Rating Change from 2015-2016	Factory Owned Service Centers	Authorized Service Centers	Parts Availability	Cost of Parts	AOG Response	Warranty Fulfillment	Technical Manuals	Technical Reps	Maintenance Tracking Programs	Overall Aircraft Reliability
<b>NEWER BUSINESS JETS</b>													
Dassault (Falcon)	<b>8.4</b>	8.2	0.2	7.5	8.0	<b>8.6</b>	7.1	8.7	8.8	8.5	9.1	8.4	<b>9.0</b>
Embraer (Phenom, Legacy, Lineage)	<b>8.4</b>	8.1	0.3	8.0	<b>8.6</b>	7.8	<b>7.3</b>	8.3	8.8	<b>9.0</b>	8.8	8.8	<b>9.0</b>
Gulfstream (G150-G280)	<b>8.4</b>	8.1	0.3	<b>8.4</b>	8.3	8.2	7.2	<b>9.0</b>	8.9	7.6	<b>9.2</b>	8.9	8.6
Gulfstream (G300-G650)	<b>8.4</b>	<b>8.3</b>	0.1	8.2	8.3	8.4	6.4	8.5	<b>9.1</b>	8.5	8.8	<b>9.0</b>	<b>9.0</b>
Bombardier (Challenger)	8.2	8.0	0.2	7.3	7.8	8.1	6.8	8.5	8.5	8.2	8.9	8.6	8.8
Textron Aviation (Citation)	8.1	7.8	0.3	7.9	7.6	8.2	6.6	8.3	8.6	8.1	8.4	8.2	8.7
Bombardier (Global)	7.8	7.8	0.0	7.6	7.4	7.4	6.5	8.0	7.7	7.9	8.5	8.5	8.2
Bombardier (Learjet)	7.7	8.0	-0.3	7.5	7.5	7.8	6.1	7.9	8.7	7.5	8.7	8.1	7.8
Textron Aviation (Premier, Hawker 400XP)	7.7	7.0	0.7	8.2	7.5	7.0	4.9	8.4	8.0	7.9	8.5	7.8	8.8
Textron Aviation (Hawker)	7.2	7.0	0.2	8.0	6.9	6.8	6.1	6.9	7.9	7.2	7.3	8.4	7.6
<b>OLDER BUSINESS JETS</b>													
Bombardier (Global)	<b>8.1</b>	NA	NA	<b>7.3</b>	8.0	<b>8.2</b>	6.2	8.4	8.1	8.3	<b>9.3</b>	8.6	8.8
Bombardier (Challenger)	8.0	8.0	0.0	<b>7.3</b>	<b>8.1</b>	8.1	5.7	8.3	7.8	8.3	9.2	<b>8.7</b>	8.8
Bombardier (Learjet)	7.9	7.5	0.4	6.8	7.4	7.6	<b>6.3</b>	<b>8.5</b>	8.1	<b>8.4</b>	9.0	8.3	8.8
Dassault (Falcon)	7.9	8.0	-0.1	6.5	7.6	<b>8.2</b>	6.2	8.3	<b>8.6</b>	7.8	8.4	8.3	<b>8.9</b>
Gulfstream (GII-GV, G300-G550)	7.9	<b>8.3</b>	-0.4	6.8	7.8	8.0	5.8	8.2	8.2	8.4	8.6	8.4	<b>8.9</b>
Textron Aviation (Citation)	7.7	7.7	0.0	7.2	7.5	8.0	6.2	7.9	8.1	7.5	7.7	8.3	8.5
Textron Aviation (Premier, Beechjet 400/400A, Hawker 400XP)	7.0	7.4	-0.4	7.0	7.1	6.4	5.8	5.5	8.0	7.2	7.3	8.2	7.6
Textron Aviation (Hawker)	6.7	7.5	-0.8	6.4	7.1	5.9	5.4	6.5	6.8	6.4	6.5	8.4	8.3
<b>NEWER TURBOPROPS</b>													
Pilatus (PC-12)	<b>7.8</b>	<b>7.7</b>	0.1	<b>8.5</b>	6.8	<b>7.4</b>	5.6	<b>7.5</b>	<b>8.7</b>	<b>8.5</b>	<b>8.6</b>	<b>8.4</b>	<b>9.1</b>
Textron Aviation (King Air)	7.4	7.5	-0.1	8.4	<b>7.2</b>	7.0	<b>6.0</b>	6.1	7.9	7.4	8.2	7.5	8.2
<b>OLDER TURBOPROPS</b>													
Mitsubishi (MU-2, Solitaire, Marquise)	<b>9.3</b>	<b>9.1</b>	0.2	<b>9.2</b>	<b>9.6</b>	<b>9.5</b>	<b>8.4</b>	<b>9.8</b>	<b>9.3</b>	<b>9.1</b>	<b>9.7</b>	<b>8.6</b>	<b>9.8</b>
Textron Aviation (King Air)	7.0	7.3	-0.3	7.4	7.1	6.8	5.4	6.4	7.6	6.8	7.8	7.3	8.6
<b>ROTORCRAFT (ALL AGE ROTORCRAFT)</b>													
Bell	<b>7.5</b>	<b>7.9</b>	-0.4	<b>7.8</b>	<b>7.4</b>	<b>7.2</b>	<b>6.1</b>	<b>7.6</b>	<b>7.5</b>	<b>8.5</b>	7.6	<b>7.2</b>	8.0
Airbus Helicopters	7.2	7.5	-0.3	7.2	7.2	6.4	5.2	7.2	<b>7.5</b>	7.5	<b>8.5</b>	6.8	<b>8.1</b>
Sikorsky	6.5	6.3	0.2	6.6	6.8	6.3	4.4	5.8	5.8	7.6	7.4	7.0	7.2
Leonardo Helicopters (AgustaWestland)	6.3	6.8	-0.5	6.2	7.2	5.6	4.3	5.6	6.7	6.9	6.7	6.3	7.0

Listed in order of 2016 overall average; ties are listed alphabetically. **Bold** indicates highest number in each category.

programs that are not too burdensome on customers. Thankfully it's in our DNA; being a regional/commercial manufacturer, we've honed these capabilities of iterative improvements to the maintenance program."

To further manage costs, Bombardier works with suppliers to limit future expenses. For example, negotiating a cap on costs for a landing gear overhaul "to provide some sort of cap to the customer, so it doesn't keep them up at night," Nureddin said. "Ultimately

everybody benefits. Residual values stay up, suppliers benefit, and they are seeing more repairs through their own shop because they underwrite these programs."

### Dassault Falcon

Falcon owners will soon realize lower maintenance costs, thanks to a new streamlined 12-month check, which replaces the nine-month A check. The first model to implement the new interval is the 7X, and the 2000 and 900 series will

follow "soon thereafter."

Other recent efforts include enhancements to the Falcon Response AOG support services, such as more mobile tech teams, release of the Falcon Response mobile app for 24/7 access to the global support network and "streamlined AOG response/deployment protocol based upon customer feedback," according to the company.

Heeding advice from its operator advisory board, Dassault Falcon has developed two new mobile apps, Flight

Documentation and Maintenance Documentation.

Dassault's two new Falcon 900 [airborne support](#) aircraft have flown 160 support missions and 50 alternate transportation missions for customers. One of the 900s is located in France and the other in the U.S.

To continue meeting customers' parts needs, the company opened distribution facilities in Louisville, Ky., and Lagos, Nigeria. The Falcon spares service level is currently 98.6 percent.

Falcon 7X



MARK WAGNER

### Embraer

Embraer has delivered 1,000 business jets, and its global network now numbers 75 service centers. Embraer's 24/7 Customer Service Center is located at company headquarters in São José dos Campos, Brazil, and it also owns service centers in Sorocaba, Brazil; Mesa, Ariz.; Fort Lauderdale, Fla.; Windsor Locks, Conn.; and Paris.

The Sorocaba facility received FAA repair station approval in May, covering the entire Embraer business jet line.

Last year the company added an authorized service center, ExecuJet Aviation Nigeria, based in Lagos. ExecuJet Aviation is approved as a Phenom 300 line maintenance service center for western Africa.

### Gulfstream

Last year Gulfstream added MRO services at Jet Aviation's facility in Teterboro, NJ. Eleven technicians are based at Jet Aviation and provide line maintenance, airframe and avionics services and 24/7 AOG assistance. Parts are locally available from a \$60 million inventory located at Teterboro-based FlightPath Services. The Teterboro technicians can maintain all Gulfstream jets registered in the U.S., European Union countries, Bermuda and the Cayman Islands.

Gulfstream opened two maintenance hangars last year, a 110,000-sq-ft facility that doubles the company's capacity in Brunswick, Ga., and a newly renovated 19,000-sq-ft hangar at its Long Beach, Calif., campus.

The Brunswick facility incorporated "several sustainable and green design features, such as recycled content, water-saving lavatories and showers, energy-efficient indoor/outdoor lighting and heating/cooling systems and preferred parking spaces for low-emission, fuel-efficient vehicles," according to Gulfstream.

At its Savannah, Ga., service center, Gulfstream opened a new paint facility last September, greatly speeding the painting process for in-service aircraft, which previously had to be slotted into the production aircraft paint facility. The new facility is air-conditioned and heated and has a crossdraft bay for paint stripping, sanding and priming, and a downdraft bay for painting.

Another environmentally

friendly building at the Savannah campus is the new [product support distribution center](#) (PSDC), which opened in June. Enclosing more than 400,000 sq ft, the PSDC is the "centerpiece" of Gulfstream's parts distribution network, which "manages 500,000 unique part numbers for 18 aircraft models at 11 warehouses and service centers worldwide," according to the company. A new distribution center was also opened near Al Maktoum International Airport in Dubai.

In Europe, Gulfstream has added product support capabilities at Jet Aviation Vienna and Altenrhein Berlin, as well as line maintenance and AOG services at Stansted Airport northeast of London. The company also moved a mobile repair vehicle to Stansted from the Luton service center.

Earlier this year, Gulfstream added a diagnostic tool available by subscription for MyCMP maintenance-tracking customers.

The new tool "integrates a customizable diagnostic reasoning engine and a database of known equipment faults and troubleshooting procedures," according to Gulfstream, and it is based on the Case-Bank Technologies SpotLight. "The MyCMP diagnostics tool starts with user input of an initial observed symptom, which launches a 'troubleshooting dialog,' similar to an expert on a call-in help desk, to arrive at a solution," said Derek Zimmerman, president of Gulfstream product support. "By dynamically generating decision logic based on fault-isolation technical data and user-submitted solutions, the program quickly identifies the cause of issues to guide the user to the corrective action." Gulfstream has made the new tool available to operators of the G650 and G550 and plans to offer it on the upcoming G500 and G600.

## ABOVE AND BEYOND

We asked AIN Product Support participants to list their favorite support providers and what they like about the service they receive. Here are some of the companies and people respondents chose to recognize. Read the full list at [www.ainonline.com/above-beyond-2016](http://www.ainonline.com/above-beyond-2016).

### OEMS

<b>Jeffrey Pearl</b> <i>Leonardo Helicopters</i>	Despite the way Agusta (Leonardo) handles its business, Jeffrey Pearl has always worked to get our aircraft up and running and answer any question I've ever had. An excellent tech rep.
<b>Amanda Bondar</b> <i>Airbus Helicopters</i>	Has helped us out on the weekend to get parts to us above and beyond her normal duty time.
<b>Dean Eechaute</b> <i>Bombardier</i>	Dean, Learjet FSR, knows the aircraft he is responsible for (primarily the Learjet 40/45/70/75) better than anyone we have come across. He will not stop until the issue is resolved regardless of the complexity. The phrase "I don't know" isn't in his vocabulary. But if he has to use it, it is followed by "I will find out and let you know."
<b>Shane McCabe</b> <i>Citation</i>	Shane is the mobile service mechanic and takes ownership of the airplanes he maintains. Excellent mechanic with a wealth of knowledge.
<b>Gene Woods</b> <i>Dassault</i>	Gene and his team have constantly exceeded my expectations and constantly deliver my company a completed and reliable aircraft. They always strive to deliver my aircraft early and if I ask for the airplane early they will go above and beyond to make it happen. I can always count on anybody on his team to go the extra mile and to treat my aircraft like it was their own.
<b>Sanjay Pandey</b> <i>Embraer</i>	Never had a technical rep call me every week to ask how the aircraft is. He wants to know my every trip to ensure he or someone else is monitoring the flights. When problems arise during our trips, Sanjay is always coordinating and making sure all questions are answered or making sure one of the Embraer Service Facility [employees] is taking care of us.... even if it's 3 or 4 a.m. The whole Embraer team in Singapore is always supportive and goes beyond the call of duty.
<b>Jim Beebe</b> <i>Gulfstream</i>	Jim continues to go above and beyond in his pursuit to help out the customers in his region. He truly responds 24/7 and even drives three hours each way to our facility to lend assistance when needed. Great person to work with.

### AUTHORIZED SERVICE CENTERS

<b>Janet Beazely</b> <i>Duncan Aviation Lincoln</i>	Janet is the best project manager I've ever dealt with. She's always active and involved in her projects. She always knows the status of the airplane and everybody in the facility respects and likes her and helps her get my airplane completed on schedule.
<b>Mark James</b> <i>Intercontinental Jet Service Center</i>	I have every possible contact number for Mark. He is always available to help 24/7/365 and his knowledge base is unbelievable.
<b>Gordon Ross</b> <i>Pentastar Aviation</i>	Gordon went above and beyond ahead of a visit to make sure the project would run smoothly. He even went so far as to spend his company's money to make sure my fabric would pass burn cert when they did not even have a signed contract. This small action won the company the whole project as well as referrals.
<b>Dan McKillips</b> <i>West Star</i>	Dan's attention to detail and going the extra mile is great!

## Mitsubishi Heavy Industries America

This year Mitsubishi Heavy Industries America (MHIA), which supports the roughly 270 MU-2s that are still flying, and its U.S. contractor Turbine Aircraft Services (TAS) held three Pilots Review of Proficiency (Prop) seminars in the U.S. The seminars are free, anyone is welcome to participate, and they are designed to help new and current MU-2 operators share information and learn more about how to operate their twin turboprops safely. Representatives of 170 MU-2s attended the Prop seminars this year, according to Pat Cannon, president of TAS, which helps MHIA support the MU-2.

Recently, TAS and MHIA completed FAA approval of an Alpha Systems angle-of-attack (AOA) system for the MU-2, under new Part 23 regulations that do not require an STC. The AOA system is calibrated for all MU-2 flap configurations and it provides visual and aural warnings, including vocal warnings such as "too slow" and "stall." The new AOA system costs \$5,000 to \$6,000, according to Cannon.

TAS is completing final editing of a new icing video, which was announced last year. MU-2 pilots are required to undergo icing training by watching the video under the supervision of an instructor every two years, and this is usually done as part of the Prop seminars. Now the FAA is allowing MHIA to provide the icing training online, and pilots will be able to view the video and answer questions without having to travel or make other arrangements with a qualified instructor. The new video is completely redone, with professional narration by



clinical psychologist and pilot Michelle Kole.

To fill the gap between the biennial Prop seminars, MHIA and TAS are developing new training videos. One example is a technique to help pilots lower the nose of short-body MU-2s more softly after landing to help reduce maintenance costs on nosewheels. “The airplane is fairly nose-heavy,” Cannon said. “The cg runs pretty far forward of the mainwheels, and it requires a technique to put the nose down softly.” The technique, which is taught at Prop and involves landing with a small amount of power, will also be explained in a new educational video, and these video tips will be available online for anyone to view.

MHIA’s strong support and the MU-2’s outstanding performance are attracting new owners, and they are spending on upgrades and refurbishment. “New owners are coming in droves, and there’s probably been a record number of sales this year,” Cannon said. Popular panel upgrades are Garmin’s G600 flight displays and GTN 650/750 touchscreen navigators. “It’s fantastic what people are doing to their airplanes,” he said.

### Pilatus Aircraft

The [PC-12 fleet has passed 1,400](#) and has logged 5.6 million flight hours. The latest version—the PC-12/47E (NG)—has seen 630 deliveries, and these airplanes

## WINNERS

The following people were randomly selected as winners of an Apple iPad for participating in our Product Support Survey.

**BILL WHITE**  
chief pilot

**CHAD VELTA**  
aircraft maintenance manager

**RONALD LAWHON**  
chief of maintenance

**JOE MCCOY**  
chief of maintenance

**CRAIG MOORE**  
chief pilot

## SURVEY RULES AND METHODOLOGY

As with **AIN** Publications’ previous annual Product Support Surveys, the objective this year was to obtain from the users of business jets, turboprop airplanes and turbine-powered helicopters statistically valid information about the product support provided by business aircraft manufacturers over the last year and to report this information to our readers. The ultimate goal of the survey is to encourage continuous improvement in aircraft product support throughout the industry.

This survey was conducted via a dedicated website, created by **AIN** from the ground up to provide improved ease of use and to encourage greater reader participation. **AIN** emailed qualified readers a link to the survey website and also sent a postcard invitation with login credentials to the survey website.

The survey website was open from May 2 to June 15. Respondents were asked to rate individual aircraft and provide the tail number, age (less than 10 years old or more than 10), primary region of service and whether they used factory-owned or authorized service centers, or both. Respondents were also asked to rate, on a scale from 1 to 10, the quality of service they received during the previous 12 months in the following categories:

- **Factory-owned Service Centers**—cost estimates versus actual, on-time performance, scheduling ease, service experience.
- **Authorized Service Centers**—same as above.
- **Parts Availability**—in stock versus back order, shipping time.
- **Cost of Parts**—value for price paid.
- **AOG Response**—speed, accuracy, cost.
- **Warranty Fulfillment**—ease of paperwork, extent of coverage.
- **Technical Manuals**—ease of use, formats available, timeliness of updating.
- **Technical Reps**—response time, knowledge, effectiveness.
- **Maintenance Tracking Programs**—cost, ease of use, accuracy, reliability.
- **Overall Product Reliability**—how the product’s reliability and quality stack up against the competition.

Respondents were also asked to recognize individuals who have provided them with exceptional product support and service. The full list of these people is available online at [www.ainonline.com/above-beyond-2016](http://www.ainonline.com/above-beyond-2016).

The 2016 **AIN** Product Support Survey results for aircraft are published in this issue, avionics will be featured next month and engines will follow in October. ■

Gulfstream Product Support paint hangar



have already reached one million flight hours.

Last year, Pilatus added Chile's Aerocardal as a PC-12 authorized service center. Aerocardal is based at Santiago International Airport, where it operates an FBO.

Pilatus has been expanding its customer support team around the world, for all of its general aviation models (PC-6, PC-12 and the upcoming PC-24 jet). Enhancements to the [MyPilatus.com](http://MyPilatus.com) portal include new publications such as fault isolation guides for the PC-12NG and 10th series and performance information leaflets. Pilatus has also published an EASA-approved master minimum equipment list and master maintenance and operating procedures manual.

To help pilots become more familiar with the PC-12NG's Honeywell Apex flight deck, Honeywell's Pilot Gateway provides a pilot integrated learning guide, task trainer and instructional videos.

### Textron Aviation

Textron Aviation's service network now includes 21 factory-owned facilities, 65 mobile service units and three dedicated support aircraft.

Earlier this year, Textron Aviation launched [the 1Call AOG response team](#), which allows customers to place a single call to marshal resources to get their Citation, King Air and Hawker back in the air as quickly as possible. "Customers calling this dedicated line for unscheduled maintenance events can receive prioritized technical support, order expedited parts, have alternative lift quickly dispatched or schedule a mobile service unit," according to the company.

In Europe, Textron Aviation placed a CJ3 to provide expedited service. This supplements the company's six service centers, five line service stations and European parts distribution center, as well as locally based design engineers and supplier representatives.

To help keep customers flying, Textron Aviation has invested in its parts distribution network with a new forecasting system that improves accuracy and has led to "significant increases in fill rate," according to the company. Delivery performance is better thanks to consolidation of warehouse and shipping operations.

On the technical publications

front, Textron Aviation is launching a system called 1View, which it developed in collaboration with customers. The system allows customers to sign on just once for access to all maintenance manuals, flight documents, service information and e-commerce features for all Textron Aviation aircraft types. Documents are linked for quick access, and users can annotate and draw on data and graphics in the documents.

### Rotorcraft

#### Airbus Helicopters

Airbus Helicopters customer support efforts are focused on "improving technical publications, better tracking of customer inquiries and issues, bigger parts inventories and vast improvements in the last two years in on-time parts deliveries." Last year the company implemented customer focus groups to learn more about "customers' irritants and their expectations," and then to respond to their concerns.

During the past two years, Airbus Helicopters has added to its worldwide spares supply, improved component repair and standard exchange offers via its

[HCare system](#), bolstered technical support at its three hub facilities in France, Dallas and Singapore and added technical reps. Customers can submit a technical request 24/7 and receive an answer "quickly from one of the three hubs," no matter where the customer is located, and the hubs will work together to follow up with additional resources and expertise.

Technical publications are now easier to use with the Orion viewer and have better content. Airbus is also working on "improving technical irritant resolution and maintenance programs."

Parts inventories have grown, including \$20 million worth of additional spares at the Dallas/Fort Worth logistics hub. This reflects a strategy to locate fast-moving parts near customers and to place parts where demand tends to be erratic in centralized locations, according to Airbus. On-time delivery of parts is improving, with deliveries of unplanned parts orders meeting the requested date 95 percent of the time, and on-time delivery for parts ordered 15 or more days in advance reaching 98 percent.



Airbus Helicopters has released the e-Tech Pub for the H125/H130, available on iPads and most web browsers. Users can now conduct full-text searches using the offline version. Customers can learn how to use the e-Tech Pubs and Orion viewer by logging into webinars that Airbus Helicopters is developing.

### **Bell Helicopter**

Bell's new Customer Advantage Plans offer fixed-cost-per-flight-hour options for operators that use the company's maintenance and support services. The service is available for the entire lifecycle of the helicopter, and it is also transferable to new owners. In addition to helping owners manage maintenance costs, the plan offers optional non-standard kit coverage and preferred rates from 100 Bell service centers or authorized

customer service facilities.

During the past year, Bell has worked on improving its logistics capabilities, the company noted, "so that both our internal and external networks are performing better than anyone else in the world for rotorcraft parts." [Bell says its recently acquired Able Aerospace Services](#) facility in Mesa, Ariz., will also help it improve its component repair and overhaul capabilities.

### **Leonardo Helicopters (formerly AgustaWestland)**

Last year Leonardo Helicopters expanded into growing markets in China, South America and Australia. Customer feedback has helped the company improve support and training worldwide, and this is a result of developing "a more robust and user-friendly e-commerce and online parts ordering

system," redesigning the service contract "with clear performance guarantees" and implementing lean processes in its maintenance facilities to help meet customers' turnaround time requirements.

Parts "delivery schedule adherence" has reached 90 percent for AOG customers and 94 percent "when taking into account warranty fulfillment and routine ordering along with AOG requests." According to the company, these numbers have continued improving year-over-year.

Leonardo plans to continue investing to shrink component repair turnaround times and to keep spare parts pricing below the consumer price index and other manufacturers' offerings.

### **Sikorsky**

Sikorsky says its efforts during the past year to improve

customer satisfaction through enhancements to customer interface teams, parts inventory mix and added shipping capacity have led to shorter delivery times and better parts availability.

The company's new [Customer Care Center](#) in Trumbull, Conn., opened in March. Offering 24/7 availability and a single phone number to reach "a focused, interdisciplinary team of experts," the center has helped Sikorsky improve AOG response time by 30 percent.

Also opening in March was Sikorsky's new forward stocking location in Stavanger, Norway, which supports S-92s in "one of the largest S-92 operating regions in the world," according to the company. Other forward stocking locations are planned, and the second one opened last month. □