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BY EMBRAER

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## News Briefs

### NASA ROLLS OUT X-59 SUPERSONIC TESTBED

NASA has rolled out the X-59 quiet supersonic technology demonstrator aircraft that could pave the way for overland supersonic flight. The X-59 was unveiled on January 12 during a public ceremony at Lockheed Martin's Skunk Works facility in Palmdale, California. The aircraft, which is expected to fly at Mach 1.4, has a thin, tapered nose, accounting for about one-third of its length, to break up shock waves that would otherwise cause a sonic boom. NASA intends to fly the X-59 later this year, after which the agency will begin flying the aircraft over several as-yet-unnamed cities in the U.S. to collect noise data from the sonic boom produced by the aircraft.

### BLACKHAWK DELIVERS AUTOLAND-EQUIPPED KING AIR

Blackhawk Aerospace Technologies has completed the first installation of Garmin's Autoland system and a full Garmin G1000 NXi suite in a King Air 200. The Autoland installation includes Garmin autothrottles. Autoland automatically selects a suitable airport, flies the airplane to the airport, lands, then shuts off the engines. The Autoland button is mounted on the aft console in the King Air 200 installation so it is easily reached by the pilot or passengers. In case of inadvertent activation, pilots can disable the Autoland event and continue flying.

### DAHER DELIVERIES, ORDERS REMAIN STABLE IN 2023

Aircraft shipments last year at Daher inched up by one unit, to 74, while the order tally matched the previous year at 100 units. This pushed the French aircraft manufacturer's aircraft backlog into early 2025. The TBM family led deliveries with 56 Model 910s and 960s, with the latter accounting for most of this total. Meanwhile, some 18 Kodiak 100s and 900s were handed over last year.



Dassault delivered 26 of its Falcon business jets during 2023, including the newly certified 6X model, and its order backlog as of December 31 is for 84 Falcons.

# Dassault Falcon orders, deliveries dip in 2023

BY CHARLES ALCOCK

Dassault Aviation closed 2023 with weaker-than-anticipated sales and deliveries of its Falcon business jets. According to the French aircraft manufacturer, orders for Falcons declined from 64 in 2022 to just 23 last year. The company delivered 26 Falcons, six fewer than in 2022, and fell short of the 35 units it had previously projected in guidance issued in March.

As of December 31, Dassault's backlog of orders covered 84 Falcons, compared with 87 at the end of 2022. However, over the same period, the backlog for its Rafale fighters increased from 164 to 211, and the company delivered 13 Rafales (11 to the French military and two for export customers), which was two fewer than forecast.

Dassault had expected to make more deliveries of its newly certified Falcon 6X last year. But the first production 6X entered service with an undisclosed launch customer on November 30, some three months after it achieved concurrent FAA and EASA type certification on August 22.

In the second half of last year, Dassault managed to spool up deliveries from a slow start of just nine units in the first six months, which the company acknowledged had been affected by ongoing supply-chain difficulties. It delivered 17 Falcons in the second half.

Dassault Aviation will publish its full-year group financial results, including its 2024 delivery forecast, on March 6. ■



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# NetJets implements mandatory age-70 pilot retirement

BY MATT THURBER



NetJets has elected to adopt an age-70 limit for its fractional-share (Part 91K) pilots and has removed them from its schedule, according to a note from the NetJets Association of Shared Aircraft Pilots (NJASAP) legal department. The move affects fewer than 100 pilots, and they were no longer on the NetJets schedule as of January 10, according to a lawsuit filed by a group of pilots seeking to overturn the age cap.

NetJets gave notice to its pilots and NJASAP on Jan. 10, 2023, that it intended to implement the age-70 limit. The notification came after Congress' omnibus spending bill was adopted in December 2022. The bill included language that allows Part 91K and 135 operators that logged at least 75,000 jet operations a year in 2019 or any subsequent year to implement an age-70 ceiling. This is not a mandatory requirement for these operators, but once they elect to adopt the age ceiling, that becomes permanent and they can't reverse that decision.

According to the notice to members from NJASAP's legal team, an arbitrator recently issued a draft decision regarding a

grievance that the union had filed after NetJets notified pilots of the age cap. NetJets denied the original grievance, and NJASAP and NetJets agreed to arbitration. The arbitrator's decision was to deny the grievance, with no finding of any violation in implementing the age-70 retirement ceiling, according to the notice. In fact, NJASAP supported the age cap when it first was proposed in 2018.

The eight NetJets pilots who filed the lawsuit against NetJets were seeking "a preliminary injunction to keep the age cap from taking effect Jan. 10, 2024," according to the lawsuit. However, the U.S. District Court Northern District of Texas Dallas Division rejected their arguments and denied the motion for a preliminary injunction.

"Because the Court concludes that the pilots failed to establish that any of their claims is likely to succeed on the merits, and this case does not warrant the exceptionally rare preliminary injunction under the RLA [Railway Labor Act], the Court denies the motion for preliminary injunction," the court concluded. ■

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## News Briefs

### BIZJET SHIPMENTS TO RAMP UP

Deliveries from the top-five business jet OEMs are forecast to jump from an estimated 575 in 2023 to 670 deliveries this year, according to investment research firm Jefferies. This would surpass the 652 delivered in 2019. Leading this growth are new programs—including the Gulfstream G700 and Dassault Falcon 6X—along with an easing of the supply-chain headwinds, Jefferies added. The delay in G700 certification, which had been targeted for December, pushed at least 15 G700 deliveries into this year. In the Jefferies outlook, jet shipments would climb to 155 at Gulfstream and 52 at Dassault.

### HAWAII PARK AERIAL TOUR PLAN CUTS FLIGHT NUMBERS

The National Park Service (NPS) and the FAA have issued a long-awaited air tour management plan (ATMP) for Hawai'i Volcanoes National Park that drastically curtails the number of sightseeing flights allowed within the park's boundaries. While existing levels are some 11,000 flights a year, the ATMP will limit them to about 1,500. Tours will be allowed from 10 a.m. to 2 p.m. local time on Mondays, Tuesdays, Thursdays, Fridays, and Saturdays, while "quiet technology" aircraft would be allowed to fly on those days from 9 a.m. until 5 p.m., in addition to Wednesdays. All air tour flights would be forbidden on Sundays and eight specific Hawaiian holidays.

### UK COMPANY CREATES SAF FROM SEWAGE

Firefly Green Fuels has developed a process to turn human waste into sustainable aviation fuel (SAF). The company has successfully produced samples of SAF from sewage sludge and expects to submit its pathway to ASTM International by year-end. It said each person produces enough raw waste to make slightly more than one gallon of SAF a year.





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# NBAA raises alarm on proposed Dublin bizav ban

BY CHAD TRAUTVETTER

NBAA has asked the U.S. ambassador to Ireland and the Irish ambassador to the U.S. for help in combatting a proposed ban on nonscheduled flights, which included general aviation operations, at Dublin Airport (EIDW), the second-busiest business aviation airport in Ireland.

The move by the Dublin Airport Authority (DAA) is meant to keep EIDW within its current annual passenger traffic cap of 32 million, which DAA expects to exceed this year. DAA is attempting to raise the annual limit to 40 million but said it could take up to two years to get such approval.

“In essence, this action by the DAA will result in no business aviation flights being allowed to fly in or out of Dublin Airport until planning is secured to increase passenger capacity,” NBAA president and CEO Ed Bolen explained to U.S. Ambassador Claire Cronin and Irish Ambassador Geraldine Byrne Nason in a letter.

Bolen also emphasized NBAA’s work with the Irish Business and General Aviation Association (IBGAA) to inform government officials about the importance of business aviation on the Emerald Isle, noting, “...the ban being proposed by the DAA will greatly hinder Ireland’s attractiveness as a location for foreign direct investment.”

While NBAA and IBGAA are hopeful that the passenger cap at EIDW will be raised to 40 million, the groups also have suggested an alternative to allocate 20,000 passengers from the current 32 million cap specifically to business aviation.

“This represents a mere 0.0625 percent of the passenger limit,” Bolen noted in the letter, “maintaining access to Ireland and the Dublin area for business aviation, which brings substantial economic and commercial benefits while still adhering to the 32 million cap.”

IBGAA, citing Argus International data, reported there were 6,515 business aircraft movements at EIDW in 2022. ■

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## News Briefs

### BOMBARDIER ENDS 2023 WITH CHALLENGER DEAL

Bombardier closed out 2023 with a firm order from an undisclosed customer for a dozen Challenger 3500s valued at \$326.4 million and set to start delivering in 2025. The order is among several fleet deals Bombardier racked up for the 3500 last year, including an agreement from ABS Jets for three and a commitment from Airshare for an additional 20. In addition, the order further stretches out Bombardier’s production backlog, which, according to president and CEO Éric Martel, had spanned between 18 to 24 months across its product lines by the end of the third quarter.

### JET AVIATION OPENS SAF TAP IN ARIZONA, MONTANA

Jet Aviation has established continual supplies of sustainable aviation fuel (SAF) at two more of its U.S. FBO locations: Scottsdale, Arizona, and Bozeman, Montana. The company has stocked SAF at its Van Nuys, California facility since 2019 through an agreement with World Fuel Services. Outside the U.S., Jet Aviation offers SAF in Amsterdam and Singapore. Since 2021, it has allowed customers to access SAF benefits and purchase credits even in locations where no SAF is present through its book-and-claim service.


### VOLATO EXPANDS HONDAJET FLEET BY 50% IN 2023

Part 135 charter, fractional ownership, and private jet management company Volato expanded its fleet by 50 percent last year to 24 HondaJets. For 2024, Volato expects to add another 10 HondaJets—two more than last year—while plans call for 12 deliveries mainly in 2025 and possibly into 2026. The company’s next endeavor will see it enter into larger airplanes, namely Gulfstream G280s, four of which it expects to take this year.



The Dublin Airport Authority has proposed eliminating all business and general aviation flights at Dublin Airport in an effort to meet its annual 32 million passenger traffic cap.





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# Six U.S.-registered bizjet fatal accidents in 2023, none in 2022

BY GORDON GILBERT

Six accidents involving U.S.-registered business jets claimed the lives of 23 souls in 2023 compared to zero fatalities in 2022, according to preliminary statistics gathered by AIN. Interestingly, the number of 2023 fatal accidents and fatalities was identical to those of 2021. However, while all six fatal crashes

occurred under Part 91 in 2021, one charter flight accounted for eight fatalities in 2023.

Despite the record of fatal accidents last year, the number of nonfatal U.S.-bizjet accidents decreased by more than half: 11 occurrences in 2023 versus 26 in 2022.

continues on page 56 >

## ACCIDENTS/INCIDENTS WORLDWIDE (2023 VS 2022)

U.S.-registered Business Jets and Turboprops

Business jets	Total		Part 91		Part 91K		Part 135		Public/Gov't		Mfg	
	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
<b>Total accidents</b>	17	26	15	21	1	0	1	5	0	0	0	0
Nonfatal accidents	11	26	10	21	1	0	0	5	0	0	0	0
Fatal accidents	6	0	5	0	0	0	1	0	0	0	0	0
Fatalities	23	0	15	0	0	0	8	0	0	0	0	0
Incidents	79	79	51	51	0	0	28	28	0	0	0	0

Business turboprops	Total		Part 91		Part 91K		Part 135		Public/Gov't		Mfg	
	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
<b>Total accidents</b>	27	28	24	23	0	0	3	5	0	0	0	0
Nonfatal accidents	17	17	15	13	0	0	2	4	0	0	0	0
Fatal accidents	10	11	9	10	0	0	1	1	0	0	0	0
Fatalities	25	37	20	27	0	0	5	10	0	0	0	0
Incidents	52	44	40	31	0	0	11	12	1	1	0	0

## ACCIDENTS/INCIDENTS WORLDWIDE (2023 VS 2022)

Non-U.S.-registered Business Jets and Turboprops

Business jets	Total		Private		Charter		Other*		Unknown	
	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
<b>Total accidents</b>	9	9	3	2	4	2	0	2	2	3
Nonfatal accidents	6	5	1	1	3	1	0	1	2	2
Fatal accidents	3	4	2	1	1	1	0	1	0	1
Fatalities	9	17	5	5	4	6	0	4	0	2
Incidents	19	17	4	7	8	6	4	3	3	1

Business turboprops	Total		Private		Charter		Other*		Unknown	
	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
<b>Total accidents</b>	34	32	9	6	17	16	7	6	1	4
Nonfatal accidents	22	23	6	4	10	14	5	3	1	2
Fatal accidents	12	9	3	2	7	2	2	3	0	2
Fatalities	46	26	5	7	38	12	3	3	0	4
Incidents	20	22	4	11	8	5	5	3	3	3

All Data Preliminary. \* For example: air ambulance, aerial survey, ferry, training, testing, manufacturer, government (non-military). Sources: FAA, NTSB, Aviation Safety Network, AIN research

AIN tables show "incidents" as well as "accidents" to distinguish mishaps based on their degree of severity. Investigators often draw fine distinctions between the two events, but, typically, incidents result in minor or no damage and their investigations are sometimes delegated to local officials. Accidents are events that range from minor damage to destruction and/or injuries. Also, some incidents ultimately get upgraded to accident status during the investigative process.

## News Briefs

### SIMCOM OPENS LAKE NONA AVIATION TRAINING CENTER

Simcom Aviation Training opened its newly constructed aviation training center in Lake Nona, Florida, adjacent to Orlando International Airport, in late December. The 95,000-sq-ft facility can accommodate up to 12 full-motion aircraft simulators and six non-motion devices. Five CAE-manufactured full-motion simulators—one each for the Gulfstream G650, Bombardier Challenger 3500, and Embraer Phenom 300, and two for the Embraer Praetor 600—are already operational there.

### FSF RELEASES PLAN TO STEM RUNWAY INCURSIONS

The Flight Safety Foundation (FSF) has rolled out a Global Plan for the Prevention of Runway Incursions with 127 recommendations that can serve as a roadmap to address incursions. FSF called runway incursions one of the most persistent threats to aviation safety. Recommendations include actions for airport operators, air navigation service providers, aircraft operators, manufacturers, countries and regulators, and the research community. They involve training, operational procedures, communication protocols, airport visual aids, infrastructure design, and personnel empowerment/responsibilities.

### JSX PLANS TO ADD 300+ HYBRID-ELECTRIC AIRCRAFT

Public charter operator JSX plans to acquire more than 300 hybrid-electric aircraft from three different manufacturers as part of its efforts to decarbonize its U.S. regional air services. The fleet expansion plans cover up to 332 aircraft, including an LOI with Electra for 82 of its nine-passenger eSTOL aircraft (32 firm, 50 options), 150 nineteen-seat Aura Aero Era regional airplanes (50 firm, 100 options), and 100 thirty-seat Heart Aerospace ES-30 regional airplanes (50 firm, 50 options).



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# Taking upset recovery training to new heights

BY STUART “KIPP” LAU



Flight Research International offers upset prevention and recovery training in a variety of aircraft, including this Aermacchi MB-326 Impala.

After three solid days of immersive flight training in military jets with a “Top Gun” instructor and a former astronaut, it’s difficult not to open with a mishmash of tired fighter pilot clichés. It is much easier to share that upset prevention and recovery training programs are eye-opening experiences, will make you a better pilot, and will ultimately save lives.

Flight Research International offers a comprehensive Fundamental Jet UPRT course; I have a fresh graduation certificate, and I learned a lot. The goal of the training is to equip each student with the skills and confidence necessary to overcome and mitigate the number one killer in aviation—a loss of control in-flight (LOC-I) event.

The three-day course includes solid academics and three training sorties in real aircraft; there are no simulators at Flight Research International. This is intentional because, according to the company, “simulators simply can’t take you to the edge of the envelope or fully replicate the emotions of the actual experience.”

Unique to Flight Research International’s Fundamental Jet UPRT program is an initial training flight in a Rockwell Sabreliner aircraft. The Sabreliner, according to the company, is used because it shares aerodynamics with several large business jets and airliners and has similar stall characteristics. For any professional pilot, this is an amazing opportunity to fly a swept-wing transport category jet aircraft to the edge of its certified flight envelope, including full aerodynamic stalls.

Follow-on flights expand the training to an all-attitude flight envelope in the Aermacchi MB-326 Impala. These flights take the student, seated in a “hot” Martin-Baker ejection seat, far outside of the typical “coffee-drinking” envelope of an airliner or business jet. The Impala is a stout military jet trainer that offers a high margin of safety during this training and has handling characteristics like a normal business jet.

All flights take place in the skies high above the Mojave Desert, which, in the U.S., is the epicenter of flight test activities.

Flight Research International, a division of the National Test Pilot School (NTPS), is based at Mojave Air and Space Port at Rutan Field in California. This is where Chuck Yeager first broke the sound barrier in a Bell X-1 named “Glamorous Glennis” and Scott Crossfield first flew above Mach 2.0. Today, the future of flight unfolds at Mojave—it is home to several suborbital space companies, a hydrogen-powered regional airliner, and Boom’s test vehicle, intended to pave the way for the next civilian supersonic transport.

Flight Research schedules three to four UPRT classes each month, with an average of four students per class. My class, a Fundamental Jet UPRT course, had three students: a flight test pilot from a major avionics company, a member/pilot of the Citation Jet Pilots (CJP) association who flew his Cessna Citation CJ3 to Mojave from his home base in the Pacific Northwest, and myself (an airline pilot).

The Fundamental Jet UPRT course is available as a two-, three-, or four-day

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course. Three-day courses are the most common, with the two-day course considered a refresher. The four-day course is reserved for pilots without prior UPRT or aerobatic training.

The three-day Jet UPRT course included one Sabreliner flight and two flights in the Impala. A flight in the Slingsby T-67 Firefly—a two-seat piston-powered aerobatic training aircraft—is added to the four-day course. Regardless of the course, students will experience an amazing cadre of instructors and support personnel. Each instructor is well-qualified and laser-focused on delivering quality instruction to each student.

### CORPORATE PILOT CLIENTELE

According to Shauna DiCesare, Flight Research International v-p of business development and marketing, most of the Jet UPRT students are pilots who fly corporate aircraft for various companies or government agencies. The company has strong relationships with FlightSafety International, NBAA, and CJP.

Each year, several CJP members flock to Mojave to train with Flight Research. The company supports each CJP pilot who takes advantage of this opportunity and understands the value of advanced training such as UPRT to improve their flying skills and make them safer pilots. These pilots are highly motivated and invest the time and resources to fly their aircraft to Mojave and take the Flight Research UPRT course, the training provider says.

By far the greatest part of this, according to my CJP classmate, was the “bring your own jet” option. He was able to fly the initial training sortie in his Citation CJ3 with a Flight Research International instructor. In this case, the initial Sabreliner “heavy jet UPRT” sortie was replaced by a flight in his Citation.

Just like the Sabreliner, these flights are flown within the certified flight envelope of the aircraft. Maneuvers include energy

management, g-unload calibration demonstrations, aerodynamic stalls, and in-flight upsets. CJP members continuing with the Jet UPRT course finish their flying in the Impala.

“Flight Research International goes beyond the Jet UPRT program and offers a vast catalog of UPRT courses that include training in helicopters, turboprops, and general aviation aircraft,” DiCesare said. “All of this is possible due to the relationship with the National Test Pilot School.”

Combined, more than 30 aircraft models can be used for UPRT training. A core principle of Flight Research is to train a student on an aircraft that has a control feeling and loading similar to the aircraft the pilot routinely flies; a business jet pilot would fly the Sabreliner, whereas a turboprop pilot would fly a King Air.

“...simulators simply can't take you to the edge of the envelope or fully replicate the emotions of the actual experience.”

For graduates of the Jet UPRT course, there is a new high-performance course available where students experience supersonic flight. DiCesare believes this is a unique opportunity for Flight Research because the training provider has instructors capable of teaching the principles of suborbital flight, an aircraft—a Northrop T-38—capable of supersonic flight, and access to special-use airspace that allows for flight at high speeds and altitudes.

### ACADEMICS

Training at Flight Research begins at 7 a.m. each day. This serves two purposes: to beat the desert heat and to fit in a full day of academics, briefings, and flying. The first day begins with a meet-and-greet where students meet the instructors and other support personnel that they'll be working with during their visit to Flight Research in Mojave.

Before flying, students spend five hours in the classroom learning about aerodynamics and limits; the effects of propulsion, stability, energy management, and lift vector control; and basic maneuvering and upset recovery techniques. On each subsequent day, students spend additional time in the classroom and discuss human and aeromedical factors, the impact of environmental and mechanical issues, and a review of accident case studies.

These academic segments were taught by Michael “Slash” Young, a flight test engineer and pilot, who boiled down some heady engineering topics into plain English that each student could understand. Part 25 certification standards were explained in detail, as well as some relevant topics throughout the maneuvering envelope of an aircraft.

The practical takeaways for a pilot are to fly within the certified flight envelope and to avoid flight at either extreme, both low and high speeds. The goal at Flight Research is to fly within the normal flight envelope and provide the tools to return to the normal flight envelope if it is exceeded.

Students graduating from a Flight Research International UPRT course will be well-versed in two acronyms: RCA and UTAP—the two phases of an upset recovery. Follow-on flights will provide the repetition to reinforce each step.

RCA is the first step to recognize (the stall or upset), confirm (using backup indications), and manage automation (disengaging/disconnecting any automation). UTAP is Flight Research's “universal recovery” strategy to unload (reduce angle of attack), throttle (as needed), aileron (bank control), and pitch (to re-establish level flight).

### FLIGHT TRAINING

Flight training at Flight Research is well-structured and professional. Each flight has a “test card” containing a list of maneuvers to be flown. Before each flight, there is a preflight briefing and an aircraft/





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cockpit familiarization that covers both normal and emergency operations. This provides ample time at “groundspeed zero” for the student and instructor to discuss the upcoming flight.

Before the Impala flight, each student is fitted with a flight suit, helmet, and oxygen mask by a dedicated support person. Additionally, there is an extensive briefing on the Martin-Baker ejection seat that includes a discussion on “counting six pins” (the number of pins required to be removed to arm the seat), the steps to take during an actual ejection, egress on the ground, and contingencies if the parachute doesn’t deploy or the seat fails to separate from the pilot.

The ejection seat is considered a vital piece of safety equipment that is maintained to exact standards by Flight Research personnel. Instructors continue this training until the student is confident and comfortable sitting on a pyrotechnic charge; although different, once you are airborne, it’s like any other piece of safety equipment. You forget about it until it is needed.

Flight in the Sabreliner followed the test card titled “Heavy Jet UPRT.” During this flight, we would fly several energy management and g-unload exercises as well as a few stalls and upsets. The aircraft was a Sabreliner 65 powered by two Honeywell TFE731-3R turbofan engines rated at

3,880 pounds of thrust. The Sabreliner is a nice flying aircraft—it’s well balanced in pitch and roll—and flying stalls and upsets seated side-by-side in business attire is as real as it will get for a corporate pilot.

My instructor was Eric “Smurph” Brye, a U.S. Marine Corps pilot who flies Northrop F-5N Tiger II aircraft as an “aggressor” to other Marine aviators. A former Boeing F/A-18 Super Hornet pilot, Brye has been teaching UPRT at Flight Research for several years.

Once airborne, “Smurph” guided me through a series of low-speed energy management exercises that included frontside and backside of the “power curve” demonstrations and slow flight. Next was a series of unload calibration exercises to demonstrate what the proper unload step of the upset recovery should feel like. This cannot be demonstrated in the simulator.

Remember, the first step of any upset recovery is to properly unload the aircraft to roughly +0.50 gs. This is critical to reduce the angle of attack (reattach airflow to the wing) for stall recovery and prevention, and it improves the roll authority and responsiveness.

Following these exercises, we’d fly the Sabreliner through a series of stalls to include recoveries using the “old pilot test standards” method of using power to accelerate with minimal altitude loss to the

new standard of unloading the aircraft to fly away more quickly while losing a small amount of altitude. All stalls were flown to an aerodynamic buffet, not to the stall warning device. Afterward, several upsets were flown, including a roll, nose high, and nose low upset visually and under simulated instrument conditions (with and without the autopilot on).

## IMPALA FLIGHTS

Flights in the Impala would follow two different test cards: jet advanced handling and jet advanced upset. The Impala is a tandem-seat jet trainer that entered service in the early 1960s; this was an era when air forces wanted a single trainer for elementary through advanced training. Powered by a single Rolls-Royce Viper turbojet (3,400-pound thrust class), the Impala is capable of speeds up to 450 knots (Mach .8).

The aircraft incorporates many simple structures and systems that make it a cost-effective trainer. More than 800 examples were built and used around the world as trainers and light attack aircraft. Flight Research and the NTPS are the largest civilian operators of the Impala.

My first Impala flight, on the second day of my visit, was with Flight Research International’s chief pilot Bill “Billy O” Oefelein, a former Shuttle Discovery pilot with 309 hours logged in space. Oefelein is also a former Navy F/A-18 Hornet pilot



PHOTOS: STUART LAU

Author Kipp Lau’s first flight explored the edges of the flight envelope in the Sabreliner with instructor Eric “Smurph” Brye (far left), a Marine Corps pilot. This was followed by the first flight in the single-engine Impala with Flight Research chief pilot Bill “Billy O” Oefelein (left), then a final Impala flight with Smurph.





The final flight in the Impala covered a long list of upset events and used the Flight Research training strategy to recover.

and a graduate of the U.S. Naval Test Pilot School and Top Gun, the U.S. Navy Fighter Weapons School.

Once in the practice area with “Billy O,” we would begin with a “g-warm” exercise at 12,000 feet MSL. G-warm is a maneuver to load up the body of the student and the instructor. This ensures that both are ready for the next maneuvers. A bit hesitant at first, I was able to eventually reach +4.0 gs, and on the next flight, I was much more comfortable yanking and banking the Impala into a +4.0 g turn.

Next up was a stall series that included an aerodynamic stall straight ahead at 1 g and accelerated (banking) stalls at 2 gs. Following the stall series, the Impala would become an in-flight lab to demonstrate much of what we discussed in the classroom.

This included performance-related maneuvers such as banking for pitch control and overbanking/spiral demonstrations. Lift vector control and energy management exercises were flown using aerobatic maneuvers such as rolls, loops, and a split-S.

Finally, “Billy O” would demonstrate a couple of advanced maneuvers including a spin and a tailslide. I’d never experienced a tailslide in any aircraft, let alone a jet. During this maneuver, Oefelein would begin at 18,000 feet and 200 kias. Next,

he’d pull the aircraft into a vertical climb where the airspeed would bleed off to the point the aircraft’s nose would “flop” through the horizon, where we’d recover using the UTAP strategy.

On the third and final day of the course, I met up again with “Smurph” to fly the Jet Advanced Upset sortie in the Impala. “Smurph’s” low-key demeanor allowed me to have a lot of fun with the Impala. This flight was an absolute blast.

Before the flight, we spent a considerable amount of time gaining familiarity with the front cockpit of the Impala, since on this flight, I’d start the engines, take off and land the aircraft, and go through the motions to shut down and secure the aircraft afterward. Likewise, we pre-briefed each maneuver on the test card.

This is the flight where everything comes together for the student. Here is the gauge, regardless of the upset: if the student employs the RCA and UTAP strategy to recover, they will be successful.

Following the g-warm exercise, we would climb up to 15,000 feet msl where “Smurph” maneuvered the aircraft into position for a long list of upset events. First were the roll upsets, both static and dynamic. The static roll upset was easy; we entered with a bank greater than 90 degrees and recovered quickly using the UTAP strategy.

Next was a dynamic roll upset (continuously rolling) that simulated a wake turbulence encounter. Again, using UTAP we recovered, only this time I would roll through the maneuver. Following the roll upsets, the instructor set me up for a series of six unusual attitude upsets in various combinations of nose high, nose low, inverted, and upright at both low and high airspeeds. In every instance, the training and UTAP strategy paid off, and a quick and precise recovery was completed.

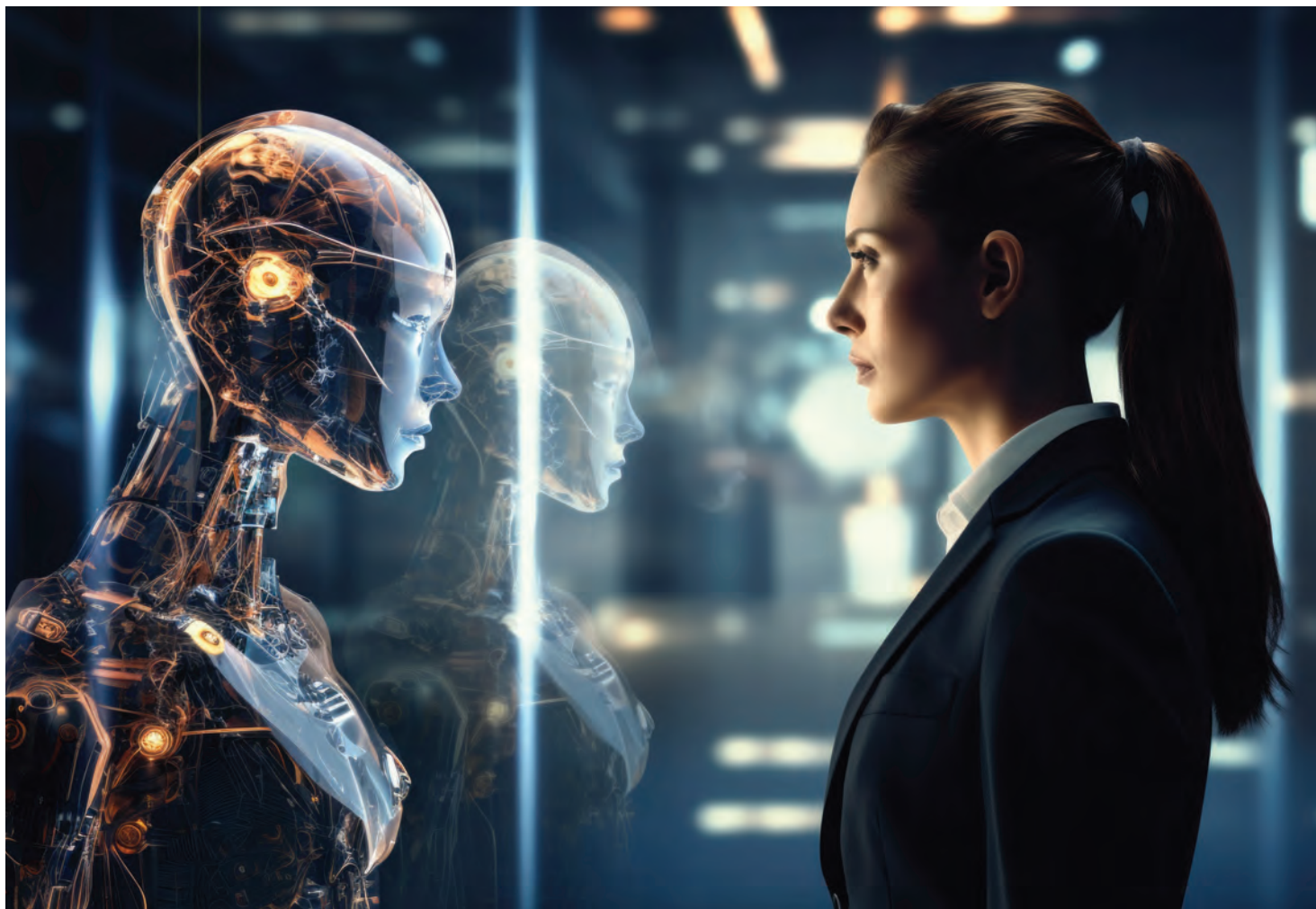
After completing a couple more advanced maneuvers including cross-controlled stalls, we returned to base to fly a simulated engine out approach to a go-around and recover to a normal landing. The Impala with trailing-link landing gear helped smooth my landing.

Beyond the academics, briefings, and flying, there is a lot to be learned from the many organic conversations that take place during breaks, over dinner, while randomly walking out to the flight line, or while passing in a hallway. For three days, the students and instructors are completely focused on one thing: upset prevention and recovery training. Without a doubt, the training at Flight Research is helpful, and any student leaving Mojave will be a much safer and smarter pilot with the skills and confidence to effectively handle an inadvertent upset encounter in flight. ■



# The AI dive into aviation

BY KERRY LYNCH



Artificial intelligence is becoming more prevalent for many uses in the aviation industry.

When ChatGPT emerged on the scene in late 2022, it put artificial intelligence, or AI, “in the zeitgeist.” While still in its infancy in the aviation industry, AI is now at the forefront of many people’s minds, said Rob Mather, v-p of aerospace and defense industries at software intelligence corporation IFS.

Less is known about what AI is and what it can do, but many agree it has the power to revolutionize how the industry does business.

“This is potentially the biggest technology transformation that we’ve ever seen,

bigger than the computer itself,” said Greg Jarrett, CEO of aviation business operations systems provider Stack.aero.

While some discussion has centered on aircraft applications, AI’s potential runs the gamut for the industry with a range of possibilities on the ground from operating software, supply chain management, manufacturing efficiencies, and safety-enhancing technologies to charter management, human resources management, and maintenance diagnostics, among many others.

However, similar to the mantra for the

evolution of electric vehicles, AI must take a crawl, walk, run approach—even though it is evolving so quickly that companies can barely keep up. This is because it must be proven secure and accurate and—for now—it requires a human interface before its full potential can be unleashed.

AI is not new, said Mather, whose company is a \$1 billion firm that provides cloud-based enterprise software for companies globally across industries, including aerospace and defense. Companies have used and still use early forms and



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“It’s wonderful that organizations like the Corporate Angel Network are able to help connect those most in need of flights to those who are flying.”

*-Henry Maier, President and CEO, FedEx Ground*



predecessors. And more broad-based applications, such as Siri or Alexa, have their foundations in AI, consultancy McKinsey & Company pointed out.

Stepping into AI was a natural shift for IFS, which has focused on software solutions for decades. “We’re a legacy system,” Mather said. But now, “From IFS’ view, the future is all about AI,” he said, adding that his company is developing AI capabilities that build on the company’s core software offerings but also is looking to acquire other specialists in the field to expand its breadth of capabilities.

## WHAT IS AI?

According to McKinsey: “AI is a machine’s ability to perform the cognitive functions we associate with human minds, such as perceiving, reasoning, learning, interacting with an environment, problem-solving, and even exercising creativity.”

For Mather, AI transcends from a typical algorithm to the point when the software is essentially capable of learning “so that it can adapt and change without having to recode it.”

Typically, coders must input the information and the potential outcomes. This meant developers had to continuously build out scenarios to expand outcomes. But with AI, instead of coding the expected outcomes, the technology can bring the outcomes to the user based on available information.

“That’s the fundamental difference in technology up until today,” Jarrett said. “You would typically know the exact outcome that you are looking for and the objective would be for the system to achieve that outcome. AI is flipping that around.”

Mather added: “With artificial intelligence, you want to get to a point where we set up the structure and then it says, ‘Oh, I know what should happen here.’ It should do this without you having to code it up



**ROB MATHER**

V-P OF AEROSPACE AND DEFENSE INDUSTRIES AT SOFTWARE INTELLIGENCE CORPORATION IFS

“ I meet organizations that are all-in on AI and similar types of organizations that are really fear-based relative to AI..We're starting to get to a place where those solutions are much more available. ”

front and foreseeing every possible scenario that you could ever come across.”

Keeping up with the scenarios upfront “takes ages and it takes a large investment, which means cost,” Mather continued. “If you set up a structure where something can figure out the new cases, you aren’t absorbing all of that upfront labor to develop this incredibly complex algorithm. At that point, you shifted the burden...and companies could do a lot of these things that they hadn’t before.”

He added that this “levels the playing field” for organizations that didn’t have the resources to invest in costly management software systems. “It’s almost like AI has the potential for a democratization of capabilities.”

## AI IN AVIATION

AI is not widely adopted yet in aviation—at least on a large scale—although many companies are exploring options or discussing it. “It’s interesting,” remarked Mather. “I meet organizations that are all in on AI and similar types of organizations that are really fear-based relative to AI.”

IFS has started to bring AI to large defense companies, airlines, MROs, and even some of the largest business aviation operations, such as NetJets.

Joe Sambiasi, director of maintenance and airworthiness for the General Aviation Manufacturers Association (GAMA), said most of the membership has not yet indicated their use of it on any scale, although there are discussions around it. And he does see potential applications for organizations such as the FAA.

Jarrett’s company, meanwhile, is beta testing AI applications and working behind the scenes with one potential client, but he said it may be 2025 before Stack.aero is ready to roll it out.

Aviation expense management platform MySky has launched AI-based programs and claims that customers are losing thousands by not using such a technology.

On the FBO front, Signature Aviation sees substantial possibilities: “Signature has long employed traditional machine learning techniques and is excited about the possibilities of artificial intelligence going forward,” the company stated.

And while it is still conceptual for many companies, Mather believes that this is going to change, and likely rapidly. For a long time, he explained, organizations using AI needed to build out the structure or spend “a whole bunch of time training a learning model...or investing time in sorting and labeling your data to have it consumed by artificial intelligence in an effective manner,” he said. “There have been solutions in place around this for a long time,

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but they've been usually bespoke and pretty expensive.”

But AI is changing, he said. “We’re starting to get to a place where those solutions are much more available and much more cost-effective.”

### THE APPLICATIONS

IFS is developing AI on multiple fronts, and Mather sees possibilities on many more. The key is AI’s potential to manage big data. Over the past decade or so, aviation companies have embarked on amassing large quantities of data, from health monitoring and flight operations to charter management and client databases. That doesn’t get into the vast amounts of data at the regulatory agencies.

“There were big data activities, but you can only get so far and you had to be able to hire data scientists, which are

scarce resources and cost a lot,” he said.

AI can help figure out the salient data that bring efficiencies, safety of flight, and lower costs, he said. As an example, he pointed to maintenance diagnostics such as anomaly detection. In traditional models, a programmer would input what sensors should read and what faults they should find. Then the programmer would input what the faults may mean. This may be time-consuming and require extensive research once the sensors find those faults. With AI, “you can take a live sensor feed and it can tell you when something is off right away instead of having to go into the data analytics after the fact,” Mather said.

Building on that, he added, is something called “unsupervised learning models,” (which he called a terrible name because “letting AI be unsupervised is a concept that is super scary to me”).

But what “unsupervised” actually means in the context of a learning model, Mather added, is that a person doesn’t need to tell the AI what it is looking at. “Basically, you plug the AI in, and it figures itself out. That works really well in the domain of anomaly detection because previously you would have to take all these sensor feeds and say, ‘Okay, this data means this.’”

Now, AI interacts based on what “normal” looks like and determines whether something is normal. “You are able to do that in real time.”

AI, he further said, has “almost untapped potential in predictive maintenance.” Again, predictive maintenance has been around for some time, he noted, but “has been slow to penetrate broadly within the industry.” A few big players have led the charge—those that can afford it.



“AI dramatically lowers the barrier to entry to being able to utilize predictive maintenance,” Mather said. “You can not only just do diagnostics, but you can then do the predictions on what’s going to happen in the future. So not just what’s wrong right now, but, ‘Now I’m trending in the wrong direction. That means something is going to happen down the road. I’ve seen this pattern before.’”

Along that vein, he continued, is flight operations patterns, with the ability to provide insight on aircraft and even pilot performance, although he cautioned that the latter comes with privacy concerns. But it can also have sustainable applications providing insight on reducing an aircraft’s carbon footprint—“Is it better to go over than to go around? Will we save X amount of fuel by doing that?”

Also, Mather added, it has safety applications such as the potential for providing real-time information on dealing with storm reports and the most efficient way to handle it.

Then there is “a whole other conversation” on how it can be used to improve manufacturing processes and the supply chain. From the start, manufacturers can find the bottlenecks and manage them.

AI can help optimize the positioning of inventory to make sure a manufacturer or an airline can meet demands without incurring delays or spending substantial money on an emergency AOG procurement, he said. It further can point to how much inventory an organization should have on hand.

Further, it can be used on the procurement side, including vendor evaluation. “Just like you’re performing real-time evaluation on sensor feeds, you can do real-time performance evaluation on vendors,” he added.

Jarrett also believes that predictive maintenance holds one of the biggest potentials for AI. For Stack.aero, though, he is exploring possibilities surrounding how it can leverage its business operations

platforms to build on customer communications and relations.

Stack has been involved in an AI pilot with one of its clients. “We’re seeing AI just help to develop the customer relationship,” he said. “It’s helping us to generate the content for those conversations, and it’s making the customer feel appreciated rather than as just another client who’s paying money. You can have a genuine authentic conversation with a customer.”



GREG JARRETT  
CEO STACK.AERO

“ AI can very easily look at unstructured data and turn it into something that appears valuable. Machine learning has to have structured data, and you have to tell it what the outcome is that you’re looking to achieve. ”

It could be about a company’s operational patterns, he agreed, but more than that, “it’s also about the things that the company is doing. General things that are public information.”

For instance, AI can give insight when a company is going through the process

of change. As a hypothetical, he said a big enterprise, such as Coca-Cola, may be recruiting for certain roles. AI can look at that recruitment and find ads on the internet. If the client is involved with Coca-Cola or part of it, that may lead to conversations on how that may affect them.

More specific to aviation, it can look up trip histories involving destinations, ranges of aircraft, and occupancies, and predict travel in the future based on those patterns.

“We can start a conversation about ‘We think you’re going to be flying this way in over the next 12 months. What do you think about that?’” Jarrett said, reiterating, “Predictive analytics is something it’s very good at.”

And while it may be used for flight optimization, Jarrett believes that predictive analysis is where its best advantage is. “I think machine learning has a much greater potential for optimization, and AI is much more about analysis of text and unstructured data,” he said. “AI can very easily look at unstructured data and turn it into something that appears valuable. Machine learning has to have structured data, and you have to tell it what the outcome is that you’re looking to achieve.”

Signature Aviation also sees opportunities on the customer front. “Like most companies, we believe technology can improve the customer experience, and generative AI presents many innovative possibilities,” the company said. “From better understanding our customers’ needs to designing better solutions to meet those needs, there is extraordinary potential for how we can leverage AI.”

Sambiase, meanwhile, points to the potential at regulatory agencies, citing service difficulty reports as an example. “These were always issued via paper or email. It’s really hard to pull a trend off of all this data in an efficient way,” he said. With AI, “you can do this within 30 seconds.”

Explaining the trend analysis further, he pointed to a tire issue that surfaced at an



operator he worked at involving retreads. Most of the retreads were fine, but in some cases, the adhesive would come apart. After an examination of the history, he realized that the adhesives encountered problems when it was hot and the tires did not have the proper pressure. This took some time to trace, he said. “AI could have done that within 30 seconds.”

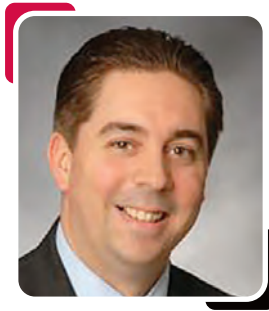
MySky, meanwhile, said its AI-powered approach eliminates costly, labor-intensive processes by pulling together back-office operations that are typically run separately, such as accounting, reporting, procurement, and business intelligence. Based on workforce and other costs, MySky suggests that charter operators could be losing up to \$4,000 per month per aircraft by using the traditional, disparate management approaches.

### NAVIGATING THROUGH THE CONCERNS

However, while the technologies are maturing, the risks involved still concern companies. Jarrett said privacy issues are a primary reason why it would be 2025 before Stack.aero is ready to roll AI out.

“We’re very much in an experimental phase. We are running experiments as the AI ecosystem evolves because it’s moving so quickly,” he said. “We need to make sure that the outcomes we deliver to our customers are beneficial to them.”

Stack is getting a lot of questions about AI, he said. However, it’s not whether the company can implement it but when it can safely implement it. “The biggest concern among them is how these companies keep their data private in all of these AI engines,” he said. “It’s not about, ‘Hey, we want it now. Everyone’s doing this.’ People are much more cautious. They’re very protective of their customers’ information.”



**JOE SAMBIASE**  
DIRECTOR OF MAINTENANCE AND  
AIRWORTHINESS FOR THE GENERAL AVIATION  
MANUFACTURERS ASSOCIATION (GAMA)

GAMA’s Sambiasi also cited a need to be able to build strong cybersecurity protections and ensure the data assumptions are correct. “If we assume that AI is reusing and recycling information that already exists, AI could certainly produce an unintended result if somebody puts in incorrect data,” he said. “AI is just going to look at that data and assume that it’s correct and produce a result based on it.”

Mather added that in general, the aerospace industry is particularly cautious and “for good reason. It’s a very safety conscious [industry] and the costs of failure are way too high.” Aviation is on the leading edge of innovation, he said, but “in other ways, we lagged in a lot of cases around adoption. It’s an interesting mix, and I would say that it manifests here.”

He pointed to maintenance. “We look at the core of how that’s set up as an industry, the main tenet is based around the idea of a human being who is trained and certified taking an action and being responsible for that action,” Mather said. “AI applications that put that principle in danger, I don’t see having adoption in the near term. There’s lots of automation that could be done through AI that we shouldn’t do right now.”

Perhaps in the future, he continued, when models are better understood and

“ If we assume that AI is reusing and recycling information that already exists, AI could certainly produce an unintended result if somebody puts in incorrect data...”

have a history to back them up, AI can reach its full potential.

But for near-term adoption, Mather pointed to “low-hanging fruits” that can be used now—with human interface.

Big data analysis and predictive actions are among the areas that can be implemented near-term, he said. “You’re not changing the regulations. You’re not changing the maintenance program.” AI may identify the problem but the technician will validate and execute it.

The regulations and the human-machine interface are tightly intertwined, he added. The person “needs to be the one making the decisions.”

Further, there are ways to enhance the data for AI, he said. Mather pointed to the idea of retrieval augmentation generation that involves relying on a specific data repository rather than the large language models used by ChatGPT, for instance. “There are challenges around large language models, and training them is expensive. Keeping them up to date is expensive,” Mather said, adding that there needs to be a level of caution around them.

With a narrower, controlled data repository, AI retrieves information from a specific source of data. “It could be a pool of data like your own reliability data, performance data, or all of your manuals.”



Maintenance facilities will have many opportunities to put AI tools to work to improve safety and enhance efficiency.

### THE JOBS FEARS

While much discussion generally has focused on the possibility of AI replacing jobs, at least for the time being, most involved with it don't see that happening.

"For right now, we have to maintain the core tenet [of a person making the ultimate decisions]," he said. "There's lots of applications that work around the periphery that make the human being at the center of that more efficient as opposed to replacing them."

Again, pointing to maintenance, he noted, "Any organization that employs technicians can benefit from those technicians being more efficient." This is especially true as the maintenance field encounters a technician shortage, he added pointing to such ongoing concerns.

Jarrett agreed. Looking out 10, 20, or even 50 years, responsibility may shift from the human to the AI machine. But for now, "who takes legal responsibility for a decision?"

Further, he said, AI has the potential to enhance rather than detract from the workplace. "We see it just helping to relieve some redundancy and hopefully allow people to be happier in their work because they're doing more interesting work. They're doing the valuable work that humans do, while AI is doing the repeat administration work."

Further, Jarrett continued, "This conversation happens with every phase of technology—about some sort of new technology taking all my jobs. I don't see it taking away jobs. I see it changing the employment landscape and allowing people to feel more useful in the tasks they are doing at work."

### THE FUTURE

Despite the near-term reservations, Jarrett emphasized its transformative possibilities long term. "Attitudes will change as people learn more and people get more experience and more education with what's possible with AI," he said. "I think things will change rapidly. Attitudes are going to change rapidly over the next 12 months, three years, and 50 years."

Sambiase further noted that if the industry isn't heavily using it now, he expects it to become a staple going forward. "It offers us another opportunity to produce some measurable gains in safety. It's a new thing that we haven't used to help improve safety," he said. "That's always going to be the objective." ■



# Universal Avionics taps AI for second grand challenge

BY MATT THURBER

On October 9, Amanda Grizzard, director of professional services at Universal Avionics, oversaw the launch of the company's next Grand Challenge, which gives employees an opportunity to form teams to solve big problems and develop products for the Tucson, Arizona-based avionics manufacturer. This time, the Grand Challenge asks employee teams to determine whether generative artificial intelligence (AI, like ChatGPT) can lead to new products.

Grizzard participated in Universal's first Grand Challenge in 2019 and gladly accepted the role of leading Grand Challenge 2.0. "The company loved it [last time]," she recalled. "It was a lot of fun, even though [my team] didn't get too far."

The spur for the new challenge was Universal CEO Dror Yahav and his learning about the latest AI developments. "He wanted to know how we could use it," Grizzard said—" [employing] large-language models and seeing how easy it is for someone without skills to use generative AI to improve the company's operational efficiency and whether it can be incorporated in new products."

As it did with the first Grand Challenge, Universal opened 2.0 to all employees. Those interested form teams and develop ideas for putting AI to work. This event is different from the first challenge, which involved a hardware solution for improving flight management system (FMS) interfaces. In 2.0, the teams don't have

to develop hardware-based products but do have more free rein to explore AI-based solutions.

The plan was that after the launch, teams come up with ideas and then submit those for initial approval for access to data needed for the AI application. On November 13, the proposal phase kicked off, and teams had two weeks to finalize their submissions.

Judges have evaluated and selected those that are moved on to the next phase, developing applications, which began on December 11. All applications had to be ready for submission by January 15, when judges decided which teams advanced. Finalists will demonstrate their products from February 6 to 8, and then Universal will announce the winner.



Artificial intelligence tools offer new opportunities for Universal Avionics employees.



The last Grand Challenge generated about a dozen proposals. This time, Yahav expected 10 to 15.

“For the first one, employees were really engaged,” Grizzard said, “and they came up with great ideas. This time, we’re going for scalable applications and long-term opportunities. And we could have multiple solutions.”

The proposals will have to consider data security since they will rely on internal company resources. To avoid connections to the outside cyber world, participants will be given access to a secure internal network with all the information they need as well as internal AI trained only on the Universal information.

Participants will be given access to a guide that answers all their questions, provides links to resources, and gives areas of focus to consider for their solutions, such as using AI for developing training materials, technical publications, chatbot services, and repair and maintenance processes. “We pulled together research papers from the FAA, EASA, and universities,” Grizzard said, “and put them in a central location so they can look around and see what are the pain points and how they can solve them using AI.”

A guideline suggestion, for example, is to develop an AI-based system that captures the knowledge of Universal’s 42 years of FMS development. The company still gets calls for support for older units, but the people who

“ We start with a base model we believe in, and we influence that model. And we always have a human oversight aspect, making sure it’s doing things correctly, it’s ethical, and checking those boxes. ”

— Amanda Grizzard

Director of professional services at Universal Avionics

designed, built, and supported those FMSs are no longer around. “One guideline is to be able to train a neural network language model-based system to remember everything we’ve done,” said Yahav. “We have material for a company that has a lot of legacy products, but they’re somewhere [not easily accessible]. If we teach a system, we can present this knowledge.”

Once the winning solution or multiple solutions are chosen, they will be implemented, but all with an eye toward cybersecurity and protecting intellectual property (IP) ownership. This could be an issue because generative AI systems capture information from a variety of sources, often without permission. This addresses, for example, whether a writer who answers a question in a training module owns the IP for that

response and how that response can be used in an AI framework.

“One benefit of when we identify how we want to use that information and having a locally hosted AI server [is that] we can influence the training,” Grizzard said. “We start with a base model we believe in, and we influence that model. And we always have a human oversight aspect, making sure it’s doing things correctly, it’s ethical, and checking those boxes.”

“What people are doing with ChatGPT is amazing,” Yahav concluded, but there are cases where generative AI “starts to make up stories, all kinds of bizarre stuff.” The solution is to take advantage of the technology but support the results with references from where the AI model was trained. It can provide a link to why it came up with the answer, and human users can dig further to validate the information.

As the users gain more trust in a well-designed AI system, they won’t need to conduct as much background checking. As Yahav explained, it’s like hiring a new quality control inspector from a competing company. “Initially, you review their work carefully. The more you gain confidence, the less you check. In the end, the ultimate responsibility is on the manager. With AI, initially, we’ll double-check and after a while, check critical items, but the manager will always be responsible.” ■



# Jet Commander: the unwanted bizjet that made good

BY DAVID DONALD

Born in the U.S. during the early business jet rush, the Jet Commander fell victim to American corporate laws but found a ready home in Israel, where the design flourished. Its derivatives later made a triumphant return to U.S. ownership, forming the basis of the smaller aircraft in Gulfstream's prestigious range.

In the late 1940s, aeronautical engineer Ted Smith schemed a light piston twin aimed at the private and business aviation markets. The Model 520 bore a resemblance to the Douglas A-26 Invader bomber, upon which Smith had worked during World War II, but was smaller and sleeker. Its flat-six engines were also far more efficient—and cleaner—than the Invader's radials.

The Model 520 first flew in April 1948, and Smith formed a company—Aero Design and Engineering, later Aero

Commander—in Bethany, Ohio, to build the aircraft. It was a considerable success in a sector largely dominated by wartime-surplus bombers, transports, and trainers. Smith later left the company, resurfacing with the Aerostar in the 1970s, renowned for years as the world's fastest piston-engine private aircraft.

In the meantime, the Model 520 was developed further into versions—collectively known as “Twin Commanders”—with more power, extended wings, stretched fuselage, and pressurized cabin. The ultimate was the Model 680FL Grand Commander. However, the sleek twins were increasingly facing cheaper competition. The introduction in the mid-1960s of the hugely successful Beech King Air with its PT6A turboprop engines was a landmark moment, not only for Aero Commander but also for the sector as a whole.

Aero Commander clearly needed to respond if it wanted to stay in the market, but it was not until 1967 that the TPE331-powered Turbo Commander appeared. It made some dents in the turboprop twin market, and by 1986 when production ended, just over 950 had been built.

## JET COMMANDER

However, and possibly contributing to the tardiness in introducing a turboprop aircraft, Aero Commander had much earlier taken the bold step to develop a jet-powered derivative of its Twin Commander.

The starting point was a fuselage similar to that of the Model 680FL, albeit with smaller cabin windows to permit higher pressurization for flight at higher altitudes. Shorter and dihedral-less mid-set straight wings replaced the Twin's high-set surfaces, and a pair of General Electric CJ610



The 1124B Westwind II delivered excellent performance at a reasonable price and low operating costs.

turbojets was mounted on the rear fuselage sides. The prototype of the Model 1121 Jet Commander first took to the air on Jan. 27, 1963.

Initial testing led to a 2-foot 6-inch fuselage stretch and increases in payload and mtow. Certification was awarded on Nov. 4, 1964, and deliveries got underway early in 1965, with production reaching eight per month.

Costing around \$500,000, the Jet Commander was popular with its pilots, who praised its good handling qualities. Passengers approved of the interior, and in particular, the excellent view afforded from all seats, a byproduct of the design in which the whole of the unobstructed cabin was forward of the wing.

On the power of its two 2,850-pound thrust CJ610-1 engines, the Model 1121 had a ceiling of 40,000 feet. After 118 production aircraft, the Model 1121A was introduced with slightly increased fuel capacity, new wheels and brakes, and a rise in ceiling to 41,000 feet. Typical high-speed cruise was 425 knots, with a maximum speed of 455 knots, and the range was around 1,600 nm. Only 11 were built.

The final Aero Commander model, the 1121B, accounted for a further 19 aircraft, fitted with 2,950-pound thrust CJ610-5S and thrust reverse offered as an option. A number of early aircraft were subsequently modified to the unofficial "1121C" standard with increased mtow.

Despite having taken an aggressive gamble at an early stage, the Jet Commander had been beaten to market by the Lockheed JetStar, North American Sabreliner, de Havilland DH.125 from the UK, and the French Morane-Saulnier Paris Jet. The game-changing Lear Jet was soon to join the fray. Without significant investment to drive continued development, Aero Commander could not afford to remain successful in the sector.

A solution came in the form of the Rockwell-Standard company, a long-standing industrial parts, machinery, and tools



Golfer Arnold Palmer was an early adopter of business aviation, here with his first jet, the 1121 Commander.

producer. In 1965, Ted Smith's aircraft company became the Aero Commander Division of Rockwell. While this solved the immediate problem of securing investment, it soon created a major problem for the Model 1121 itself, one which was not of its making.

Spurred by its acquisition of Aero Commander, Rockwell became more interested in aviation, and by 1967 it was making a move on North American Aviation, one of the industry's giants. However, a merger between the two companies raised a major problem: North American Aviation already built a business jet, the Sabreliner, and U.S. antitrust laws forbade North American Rockwell from marketing both it and the Jet Commander. One of the aircraft had to go.

Despite the many advantages of the Jet Commander, it was the unlucky type selected for disposal. The principal argument was that North American had supplied Sabreliners to the U.S. Air Force (as the T-39) and not only wanted to keep further contract work and ongoing support/spare parts business but also did not want to upset its primary customer. The loss of the Jet Commander business would be very small fry compared with potentially losing a major military aircraft deal.

## IAI DEVELOPMENTS

As a result, while the Turbo Commander business continued under Rockwell's stewardship, the Jet Commander was put up for sale with a degree of reluctance and

regret. It was not long before a buyer was found: the government-owned Israel Aircraft Industries, which had been formed to create an aviation industry in the young nation. The entire Model 1121 program was acquired, including all tooling and parts and 49 incomplete aircraft.

Production restarted in Israel in 1969, with the aircraft renamed the 1121 Commodore Jet. IAI flew a pair of improved Model 1122 aircraft, but they were completed as the Model 1123.

This six- to eight-seat variant, named Westwind, first flew on Dec. 8, 1971. It had a 20-inch fuselage stretch, 3,100-pound CJ610-9 engines, and a Microturbo Saphir III APU.

The Westwind also featured tip tanks for increased range and an optional auxiliary tank in the baggage compartment. The wings had leading-edge slats and double-slotted trailing-edge flaps, and the tailplane was of greater span.

After 36 had been built, the Model 1124 Westwind was introduced with 3,700-pound Garrett AiResearch TFE731 turbofans, which increased range by 10 percent and reduced field length requirements. A ventral fin was added for greater longitudinal stability.

Westwinds proved popular in the marketplace, and a few remain in service today. The original Westwind I was superseded by the 1124B Westwind II with an improved wing and small upright fins added to the tip tanks for greater high-altitude



efficiency. Maximum operating Mach number was raised to Mach 0.785 from the 0.765 of the earlier Jet Commander models.

Only a handful of Jet Commanders and Westwinds served with the military, and then mostly as staff transports. The notable exception was the IAI 1124N SeaScan, which was initially developed by IAI for a U.S. Coast Guard requirement eventually fulfilled by the Dassault Falcon 20G (HU-25). The 1124N had a bulbous nose housing the antenna of a Litton APS-504 search radar and could be fitted with stores pylons on the lower fuselage sides.

The Israeli Air Force bought three, as did the Australian customs agency, albeit without the stores pylons. One jet was used by IAI for radar trials, with a MiG-21 nose grafted onto the front end.

Production of the Westwind ended in 1987, after around 290 had been built. They followed on from the 150 Jet Commanders.

## RETURNING “HOME”

In the late 1970s, IAI was working on a successor to the Westwind, the six- to nine-seat 1125 Astra. Although the Jet Commander/Westwind lineage was very apparent, the 1125 retained little of the earlier design—principally in the tail fin area. The most obvious difference was the new wing, which was swept and low-set. The fuselage was based on that of the Westwind but was slightly wider and two feet longer. A nose that was 20 inches longer was added to accommodate more avionics. Garrett power was retained but in 3,700-pound TFE731-3A-200G form.

First flight for the Astra occurred on March 19, 1984, and production of the initial variant reached 32. Following were 37 Astra SPs with updated avionics, refined aerodynamics, and increased mtow. In 1994, the Astra SPX took to the air, the main change being the adoption of TFE731-40R-200G engines (rebranded under the Honeywell name in 1999) and winglets.



The G150 was an improved version of the G100/Astra SPX, the first new model introduced after Gulfstream parent General Dynamics purchased Galaxy Aerospace from IAI in 2001.

In the late 1980s, IAI began development of an altogether more ambitious project in the form of the Model 1126, initially known as the Astra IV or Astra Galaxy, but later using just the Galaxy name. An initial partnership with Yakovlev—under which the Russian company was to design and build the forward fuselage and empennage—foundered in 1995, two years after the program had been publicly announced. IAI subsequently entered into a similar agreement with EADS Sogerma in France, but that also came to nothing.

Employing a modified Astra SPX wing as its basis, the Galaxy introduced a wider cabin with three-abreast seating for eight to 10 passengers (or up to 18 in a high-density arrangement), Pratt & Whitney Canada PW306 engines, and Collins Pro Line 4 avionics with a five-screen cockpit. It first flew on Dec. 25, 1997, and received U.S. and Israeli certification a year later.

By 1997, however, the Galaxy program was in deep trouble as the Israeli government refused to bail out IAI unless a foreign partner was found. As a result, IAI teamed with the Hyatt in Texas to form Galaxy Aerospace. IAI would build the aircraft with completions undertaken in Texas.

In 2001, Galaxy Aerospace was bought

by General Dynamics, and the Astra SPX and Galaxy joined the stable of GD subsidiary Gulfstream, becoming the G100 and G200, respectively, in 2002. The same year, after a total of 77 Astra SPX/G100s had been built, Gulfstream announced the G150 follow-on. It had a wider and longer fuselage and a reprofiled nose. Sales were not strong, and the G150 was discontinued in 2017 after 120 had been built.

Gulfstream built 250 G200s until production ended in 2011 to make way for its successor. Originally known as the G250, the designation was changed to G280 to avoid any unfortunate connotations in the Chinese market. Essentially a G200 with a 34 percent larger wing, Honeywell HTF7250G engines, and reworked interior, the G280 made its first flight on Dec. 11, 2009.

It remains in production as the smallest of Gulfstream’s high-end business jet offerings. Over the years, through numerous corporate ownership changes and design improvements, the grandchild of the original Jet Commander now shares the looks and opulence of its larger stablemates and is clearly very much a “Gulfstream” product. Deep down, however, the genes of one of the business jet market’s now-forgotten pioneers live on. ■

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# After a long delay, Asia-Pacific is heading for a turnaround

BY JENNIFER MESZAROS



Universal Weather and Aviation is seeing an uptick in interest in long-range business jet ownership in the Asia-Pacific region.

## @ Singapore Airshow 2024

Aligned with the heightened expectations for the 2024 Singapore Airshow, Universal Weather and Aviation's ground-handling arm Universal Aviation is witnessing a growing interest in Asia-Pacific for long-range business jets, with operators there expressing a strong inclination to own more than one aircraft.

Despite this, the economic outlook will temper the purchasing power, with many looking for a good deal, Universal regional director for Asia-Pacific Yvonne Chan told *AIN*.

"Owners and operators from the regions will be looking at the newer business jets with longer range that will be on display [at the airshow]," Chan said. "We should expect to

see quite a number of closed deals as a result."

The airshow comes as the region is rebounding from a prolonged pandemic-related downturn. In its most recent quarterly update on the moods and intentions of the business aviation market, Asian Sky Group (ASG) found that optimism rebounded by between 10 percent and 20 percent in various parts of Asia-Pacific in the second half of 2023.

In the Asian Sky Quarterly report for the third quarter, ASG owner and director Jeffrey Lowe painted a grim picture in the region for the first half of 2023, with 27 percent of surveyed people feeling the economic situation would only get worse—a 14-point surge from 2022.

"When you don't have a great outlook for the future, you generally don't go out and buy

a corporate jet," he said. Further in the period, the number of operators reporting reduced flying jumped from 10 percent to 26 percent. "That big explosion in business jet flying that many other regions of the world experienced didn't seem to be happening yet in Asia, at least through the first six months of 2023."

But momentum in the travel and retail sectors and the general economic improvement contributed to a bounce in optimism, rising from 73 percent to 77 percent generally throughout the region. Southeast and Northeast Asia were the only subregions to experience a decline in optimism, from 83 percent to 72 percent.

## SOUTHEAST ASIA RISES

ASG noted that an increasing number of businesses relocated to Southeast Asia,

making this subregion more vulnerable to soft demand for manufactured products, adverse weather, and reduced agricultural harvests. Even so, Singapore led the region in flight activity given the increased number of foreign businesses there.

“In Singapore, flight movements are not yet back to pre-Covid-19 levels. We are only at around 80 percent,” Universal’s Chan noted. “We are seeing a strong passenger load coming through Singapore. In the years preceding Covid-19, we would see many flights operating with less than four passengers. Today, we are seeing more double-digit passenger loads per flight movement.”

According to Honeywell’s latest business aviation forecast, Asia-Pacific will account for 11 percent of new global jet demand over the next five years, up one percentage point from the previous year.

According to ASG, some 37.7 percent of survey respondents across the region are interested in purchasing preowned aircraft, a number partly attributed to the lack of available new-production aircraft.

Global Jet Capital’s forecast anticipates that 70 percent of business jet transactions in Asia-Pacific from 2023 to 2027 will involve preowned aircraft. Further, Global

Jet Capital projects 443 such transactions over the forecast period in the region, with another 192 involving new-production aircraft.

ASG further found that large-cabin jets continue to be the favored category in China, the Middle East, and North Africa. Meanwhile, nearly half of respondents to ASG’s survey anticipate chartering an aircraft over the next three years.

New operators and the establishment of joint ventures across the region are on the rise, with companies looking to create a bigger footprint, Chan further stated. Asia-Pacific charter business demand remains robust, and new trends are emerging in jet travel.

### MARKET HOTSPOTS

Among the markets to watch in Southeast Asia are Indonesia and Singapore, where flight traffic continues to be robust, according to Chan. Given the limitations of slots and spots at Singapore Changi Airport, Seletar remains the favored choice for business aviation on the island nation.

“Parking for [Seletar] is manageable for now,” Chan said, “and the compact parking stands here help alleviate the pressure

for day-to-day operations. However, the airport’s training hours and quiet hours [are] impacting the push for Seletar to be the preferred general aviation/business aviation airport. Operators need to consider this closely when planning to operate in and out of Seletar.”

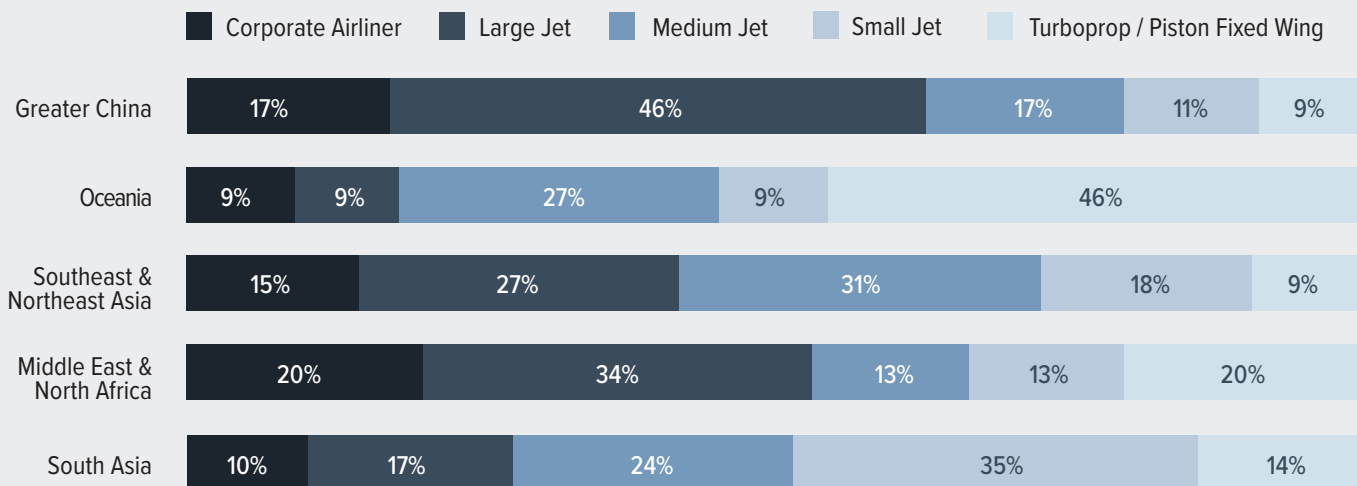
Customs, immigration, and quarantine facilities at Seletar are also limited to two counters, posing a challenge for current passenger loads. “Hopefully, with the push with automated clearance, we can see some level of improvement in the year ahead,” Chan added.

With business aviation on the upswing, the Civil Aviation Authority of Singapore (CAAS) is trying to help owners and operators through its permit process and surveillance program.

Chan noted that the issuance of an operations permit takes time due to CAAS’ foreign operators surveillance program, which follows a risk-based methodology to assess foreign carriers and business jets.

The evaluation considers factors such as the safety oversight capability of the state of operator, the state of registry, the operational capability of the carrier, and the safety records of the specific aircraft and aircraft type.

### PURCHASE INTENTION – REGIONAL DIFFERENCES (FIXED WING)



SOURCE: ASIAN SKY GROUP



“We understand and support the CAAS decision to review the safety records of operators and aircraft,” Chan said.

## CHINA LAGS IN REGION

In the broader APAC region, Chan noted that “traffic involving China continues to remain soft, especially in and out of Singapore.” She further added that business jet traffic in China is expected to increase in upcoming months.

ASG highlighted the contraction in China in contrast to the growth experienced in India.

The business jet fleet in India grew by 0.7 percent in 2021 and 7.2 percent in 2022, while contracting by 1.7 percent and 11.2 percent, respectively, in China. In fact, ASG’s Lowe said China has lost about a quarter of its business jet fleet over the past two years, with aircraft sold elsewhere due to Covid restrictions, political sentiment, or economic slowdown.



**JEFFREY LOWE**  
ASG OWNER AND DIRECTOR

While India moved up to the number two business jet market in the first half, “China was dead last,” he pointed out.

In the third quarter, ASG found that only 6 percent of Indian survey respondents felt conditions would worsen, the lowest mark since 2019 and better than the 23 percent of respondents across Asia-Pacific. Traffic in India particularly ticked up in August and September.

Positivity in China has not yet filtered into purchase intentions but has ticked up on the economic optimism, according to the ASG survey.

Meanwhile, demand for travel to Japan is growing at exponential rates. Chan said, “We hope to see continued support from the Japanese officials to meet this demand head-on.”

With business travel rising, Chan highlighted a trend toward cost-saving by opting for do-it-yourself (DIY) trip planning. However, she emphasized that solely taking a DIY approach “can introduce additional risks,” stressing the importance of gaining support from an experienced mission management company, especially in China.

## OEM OUTLOOK

As for the OEMs, Bombardier is among those seeing growth in the market. “The Asia-Pacific region is a very important market for Bombardier as it offers considerable growth opportunities, including aircraft sales, Bombardier Defense, certified preowned aircraft, and aftermarket potential for our immaculate medium- and long-range aircraft, including the Global 7500 and Challenger 3500,” a Bombardier spokesman told *AIN*.

Despite the economic slowdown in Asia, Bombardier’s Challenger and Global platforms have made notable gains in the region. In third-quarter 2023, industry flight hours for Bombardier aircraft departing APAC surged by more than 50 percent versus the same period in pre-pandemic 2019, he said. From January to November last year, flight hours increased by approximately 36 percent compared to the same period in 2022 for aircraft departing the region.

“We continue to see strong interest in our aircraft from India, Australia, and Southeast Asia and currently have Global 7500 aircraft based throughout the Asia-Pacific region in Japan, Australia, India, Greater China, Singapore, Indonesia, and Malaysia. From a sales perspective, we are well positioned in the market,” the spokesman said.

In the aftermarket sector, Bombardier remains focused on expansion, with an emphasis on growing its service center presence in Singapore, plus Tianjin, which

involves a joint project with the Tianjin Airport Economic Area.

Bombardier also has high expectations for success in the region of its Global 8000. The flight-testing program is advancing steadily, with Bombardier accumulating nearly 150 test hours, including ground testing, along with approximately 1,000 hours on the ground systems. The spokesman reiterated that the aircraft remains on track to enter service in the second half of 2025.

Likewise, Dassault Aviation has considered Asia-Pacific as a key region as it begins to ramp up on its newest addition to the Falcon family, the 5,500-nm large-cabin 6X.

The OEM has displayed the cabin, designed for long-range missions common in the Asia-Pacific region, at the Singapore Airshow. It has since obtained certification, with the first handed over late last year.

While business aviation is still in early growth stages in certain parts of the region, Dassault’s Falcon 2000 series has been in the top 10 aircraft models in terms of hours flown in Asia-Pacific.

But arguably, support is just as important: Dassault’s ExecuJet plans to open a new purpose-built MRO facility at Subang Airport in Malaysia this year. The facility will measure 149,500 sq ft, providing the ability to accommodate 10 to 15 business jets.

Gulfstream, meanwhile, has also been building up its support in the region, including additional authorized warranty centers in China. The Savannah, Georgia manufacturer likewise is seeing demand for its newest model, the G700, along with its legacy models.

“The need for business aviation has never been stronger, and customers are showing interest across our full fleet,” said Michael Swift, Gulfstream’s group v-p of sales for EMEA and APAC.

“The performance capabilities Gulfstream introduced with the G650 have proven to be ideal for customers in the Southeast Asia and APAC region as interest continues to grow. We are now seeing heightened demand for our flagship G700 and the ultralong-range G800.” ■



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# Helicopter OEMs see big civil market opportunities in China, India

BY MARK HUBER



Robinson Helicopter sees markets in China and India for thousands of helicopters and has plans to set up more dealerships.

## @ Heli-Expo 2024

David Smith, vice president of operations for Robinson Helicopter, thinks the emerging civil helicopter export markets for China and India are in their infancy. “These places have been emerging for too long,” he recently told *AIN*. “Emerging. That’s the word I always hear from the trade groups. It’s past emerging. It’s past due.”

### PLANTING MORE SEEDS IN CHINA

Start with China. Robinson has delivered more civil helicopters into that market

than any other foreign OEM—475 through late 2023. The number sounds impressive until you slice it with a per capita divider. China’s population is 1.42 billion. “When you look at it on a per capita basis, it’s just incredibly low. Compare that to Australia where we have delivered 1,300 helicopters in a country with a population of 27 million,” Smith said.

Indeed, Australia and Brazil are Robinson’s leading export markets, but the potential in China and India is much larger, for the industry as a whole and Robinson in particular, according to

Smith. To match Australia’s helicopter-to-population ratio in China, Robinson would need to deliver 10,000 helicopters. And Robinson is planting the seeds to make a run at it.

Robinson works through a worldwide dealer network, and in China, the helicopter OEM has established 11 service centers—mostly on the eastern side of the country, in industrial centers. Altogether, between dealers, representatives, and service centers, Robinson has 15 “company connections” in the country. Smith would like to see another five to 10 dealerships

established in the western part of the country in the near future. “There’s ample demand,” he said. “There’s a lot of opportunity there to service the energy, mining, and automotive industries.”

There’s also a demand for—and shortage of—civil helicopter pilots in China. Smith explained that most flight schools in China are run by state enterprises and weigh their training toward churning out airline pilots. The helicopter pilot shortage is where Robinson can help.

Those pilots will be needed to fly critical public safety and air ambulance missions. Right now, Smith said there is a dearth of instructors to train those pilots. “We want to work with our dealers and service centers to ease delivery of our helicopters and training to customers.”

Right now, Chinese instructors must come to Robinson’s factory training course in California, and obtaining visas for them can slow the process and make it complicated. So besides expanding the dealer network, Robinson is working to get helicopter simulators into China to expedite and improve training.

“We build the world’s helicopter pilots across all demographics and regions,” Smith said, acknowledging that some regions in the world are “behind the curve”

when it comes to pilot training. However, Robinson’s CFI safety course helps instructors “see the best way to use [Robinson] aircraft for training.”

Robinson is expanding its instructor and pilot training course and plans more announcements about this offering in the coming months, Smith said.

### HUGE POTENTIAL IN INDIA

Aside from China, the nascent Indian market is one where Smith thinks Robinson can make substantial progress in the coming years. Currently, only 18 of the company’s helicopters are flying in the region.

“India is the world’s most populous country [with 1.43 billion people]. In one respect [number of Robinson aircraft delivered] it’s underperforming expectations; it’s a more interesting challenge, but the opportunities are immense. China’s infrastructure is huge and well-funded—India’s is not the same. They have infrastructure challenges in every regard. I think our aircraft offer a perfect match for what they need to enable market expansion.”

And while eVTOLs have been touted in recent years as a solution to India’s massive ground congestion problem, Smith thinks it will be some time before either the needed support infrastructure is in

place or the cost of eVTOL passenger transport will be cost-competitive with single-engine helicopters.

However, Robinson has just one dealer in India. “Predictably, that dealer can’t keep up with all the things that are coming their way on every opportunity across the whole country, so we definitely will be developing the dealer network in India,” Smith said. Robinson has three authorized service centers in the country, and Smith said the company is looking to add five to six dealers there in the coming years. “It’s going to get real focus from us.”

He sees a particularly strong potential market for the single-turbine engine R66 in India. (100LL avgas for Robinson R44 and R22 piston helicopters is hard to come by in India.) “It’s the perfect aircraft for the country that is going to quickly become the one with the most billionaires and the most entrepreneurs. If you scale it to Australian standards, it’s easily a 10,000 [civil helicopter] market if the industry players, us included, do the job right.”

Smith sees the ability to maintain Robinson helicopters with less maintenance in relatively austere environments as a market advantage in both China and India. However, as in China, pilot training is a concern. [India’s] policy is similar to China’s. It is very heavy on developing commercial [airline] pilots. There’s not enough emphasis on general aviation pilot development and even less on [civil] helicopter pilot development. We have to work on that. .”

Robinson hopes to work with interested dealers there who want to develop flight training as a side business.

### OTHER OEMS MAKE GRADUAL MARKET INROADS

Airbus, Bell, and Leonardo continue to make inroads into the Chinese and Indian markets as well.

Airbus started supplying helicopters to China in 1967, and today there are more than 300 of them flying there, serving more than 90 customers. Airbus



Other OEMs are seeing success in India and China such as Bell with this 429 in Hainan Province.



Helicopters service and logistics centers operate from eight locations within the country including Beijing, Shanghai, Shenzhen, Hong Kong, Chengdu, Harbin, Xiantao, and Qingdao.

It provided its first in-country full-flight simulator for the H225 heavy twin in 2012, located at the Hua-Ou Aviation Training Center in Beijing.

In 2019, Airbus established a final assembly line for its H135 light twin in Qingdao as part of a deal to provide 100 of those helicopters over 10 years.

In 2023, Airbus Helicopters signed a contract with China's GDAT, a helicopter lessor and operator, for 50 H160 intermediate-twin helicopters—a deal worth more than \$700 million.

GDAT specializes in helicopter sales, leasing, maintenance, and modifications, as well as operating emergency rescue and other government services flights. GDAT already operates a fleet of 26 Airbus helicopters, including 21 H225 Super Puma heavy twins.

In 2010, Airbus was the first foreign helicopter OEM to set up a customer center in India and now claims more than half of the domestic civil and parapublic market in the country. More than 100 Airbus helicopters are flying in India, with models including the H125, H130, H135, H145, and AS365 Dauphin, serving energy, commercial, private, and business markets as well as helicopter EMS, airborne law enforcement, urban air mobility, and powerline maintenance.

Recently, India's first official HEMS service was launched in the states of Karnataka and Uttarakhand using H130s.

In March 2023, Airbus announced the sale of two ACH160s in India, the first sale of the type in the region, to an undisclosed customer.

Airbus Helicopters also recently authorized Indian MRO Indamer to service its fleet of H145s and H135s.

China is the second-largest market for Bell in the Asia-Pacific (APAC) region, following Australia, with 220 aircraft in the



In April 2023 Airbus sold 50 H160s to China's GDAT, a helicopter lessor and operator.

country, including 120 Model 407s, 30 Model 505 light singles, and 20 Model 429 light twins.

Bell considers the EMS market in China to be particularly promising, according to Herbert Wu, the company's in-country media representative.

"Currently, there are less than 100 specific HEMS-configured helicopters in China. To meet the needs of China's vast population, an estimated 5,000 EMS helicopters would be required. Bell is actively working with our local collaborator, Shaanxi Helicopter, to develop this market," Wu told *AIN*.

Bell has also seen interest for its 525 super-medium twin in China, particularly in support of offshore energy.

Shaanxi Helicopter has established an EMS operation in that province. Additionally, other operators likewise are employing Bell models for EMS missions across the country, including flying a Bell 429 on disaster relief missions during the 2023 Beijing floods.

In-country service is available through MRO Bell China Services Center in Zhenjiang and Jiangsu and factory-authorized maintenance centers in Deqing, Zhejiang (for the Bell 429), as well as Zhuhai, Guangdong, and Xi'an, and Shaanxi (for the Bell 407). Shaanxi Helicopter is the exclusive

dealer for the Bell 407 in China, delivering more than 80 helicopters, mostly 407s, in recent years.

While Bell's China MRO focuses on serving customers in the country, Bell's Singapore center and co-located company training academy campus provide expanded services to customers throughout the Asia-Pacific region.

While Bell does not operate a training academy in China, it does provide onsite training at customers' facilities. Since 2017, it has conducted more than 3,500 hours of onsite training.

Leonardo, meanwhile, has sold more than 200 civil helicopters in China to date for EMS, SAR, firefighting, law enforcement, passenger transport, and energy support. Models delivered into the country include AW119s, AW109 series, AW139s, and AW189s.

Recent significant orders that Leonardo has received from Chinese operators include ones for AW189s that will be used in maritime search and rescue and law enforcement operations and for AW139s for offshore transport.

Other helicopters in China are for passenger transport and energy support missions—primarily AW119, AW109 series, AW139s, and AW169s. The total includes more than 40 AW139 intermediate twins. ■



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# Flying a modern classic, the MD530F

BY MATT THURBER



The MD530F's precision handling and performance make it a popular choice for utility operators.

During a visit last year with the new owners and leaders of MD Helicopters, I had an opportunity for a demo flight in the MD530F, one of the three 500-series models on the company's production lines. As MD recovered from bankruptcy and resumed growing, the new owners focused on the most popular models, and the factory is humming with MD500Es, MD530Fs, and the military version of the latter, the TH-AH-530 or Cayuse Warrior.

Officially, the MD530F is the marketing name for the model 369FF, derived from the Hughes model 369 that started life in 1965 as the OH-6 Cayuse military helicopter. The 530F has longer main rotor blades and a larger engine than the 500E and thus provides better performance in hot and high conditions.

MD Helicopters training and demo pilot CJ Schneider III flew the demo; at the time I flew with Schneider, I was about halfway through earning my commercial rotorcraft add-on in a Guimbal Cabri G2, so the 530F was a significant boost in performance and capability. It was also a great introduction to the performance and handling of a larger helicopter compared to the trainer.

For experienced helicopter pilots, the 530F transition course involves 16 hours of ground training and five hours of flying, including full touchdown autorotations. Many customers, especially police departments and utility operators, send pilots to MD for annual recurrent training, which includes eight hours of ground training and three flight hours. Buyers of new ships

get two pilot training slots and maintenance training.

The 530F is powered by a 650-shp Rolls-Royce 250-C30 turboshaft engine and features a five-blade, fully articulated rotor system with a two-blade conventional tail rotor. With a mtow of 3,350 pounds, the 530F can carry an internal load of 1,627 pounds and fly 223 nm. Vne is 134 knots.

There are two crash-resistant elastomeric fuel cells (an auxiliary cell is optional), and these are protected by crash-resistant keel beams and bulkheads below the cabin floor, according to MD. "A three-dimensional truss-type structure with an internal roll bar protects the pilot and passengers and offers increased occupant safety."



What helicopter pilots appreciate about the MD machines is their precise handling. “People say you just strap it on,” said MD’s Schneider. “It’s the Ferrari of the skies.”

Helicopters drive main rotor blades from a driveshaft connected to the main gearbox, and flight loads are transmitted into the gearbox. In the MDs, however, the gearbox is attached to the mast support structure and a hollow mast. Inside that nonrotating main rotor mast, a shaft connects the gears to the rotating hub. The result is that dynamic and static loads are transmitted directly to the airframe, giving pilots prompt response to control movement. This design also allows for a smaller gearbox because it doesn’t directly absorb flight loads.

The earlier 500-series models had four-blade rotor systems but switched to five blades with the 500D in 1976; the pointy nose was added when the 500E was introduced in 1982. The differences between the 500E and 530F are the engine and rotor disk diameter, which is about a foot more on the 530F. The 500E is powered

by the 420-shp Rolls-Royce 250-C20B. The 530F also has an 8-inch extension added to the tailboom to move the tail rotor aft to accommodate the more powerful engine and larger rotor disk. For those looking to upgrade, MD offers a 500E to 530F conversion program.

MD offers an array of optional add-ons for various operational tasks, including floats, cargo hook, FLIR, satcom, searchlight, FreeFlight radar altimeter, and other mission-specific equipment. The standard avionics package includes Garmin G500H TXi touchscreen displays, GMA 350Hc audio panel, GTX 345R ADS-B In/Out transponder, and GTN 650 com/navigator, Howell engine instruments, and PAI-700 vertical card magnetic compass. The 530F that I flew had the optional Garmin synthetic vision and helicopter terrain awareness and warning system.

### FLYING THE MD530F

Pilots fly the MD series from the left seat. There are all sorts of reasons given for this, but primarily it has to do with flying a

sling load being easier from the left seat in terms of reaching the controls and a better view from that side.

I climbed into the left seat and Schneider in the right; it was a warm morning at the MD headquarters in Mesa, Arizona, almost 80 degrees F (26 degrees C), and we flew with the doors off. I’ve come to like flying doors-off because it adds the extra sense of being able to hear if we’re flying trimmed in yaw without looking at the instruments.

Schneider started the engine and, after checking the governor, throttle rigging, and N1 deceleration, lifted off from MD’s delivery ramp on the northeast side of Falcon Field. We hover-taxed over the fence to Taxiway E, then the tower cleared us to take off and depart to the northeast.

As we cleared the runway environment, Schneider handed over the controls, explaining that using the trim button on the cyclic would help a lot. “If I get it trimmed out right, I can almost take my hand off and it’ll stay right [there],” he said. The trainer I’d been flying, the Guimbal



The MD530F sits tall on its landing gear, which is easily visible from either pilot seat. The author is flying from the left seat, the traditional pilot seat in the MD series helicopters, along with MD training and demo pilot CJ Schneider III.





Cabri G2, has a similar trim system, so that was familiar. Although the rotor blades spin counter-clockwise in the MD, unlike the clockwise rotation of the G2, I didn't feel any confusion because of that, and flying the 530F proved easy and natural.

"You should be able to just fly hands off," Schneider explained. "All I do now is minor bumps to keep straight and level. But what people do is they try to fight it and then they're gripping and they overcontrol, and that's where you get that feeling of being on a boat, those little micro-movements that are over-controlling at that point."

Leveling off, I accelerated to about 110 knots and followed the Salt River, flying on the right side to avoid inbound traffic that remained on the other side of the river. "The collective might be a little heavier [than the trainer]," he said. "Don't be afraid to give it a little tug. You just kind of feel the power in this thing. It's that five-bladed rotor system, it's almost instant...with how the mechanical controls work and how the flight controls work, you almost get instantaneous power and instantaneous movement within the controls as well."

## STEEP TURNS

A bit further on, Schneider had me fly some steep turns, to the left then right. "The purpose is I want you to make it tight and let you feel it. Pulling up on the collective really tightens that turn. Rolling into those turns, you can do that from about any airspeed and the helicopter will take it. As long as you're in trim and not over-controlling the helicopter, she's gonna dance with you. It's just a smooth dance, and as long as you're not stepping on her toes, she's going to flow right with you. But it's over-controlling, out of trim where she's going to fight back and start chattering at you a little bit."

Schneider then took the controls to demonstrate an autorotation with power recovery. He pointed out that MD likes to



“ That’s the cool thing about how our skids stick out. I’m just kind of planting it against the rock here. Let a guy out and go away. ”

train full-down autorotations, where the maneuver ends with a power-off run-on landing instead of flaring and then recovering to a hover.

"We're not going to go all the way into the flare," he explained. "I don't like teaching that, particularly, because it teaches you a bad habit. When I teach you the flare to the pushover [and hover], it's different than what I'd teach you if I was doing a full-down. So I don't want you or the customer to get in the habit of doing one thing then [getting] the muscle memory and memorize it and have to do it [differently] over here."

I followed through on the controls as Schneider entered the autorotation and pitched back to about 60 knots. He demonstrated how the 530F happily stays at 60 almost by itself.

"As long as you're not touching anything, the helicopter's going to work for you," he said, then moved the cyclic and showed how that makes the pilot have to work the other controls to compensate. Below 100 feet agl, he added power and then flew away. "The smoother that you can be, the helicopter just wants to work with you."

It turned out that the steep turns were to prepare me for the next maneuver. "See that dry creek bed, fly straight to that," he said as I entered a small canyon and flew through a twisting course that put that steep turn practice to good work. "It's just going to get a little tight but completely fine," he said. "We fly this every day, so there's no wires or anything. Just look ahead to where you're going and fly to it, like you're on a motorcycle. Don't

be afraid to kind of just whip it around.

“We bring [pilots] out here because if you can maneuver here, you’ve really got the feel for the helicopter and start to communicate with it. This is just a good way to get pilots in tune with it.”

Taking the controls again, Schneider flew to a locally famous landmark called “the rock” and demonstrated a perfect pinnacle approach and landing. After lifting off from the rock, he showed me a one-skid operation, where he placed one skid precisely against the rock as if a passenger had to get out in an area where it was impossible to land. “That’s the cool thing about how our skids stick out,” he said. “I’m just kind of planting it against the rock here. Let a guy out and go away.”

### PINNACLE LANDING

Back at the controls, I flew over to a less intimidating landing pinnacle, not quite as steep-sided as the rock but nevertheless a small spot for a touchdown. Normally I’d fly a reconnaissance over such a spot, having never been there, but I trusted Schneider’s having trained there often.

He guided me to the pinnacle, and I gradually slowed the helicopter while descending at a low rate. Before I knew it, the helicopter’s tall skids were touching down, and I lowered the collective to keep it planted.

The G2’s skids are much shorter, and I wasn’t expecting the touchdown so quickly, but that turned out better because I wasn’t agonizingly hovering over the spot and trying to touch down smoothly, which usually results in over-controlling and some uncomfortable jerking around. “For your first time coming in on a pinnacle out here...not bad,” Schneider said.

After lifting off into a hover, I handed the controls over to Schneider, and he climbed the 530F to demonstrate settling with power. Once level, he slowed to an out-of-ground effect hover, then allowed a sink rate to build while adding power. “You feel the mushy controls, feel the buffeting, the shuddering,” he noted. “I pull up, we

still get a sink rate and you can feel it’s unstable. So what I’m going to do is collective [down a little] and I want to bring that [vertical speed] back up there and just fly out of it. It’s very manageable in this helicopter; it’s not overwhelming.”

Next was a demonstration of an out-of-ground-effect autorotation, starting at zero airspeed, and with a power recovery. All he had to do to gain airspeed was “barely push down on the nose,” he said. “When I’m up at altitude, and I slam that collective down, the nose is naturally going to drop. And I don’t want to over-accelerate because that means I’m going to move faster toward the ground. So I try to make everything as slow and as comfortable as possible. And then if I need a little bit of airspeed, then I gently, just like I would now, just gently push it forward and fly it there. Nothing to it.”

After asking about how the 530F does with low-g maneuvers, Schneider showed me a 30-degree pitch up followed by 30 degrees down. “We’ll get a bit of airspeed,” he said, “so that’s about 20, 30, and then we’ll come low-g here, and just floating it back down, that’s about a 30-deg angle and then come out of it. Completely normal, that’s how they do their military bumps [low-level maneuvering], nothing to it.”

I flew back to Falcon Field, with a slight detour to take some photos of a herd of horses—wild mustangs—that live in the desert.

Back at Falcon Field, AIN director of video Ian Whelan had set his camera up to catch us autorotating onto the ramp. Schneider first set up another out-of-ground-effect autorotation, starting at zero airspeed from 500 feet agl. After touching down smoothly near the camera, Schneider handed over the controls and I did another liftoff to a hover. It wasn’t as precise as Schneider’s flying, but did give me confidence in the MD530F’s superior handling. I flew the traffic pattern, then handed over the controls for a final touchdown autorotation, and Schneider pulled it off perfectly, skidding to a stop perpendicular to the camera.

After lifting off again, I gave control back to Schneider, and he hover-taxied back to the MD delivery ramp, where he shut down the engine.

“In an hour or two, you could easily get used to this [helicopter],” he assured me. “The more comfortable you get in it, the easier and more comfortable that feeling is. That’s why it’s good for the powerline construction stuff, so they can sit there next to the lines, even in high winds, and keep the alignment safe because of how precise they can be with the helicopter.” ■



AIN director of video Ian Whelan captured some excellent video of flying through the Arizona desert with training and demo pilot CJ Schneider (viewable on the AIN YouTube channel).



# Helicopter seat pain fixes are on the horizon

BY MARK HUBER

Helicopter pilots frequently sustain injuries. And not just from accidents.

Rather, it's from the seats and helmets in concert with the aircraft's constant whole-body vibration (WBV) and flight control positions. The injuries can be permanent, debilitating, even career-ending, as pointed out by a study published in 2011 by the Naval Postgraduate School.

According to a survey of hundreds of Navy helicopter pilots, 88.1 percent experience back pain on at least 50 percent of their flights, and 34.4 percent admitted that it affected their situational awareness. However, those who experience pain from uncomfortable seats are reluctant to seek treatment for it for fear of being removed from active flight status.

The study found that the problem was exacerbated by length of flight, poor seat lumbar support and padding, helmet-mounted night vision goggles, aircraft vibration, and the suboptimal posture sometimes required to effectively manipulate helicopter controls. Cockpit seats in particular were faulted for their thin padding that also resulted in leg pain and numbness due to lack of blood flow or "compression ischemia."

Study recommendations included seat designs that facilitate improved posture and better flight control geometry including offset cyclics, a design incorporated into the cockpit of the Bell 525 super-medium twin, as opposed to traditional cyclics centered between the pilot's legs. It also suggested the wider adoption of aircraft vibration reduction technologies and lighter flight crew gear.

In her 2013 Embry-Riddle Aeronautical University thesis that examined the ergonomics of pilot seats, Yolanda Andrade concluded, "The need for better



seat designs that fit the target population and decreases biochemical problems and reduces fatigue is apparent.” She added, “Sustained exposure to seat vibrations can also contribute to muscle fatigue and damage of the [spinal] discs. Vibrations apply pressure to the spinal column, which in turn strain the intervertebral discs and end plates that can lead to blood flow problems and ultimately failure of nutrition to the discs.”

But when it comes to aircraft seating, particularly helicopter seating, the quest for comfort often takes a backseat to survivability via energy-absorption features, which emphasize structures and the regulatory requirements governing them. A 2020 study published in *Progress in Aerospace Sciences* noted, “The excessive impact energy exceeds the human tolerance, leading to heavy casualties for the occupants during a helicopter crash.”

The study also explained that causes for helicopter crash injuries fall into three general areas: inertial overload due to sudden acceleration; contact injury from collision with hard cabin surfaces; and environmental injury due to smoke, fire, or drowning. The seats, restraints, and subfloor must all work in concert to achieve energy-attenuation objectives.

For civil helicopters in the U.S., those are set via regulation for all new aircraft certified after 1989. Both Part 27 and 29 helicopters must have seats able to sustain a downward load of 30 g (14 CFR 27.562 and 29.562).

However, in 2020 only 10 to 16 percent of the total helicopter fleet met that requirement due to low turnover. Citing FAA data, Helicopter Association International president James Viola said that “from 2009 to 2017, non-crash-resistant seats caused the deaths of 307 people in helicopter crashes.”

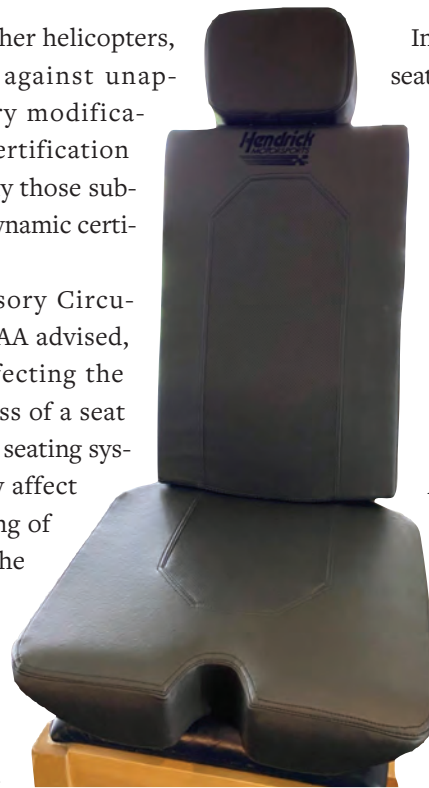
There is a long list of popular civil helicopters certified before 1989. They include the series aircraft of the Airbus AStars and the Bell 206 and derivatives, a universe containing thousands of aircraft.

For these and other helicopters, the FAA advises against unapproved upholstery modifications that alter certification criteria, particularly those subject to the newer dynamic certification standard.

In a 2016 Advisory Circular (21-25B), the FAA advised, “Modifications affecting the strength or stiffness of a seat part may affect the seating system, and thus may affect the dynamic loading of the structure and the loads transferred to the occupant. Therefore, a modification to a part either in the direct load path or within striking distance of the occupant will typically

require a dynamic assessment. For this reason, any changes to common components such as seatbelts, cushions, IFE system hardware, seat back tray tables, and any other item added or removed from the seat, an assessment must be conducted to verify that the seating system structural integrity and occupant injury performance is maintained.”

New seat cushion schemes designed to improve comfort are offered by several manufacturers, including Oregon Aero. Raytheon’s Collins Aerospace unit is working to improve helicopter seat comfort, incorporating features such as pressure mapping for ergonomic design, vibration absorption, adjustability, an integral seat bucket design, and customer-specified options including armrests. Cushion contouring is particularly critical for comfort on newer 30 g seats that have seatback structures that are typically uncomfortable because they are more upright to sustain impact g-loads and protect the occupant’s spine in the event of a crash.



Hendrick Motorsports’ prototype seat for the U.S. Army.

In addition to traditional aircraft seating providers, some elements of the military are thinking decidedly out of the box when it comes to improving helicopter pilot comfort. The Army turned to Nascar, specifically Hendrick Motorsports. Hendrick not only fields race cars; it also builds components for them, including seats. For the Army’s AH-64 Apache gunship, Hendrick developed a new contoured cushion system that feels like memory foam and is self-extinguishing.

The Hendrick Advanced Seat Liner can be air-conditioned and is covered in leatherette. Evaluating maintenance test pilots found it more comfortable than the standard seat. (Hendrick also designed a high-performance Infantry Squad Vehicle for the Army that fits inside a Boeing CH-47 Chinook).

The worldwide helicopter seating market is large. Even without a retrofit mandate for 30 g seats, a January 2024 study by Global Industry Analysts estimated the overall helicopter seating market at \$5.2 billion in 2022 and projected it would grow to \$11.1 billion in 2030. Helicopter crew seating is expected to post an 11.7 percent compound annual growth rate over the next seven years.

While there are economic and technical challenges to retrofitting the existing legacy helicopter market with crash-worthy seats, a 1994 study by the U.S. Army’s Aeromedical Research Laboratory favorably reported on the feasibility and benefits of doing so, using the Bell OH-58 (civil 206) as a baseline. The Army reported that the new seats added just 20 pounds for each aircraft in which they were installed, were more comfortable, and able to attenuate energy three times better than the existing seat, thus improving survivability. ■





## Naples Aviation Earns 1st Argus Base Ops Audit

Naples Aviation, the airport-operated FBO at Florida's Naples Municipal Airport (KAPF), was named as the first recipient of Argus International's Base Operations Audit Certification. The program—launched in May 2022—is designed to assist service providers in reducing ground incidents that could result in damage to aircraft and company assets. And the certification identifies those FBOs that meet stringent international industry best practices and standards to establish safety and service programs in their operations.

## Signature Acquires Two FBOs in Meridian Purchase

Signature Aviation has expanded its network by two locations with the acquisition of New Jersey-based Meridian. Formerly the lone independent service provider at metro New York City business aviation hub Teterboro Airport (KTEB), family-owned Meridian had a presence on the field for more than 75 years and was perennially ranked as one of the top FBOs in the Northeast U.S. in *AIN*'s annual FBO survey.

In 2016, Meridian expanded across the country, opening a new FBO at San Francisco-area Hayward Executive Airport as a West Coast base for its charter fleet, which it chose to divest less than four years later, along with shutting down its maintenance operation.

The move bolsters Signature's position at KTEB, the world's busiest business aviation airport, giving it control of four of the six FBO locations on the field.

## Million Air to Upgrade Utah FBO

Million Air will embark on a \$5 million renovation on its FBO terminal at Utah's St. George Regional Airport (KSGU). The facility is the newest location under Freeman

Holdings, the largest franchisee in the 37-location chain.

The eight-month-long project will expand the 8,300-sq-ft, two-story building by 5,500 sq ft and will include the addition of a full-service café with balcony and outdoor seating offering a view of the flight line and the surrounding scenery, as well as a coffee and refreshment bar in the remodeled lobby, an upgraded pilot lounge and snooze rooms, and dedicated flight planning area. In addition, it will offer shower facilities, a theater room, an audio/video-equipped conference room, and a training room. The FBO will continue to operate from the terminal during reconstruction, serving general aviation, business aviation, and military traffic at KSGU, which features a 9,300-foot runway.

Since it took over the 20-acre facility just north of the commercial terminal this past summer, Million Air has invested in upgrading the ground service equipment with new 5,000-gallon and 3,000-gallon jet-A refuelers, aircraft tug, GPU, potable water cart, and lavatory cart.

## Signature Aviation's New Iowa FBO Spreads Wings

Signature Aviation has opened its new FBO at Iowa's Des Moines International Airport (KDSM), the Hawkeye State's largest airport. The facility on the south side of the field replaces the company's previous one, east of the airline terminal, built in the 1970s.

The 20-month-long construction project included a 5,000-sq-ft LEED-certified terminal—more than double the previous facility's size—with floor-to-ceiling windows in the lobby. It offers a conference room, internet café, coffee bar, pilot lounge with snooze room, business center, crew cars, a porte cochere, and an outside firepit area.

The terminal adjoins a new 30,000-sq-ft hangar with office space, large enough for Gulfstream's new G700.





## Propeller Aero Services Handles All at Seattle's Paine Field Airport

Seattle's Paine Field (KPAE) has worn several names over its nearly nine-decade existence, the latest being Seattle Paine Field International Airport, adopted just last year to emphasize its proximity to the city. It started out as a depression-era works project to establish a major airport for Seattle, but as it was nearing completion, World War II broke out and it was commandeered by the military.

In the 1960s, when Boeing was looking for a location to establish a production facility for its new super airliner—the 747—it chose KPAE, which had recently ceased operations as Paine Air Force Base. While the final 747 was delivered a year ago, the building—still used by the airframer for aircraft production—remains the largest in the world.

In 2019, Propeller Airports opened a commercial airline terminal, which it operates on behalf of Snohomish County. Two years later, the company decided to purchase the lone FBO on the field. “I figured I could run a commercial passenger terminal with a million people a year going through it, so how hard could it be to run an FBO?” said Propeller CEO Brett Smith, who quickly learned there are differences between the two. “Running a commercial airline terminal is a lot more regimented and predictable than an FBO. One minute we are fueling an Antonov and the next we are making sure a VIP’s aircraft is properly catered.”

The facility was immediately rebranded as Propeller Aero Services, with \$1 million spent on a renovation of the '90s-era, two-story terminal, which was completed in November. The 16,000-sq-ft facility offers a full kitchen stocked with complimentary snacks; a pair of conference rooms seating 20 and eight respectively; pilot lounge; shower facilities; business center; three crew cars; onsite car rental; concierge; laundry and dishwashing; and shuttle service. While customs service



The lone FBO at Seattle Paine Field International Airport, Propeller Aero Services operates from a renovated 1990s-era terminal as it weighs its future plans.

is available at the commercial terminal, the company hopes to bring it to the FBO over the next year.

Yet, Smith still considers this a temporary terminal. Early on, the company announced plans to tear it down and build a \$25 million modern glass-sheathed structure on the site, relocating the FBO operations during that time to its under-renovation nearby corporate headquarters. But word that another complex on the field—offering several existing hangars—might soon become available has stayed Smith’s hand. He expects to decide on the FBO’s future home within the year.

The Avfuel-branded location also handles all the airport’s fueling, pumping 9 million gallons a year. Its fuel farm has a capacity of 360,000 gallons of jet-A and 20,000 gallons of avgas and is served by six refuelers. The FBO also has a self-serve avgas pump.

In addition to general aviation and commercial traffic, KPAE also sees a sizable amount of cargo flights, and its 9,010-foot main runway accommodates anything up to the Antonov 124. The FBO has just 22,000 sq ft of heated hangar space and is home

to seven turbine-powered aircraft. Smith is eager to add more space. “Boeing Field is pretty much out of capacity and this is really the only other place to go,” he told **AIN**.

As a hands-on CEO, Smith is always available, and one of his self-appointed tasks each week is supplying fresh flowers not just for the FBO, but for the award-winning commercial terminal as well. “I do it myself and it shows the employees how much I care but it gives a really nice environment to the passenger,” he said. “It’s two hours out of my week, but I think it’s worth it.

“Service is the most important thing to me,” he added. “It’s making sure people can get in and out of here quickly and they are in a nice environment and they get whatever fuel or products they need.”

In a recent example of that belief, a cross-country flight arrived at the FBO with passengers headed to nearby vacation destination San Juan Island. When the small airplane slated to ferry them to the island’s Friday Harbor Airport did not arrive, Smith immediately volunteered to fire up his own Cirrus and fly them there, an offer that was gratefully accepted. **C.E.**



BY AIN STAFF



## Embraer Executive Jets To Double Owned Service Centers in U.S.

Embraer Executive Jets is growing its maintenance service network in the U.S. from three to six facilities “to support the continued growth of its executive jets customer base,” the company announced. The three new factory-owned service centers—to be based at Dallas Love Field, Orlando Sanford (Florida) Airport, and Cleveland-Hopkins (Ohio) International Airport—are scheduled to open in the second quarter of this year.

Embraer will also “substantially increase” its mobile response network by 28 teams and enlarge its capabilities—including access to cabin completions, paint, and component repairs. The expansion will augment the company’s three owned, U.S.-based business aviation service centers in Mesa, Arizona, and Melbourne and Fort Lauderdale, Florida, as well as 24 factory-authorized service centers in the U.S.

## Aero Centers Epps Selling Pilatus Mx, Sales Ops

Under an agreement inked with Aero Centers holding company SAR Trilogy Management, Pilatus Aircraft will acquire Aero Center Epps’ Pilatus sales and maintenance operations at Atlanta DeKalb-Peachtree Airport (KPDK). The deal, expected to close this year, is limited to Aero Center Epps’ Pilatus maintenance business and sales and maintenance personnel, the companies said. Aero Centers Epps will continue to operate its FBO and other maintenance activities, SAR Trilogy noted.

According to Pilatus, it will continue to provide MRO services on an independent basis to customers and pledges to provide product support over the entire life cycle of its aircraft.

Aero Center Epps Atlanta has been a Pilatus sales and service center since 1996.

## Duncan Aviation Consolidates Facilities under One Repair Station Certificate

The FAA has issued the first-ever repair station certificate covering all of a company’s facilities, in this case to Duncan Aviation. The single certificate incorporates under its Lincoln, Nebraska repair station certificate all of Duncan’s satellite facilities and additional fixed locations in Oxford, Connecticut; Bedford, Massachusetts; Teterboro and Morristown, New Jersey; and White Plains, New York. Other satellites and fixed locations, as well as its Battle Creek, Michigan and Provo, Utah locations, were consolidated on December 10.

Before the consolidation, Duncan had operated under a single repair station manual, but FAA oversight was still separate for each of the 23 different repair station certificates.

## Elliott Aviation Delivers King Air B200 Garmin Autoland Upgrade

Elliott Aviation has performed its first completion and delivery of the Garmin Autoland upgrade in a King Air B200. Designed as a safety measure, the Autoland system in an emergency situation can take control of an aircraft and autonomously land itself at the nearest suitable airport.

According to Illinois-based Elliott, the modification—which took four weeks to install—represents the next chapter in the evolution of the Garmin G1000 NXi package for the King Air family. The Autoland installation in the King Air includes Garmin’s autothrottle system. The Autoland technology program was launched in 2011 and received certification in 2020.





## Private Jet Maintenance Keeps Eye on Expansion Opportunities

Some two and a half years since its establishment, Buffalo-based Private Jet Maintenance (PJM) has turned its attention to applying its newly acquired Part 145 repair station certificate to opportunities for expansion. Now largely engaged in supporting out-of-production business jets, the company operates out of a modestly sized hangar at Buffalo Niagara International Airport, whose lease expires in November 2024. By that time, an offer from Signature Flight Support to lease a larger hangar could allow it to maintain larger jets such as Bombardier Globals and Challenger 650s.

In a recent interview with **AIN**, PJM director of maintenance Ben Chieffo explained that profit margins on maintenance of large-cabin jets can exceed those on small aircraft such as Learjets by a factor of three.

“To be honest, a lot of facilities like Bombardier don’t want to see the Learjets anymore; they want to work on Challengers; they want to work on Globals,” he noted. “You can’t blame them because they’re making a lot more money on those.”

Although Chieffo agreed that the trend means more opportunities for small MRO providers to work on what he called legacy types, he stressed that PJM does work on new aircraft as well. “A customer from Canada...just bought a brand new [Citation] CJ4 and wanted us to manage it for them,” he said. “So it’s not off the table that we would work new airplanes, because we do.”

Addressing a need for maintenance management, PJM has begun offering the service as a core part of its business. When Chieffo spoke with **AIN** late last year, PJM had signed three customers for the service and “hopefully soon another two,” he said.

PJM’s maintenance management offering involves tracking and updating databases and performing post-flight support. The



Private Jet Maintenance is servicing legacy Learjets as well as newer and larger aircraft.

program includes discounts on parts and labor, a welcome feature given recent cost increases due to inflationary pressures. In fact, PJM’s hourly labor rate has risen from \$125 to \$155 over the past year and a half.

“[Many] of these operators will have their pilot tracking their maintenance and taking care of all that stuff,” explained Chieffo. “A lot of these pilots are not going to say no because they want the job. But they’re not interested in it, and they don’t do it well.”

“We’ve had pilots miss key events,” he continued. “We’ve had them miss warranty work that could have been done but now it’s costing the owner money because that period of ‘free’ is gone.”

Some operators have hired their own directors of maintenance but at a steep cost compared with PJM’s management plan, which runs about \$2,500 a month for a King Air or \$3,500 a month for a Learjet 60.

Employing eight A&P mechanics, three of which work in its avionics department, PJM covers the gamut of maintenance needs apart from major engine work. In cases such as a recent incident involving a bird strike on a Citation, it will remove an engine for shipment to an overhaul

facility, typically StandardAero, said Chieffo.

Notwithstanding its relatively small size, PJM has embraced new technology such as maintenance software from Tronair called EBIS, which allows mechanics to open work orders on a Microsoft Surface tablet. “They can work a job and clock their time in and out, so we’re more accurate with labor hours and what to charge the customer,” explained Chieffo. “Our parts people order parts and assign them to work orders so, as the guys are signing off on discrepancies, the software is actually creating a logbook sticker and at the same time, it’s creating an invoice.”

“We’re much faster in getting paperwork done in the end...and we can give the customer a bill a lot quicker,” he added.

Although timely parts availability due to supply chain constraints remains a problem, Chieffo said lead times have improved recently. He added that PJM hasn’t seen cases of months-long turnaround times recounted in horror stories by some maintenance directors.

“We haven’t experienced that,” he said. “Generally for the stuff we’re doing so far, we can kick airplanes out the door in a couple of weeks.”

G.P.



BY DAVID JACK KENNY

The material on this page is based on reports by the official agencies of the countries having the responsibility for aircraft accident and incident investigations. It is not intended to judge or evaluate the ability of any person, living or dead, and is presented here for informational purposes.

## Preliminary Reports

### Two Killed in Departure Accident

Socata TBM 700, Nov. 26, 2023,  
Ludington, Michigan

The pilot and only passenger were killed when the single-engine turboprop went down moments after takeoff from Runway 8 of Mason County Airport. The Part 91 personal flight was operating on an IFR clearance to Tri-State Steuben County Airport in Angola, Indiana. Prevailing weather included visibility of three-quarters of a mile in snow beneath a 400-foot overcast layer, with temperature and dew point equal at -1 deg C.

The airport manager helped the pilot and pilot-rated passenger pull the airplane out of a hangar at 09:45. Ten to 15 minutes passed before it began its takeoff roll. He described the takeoff as “unremarkable” except that the left wing dipped after lift-off and the airplane entered the clouds in a left bank. A witness walking her dog half a mile north of the airport recalled seeing an airplane low over the tree line “with the left wing perpendicular to the ground” and hearing a crash after it disappeared behind the trees.

The wreckage was located about one-quarter mile north of the airport, with the debris field oriented on a west-to-east heading. A small crater containing pieces of the left fuel tank and gear door was just west of a 10-foot-tall barbed-wire fence with torn and broken strands. Most of the remaining wreckage was found in the debris field, which measured 75 feet long by 40 feet wide. All five of the composite propeller blades were separated at the hub, but only one was found in the wreckage. The stubs of the propeller blades

were “ragged with a broom straw appearance cut at a 45-degree angle and packed with mud.” The airplane’s Garmin G1000 flight displays, “other avionics,” and circuit breaker panel were all consumed by a post-crash fire.

### St. Vincent Gulfstream Disappearance Remains Enigmatic

Gulfstream G-1159A III, Dec. 22, 2023,  
St. Vincent and the Grenadines

The supposed discovery of the airplane’s wreckage six days after contact was lost launched new rumors sparked by its disappearance but details of the wreckage had not been confirmed at press time. Information on the flight and its passengers and crew remained mysterious.

Radar contact was lost six minutes after the twin-engine jet departed from the resort island of Canouan on a purported sightseeing flight, leading to suggestions that the crew had deliberately turned off the transponder. No distress calls were received. Press reports varied in their accounts of the number and nationalities of passengers and crew, which had not been officially confirmed as of January 2.

The unlikely use of a lightly-loaded corporate jet with four hours of fuel for a local air tour led to speculation that the airplane was surreptitiously flown to a destination on the mainland, perhaps for use in smuggling operations. A local news report—since deleted—cited Eastern Caribbean Civil Aviation Authority (ECCAA) “director general Reginald Darius” as having given a press conference about launching an investigation into the supposed accident. However, when contacted by **AIN**, the ECCAA spokesman said that there is no such

person associated with the ECCAA and that no one from the ECCAA had held a press conference about finding the wreckage.

### Ten Rescued in Northwest Territories

De Havilland Canada DHC-6, Dec. 27, 2023,  
Lac De Gras, Northwest Territories, Canada

Search-and-rescue (SAR) personnel overcame heavy blowing snow and winds gusting to 35 knots to parachute to the site of a ski-equipped Twin Otter that struck the ground on approach to Lac De Gras. All 10 on board survived and were transported the following morning to the Diavik diamond mine about 16 km (10 miles) to the northwest. Two were reported to have suffered serious injuries, six had minor injuries, and two were unhurt.

Two pilots and eight passengers were on board the charter flight carrying a crew to a winter road construction site. The accident occurred about 12:45 local time. The occupants sheltered in a tent from the Twin Otter’s survival gear for about eight hours before help arrived.

The RCAF CC-130 Hercules dispatched from Winnipeg with the SAR technicians had to circle for some two hours before conditions moderated enough to allow the parachute jump. Shortly after the techs arrived with food and medical supplies, warm clothing, and better communications gear, a rescue team from the Diavik mine arrived by ground.

From the diamond mine, the survivors were transported to Yellowknife by helicopter. Despite the daunting conditions, they had the benefit of unseasonably warm temperatures for the area: Yellowknife reported -9 deg C (16 deg F) that evening, 13 C warmer than the average for that date.

## Final Reports

### Spatial Disorientation Implicated in Predawn Helicopter Crash

Airbus Helicopters AS350B3e,  
Sept. 16, 2021, 15 km northeast of  
Lawrence, South Island, New Zealand

Based on the helicopter's flight track as recorded by ADS-B and the fact that it departed in "close to the darkest part of the night," the New Zealand Transport Accident Investigation Commission (TAIC) concluded that the pilot "almost certainly" encountered low clouds over the Lammerlaw Range and "very likely" became disoriented while trying to maneuver around the mountains in an area with very little ground lighting.

The solo pilot perished when the aircraft departed controlled flight in a left spiral dive, striking rolling, gullied terrain in a near-vertical nose-down attitude at "a very high rate of descent."

The flight took off from the operator's base near Liston at 05:17, about one hour after moonset and an hour before civil morning twilight, to conduct frost protection operations at a cherry orchard 62 nm to the northwest. The pilot was not equipped with night vision goggles, which he was not qualified to use.

The ADS-B track showed that it followed a straight course until it approached the town of Lawrence, where it made a 90-degree right turn. One minute 23 seconds later it turned left to a track parallel to its original course. Not quite three minutes later it turned right, then left again, descending from 7,150 feet to 3,475 feet in 46 seconds. The final data point was recorded 1,041 feet above the elevation of the accident site.

The SAR crew recruited after the operator's flight-tracking system stopped receiving updates was initially unable to locate the site due to cloud cover extending down to ground level but spotted the wreckage at 07:43 after the cloud base receded up the hillside.

The 36-year-old commercial pilot had about 4,230 hours of flight experience including 1,200 in the AS350. His night rating was restricted to flights within 25 nm of a lighted airport or heliport. He had 63 hours of night time including 4.2 the previous night, his first night flight in almost a year. His most recent instrument flight was made in simulated conditions in April 2012, leading the TAIC to find it "very unlikely" that he'd retained meaningful proficiency in flight by instrument references.

### Unidentified Emergency Precipitated Fatal Departure Stall

Piper PA46-500TP,  
Feb. 13, 2022, Olathe, Kansas

Just after departing from Runway 36 at Johnson County Executive Airport, the pilot flying the Meridian turboprop single radioed an urgent request to return to the airport and was cleared to land. The airplane drifted right and slowed from its peak groundspeed of 81 knots, corrected back to the left, and crashed about 400 feet past the departure threshold, igniting a fire that consumed the cockpit, both wings, and the cabin back to the forward carry-through spar.

The last three data points of its flight track indicated groundspeeds of 49, 47, and 45 knots. Factoring in the reported 15-knot headwind, the last corresponded to 60 knots airspeed, four below its lowest published stall speed of 64 knots.

No further transmissions were received after the pilot's request to return, and examination of the wreckage "revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation." Rub marks and damage to internal components indicated that the engine was rotating at the moment of impact, but the amount of power produced could not be determined. The extent of the damage and the brevity of the pilot's transmission prevented investigators from determining the nature of the emergency.

The flight was intended to return to the pilot's base at Albuquerque (New Mexico) Sunport following completion of an annual inspection. The 51-year-old private pilot's most recent medical application listed 354 hours of total flight experience with 66 hours in the preceding six months.

### King Air Downed by Fuel Exhaustion

Beech B200, Sept. 8, 2023,  
Elk Grove Village, Illinois

The pilot's decision to pass up a possible fuel stop followed by his compliance with a controller's instruction to go around resulted in a rare instance of complete fuel exhaustion by a Part 135 operator. The solo pilot suffered serious injuries in a forced landing into forested terrain after both engines lost power on final approach.

After delivering passengers to Chicago's O'Hare International Airport (KORD), the pilot accepted a flight from Waterloo, Iowa, about 200 nm to the east. However, while on approach, his previous passengers texted that they were ready to be picked up again so he broke off the approach to return to KORD, climbing to 16,000 feet to minimize fuel burn.

He arrived at KORD with "minimum fuel," and was cleared to land on Runway 9L. Because the previous aircraft was slow to clear the runway, however, the tower controller directed him to go around. He advised first the tower and then approach control of his fuel status and approach "worked diligently to get me a tight visual approach," but both engines flamed out. He subsequently told investigators that he "tried to do too much with too little fuel" and should have landed rather than going around. ■

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BY GORDON GILBERT

## JUST AROUND THE CORNER

March 1, 2024

### ICAO: North Atlantic Operations

A draft of the revised North Atlantic Operations and Airspace Manual has been published resulting from the meeting in June 2023 of the North Atlantic Systems Planning Group. The new manual is scheduled to take effect beginning on March 1, 2024. According to international operations and security intelligence organization OpsGroup, key changes in the manual include deleting the oceanic clearances requirement and a “completely rewritten” comms failure procedure.

March 4, 2024

### EASA: Maintenance Training Organizations

The primary objective of this notice of proposed amendment (NPA) is to eliminate or reduce fraud cases in examinations conducted by Part-147 maintenance training organizations (MTOs). It also intends to ensure an adequate language proficiency for the trainer and students. Lastly, it aims at improving the structure and readability of Part-147 while ensuring a greater consistency with related regulations. To achieve these objectives, the NPA proposes a more “robust organization set-up,” introducing measures and mechanisms for fraud prevention and requirements for language proficiency. Comments on the NPA are due by March 4, 2024.

March 16, 2024

### U.S.: Remote ID of Unmanned Aircraft

Drone pilots who are unable to comply with the remote ID broadcast requirements have until March 16, 2024, to equip their aircraft, a six-month delay from the original Sept. 16, 2023 date. After March 16, 2024, operators flying uncrewed aircraft without remote ID could face fines and suspension or revocation of pilot certificates. In making this decision, the FAA said it “recognizes the unanticipated issues that some operators are experiencing finding remote identification broadcast modules.”

April 24, 2024;  
Oct. 24, 2024; April 25, 2025

### U.S.: Airport SMS

Certain air carrier airports certified under FAR Part 139 will be required to submit an implementation plan for a safety management system (SMS) on the following deadlines: April 24, 2024, for airports designated as hubs; Oct. 24, 2024, for airports with 100,000 or more annual operations over the previous three years; and April 25, 2025, for airports classified as port of entry, landing rights, user fee, and international facilities. The SMS must be implemented within 12 months of receiving FAA approval of the implementation plan.

Sept. 9, 2024

### U.S.: Pilot Records Database

Final compliance date is Sept. 9, 2024, for reporting historical records concerning training, alcohol testing, qualification, proficiency, and disciplinary actions records that date before Jan. 1, 2015, to the FAA’s new pilot records database (PRD). Also beginning on Sept. 9, 2024, the Pilot Records Improvement Act (PRIA) ceases to be effective and will not be an available alternative to PRD. Also after this date, each entity that holds an operating certificate under Parts 121, 125, or 135—or that holds management specifications for Part 91K—must report to the PRD all historical records kept in accordance with PRIA dating from Aug. 1, 2010, until June 10, 2022.

Since June 2023, certain operators under Part 91, as well as those under Parts 91K and 135, were required to complete submissions to the PRD of all historical records dating on or after Jan. 1, 2015.

Dec. 2, 2024

### Europe: Part 145 Safety Management Systems

Starting on Dec. 2, 2022, EASA Part 145 maintenance organizations were required to meet revised regulations that were published in November 2021. However, there is a two-year transition period, to Dec. 2, 2024, to allow maintenance organizations to correct any findings of noncompliance with the new Part-145 requirements. The main change introduced in the regulation is the required implementation of a safety management system. To support the SMS processes, several organization requirements have been changed including the safety policy and internal occurrence reporting.

Jan. 1, 2025

### Europe: ELTs

EASA has implemented a two-year postponement requiring certain large airplanes certified in Europe to be equipped with an emergency locator transmitter (ELT) with distress tracking capability: ELT(DT). An ELT(DT) is designed to activate automatically in flight when it detects conditions indicative of a distress situation,

or the flight crew can manually activate the ELT(DT). Under the new rules, airplanes with a mtow of more than 27,000 kilograms (above 59,500 pounds) and first issued their CofA on or after Jan. 1, 2024 will be required by Jan. 1, 2025 to be equipped with an ELT(DT) that autonomously transmits information from which the aircraft's position can be determined by the operator at least once every minute when in distress.



Feb. 16, 2025

### U.S.: Medical Transport of Veterans

Scheduled to start on Feb. 16, 2025—a year delay—the U.S. Veterans Administration (VA) will have the authority to begin reimbursing non-contract ground and air ambulance transportation at rates “significantly below costs,” according to providers. Critics charge that the move will force providers to “downsize operations and reduce hours of availability while compromising the ability of veterans, particularly in rural areas, to receive prompt medical transport.” Under the new rules, the VA will be allowed to pay the “lesser of the actual charge or the amount determined by the Medicare Part B Ambulance Fee Schedule.” The VA currently pays for the actual costs of such medical transports.

May 1, 2025

### Europe: ETIAS

ETIAS (European Travel Information and Authorization System) is an online pre-travel and pre-boarding requirement applying to visa-exempt third-country nationals planning to travel to European states. The implementation date has been extended to May 1, 2025. The information is submitted via an online application ahead of arrival at borders, enabling pre-travel assessment of irregular migration risks, security, or public health risk checks.

For the most current compliance status, see: [ainonline.com/compliance](http://ainonline.com/compliance)



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**DUNCAN AVIATION**



BY JAMES CARELESS

The *European Union Aviation Safety Agency* (EASA) management board has selected **Florian Guillermet** as its future executive director. Guillermet, who has more than two decades of aviation industry experience, was presented to the European Parliament's Committee on Transport and Tourism on January 22, with a formal appointment to the role expected on February 15. He currently serves as the director at French air navigation services provider DSNA and was the executive director at the SESAR joint undertaking from 2014 to 2021.

The *Citation Jet Pilots* owner-pilot association (CJP) has chosen **Rob Balzano** as CEO. A retired U.S. Air Force colonel and former F-16 pilot/instructor, Balzano founded the Check-6 Foundation to provide aid, assistance, experiences, purpose, inspiration, and hope to children battling serious illnesses and military veterans in need.

**Oliver Kosing** has joined *Aero-Dienst* to share the CEO position along with André Ebach. Kosing had been a member of the board at IABG, covering analysis, simulation and testing, and system operation.

*Sonoma Aviation* has hired **Jeremy Epperson** as its new president while appointing **Clayton Lackey** as vice president. Epperson was previously president and COO of Aero Centers, while Lackey had been Sonoma Aviation's director of FBOs.



JEREMY EPPERSON

**Lynda Coffman** was named CEO of *Women in Aviation International* effective January 22. She previously served as v-p of United Airlines, as well as president of United subsidiary United Ground Express.

*Ingenio Aerospace* has hired **Simon Lafrenière** as its first COO. His last position was co-founder and chief transformation officer of Golè & Co. Global Business Consulting.

The *General Aviation Manufacturers Association* (GAMA) has set its executive committee leadership team for this year with **Chuck Wiplinger**, president and CEO of *Wipaire*, stepping in as chair of the board. Wiplinger most recently was vice chair. The 2023 chair, *Simcom International* president and CEO **Eric Hinson**, became immediate past chair, and **Henry Brooks**, president of *Collins Aerospace Power and Controls*, is vice chair.

GAMA's electric propulsion and innovation committee is jointly led by **Oliver Reinhardt**, chief risk and certification officer at *Volocopter*, and **Ben Tigner**, CEO of *Overair*.

The *National Gay Pilots Association* (NGPA) announced a new board of directors and officers. New directors elected to three-year terms are: **Kalli Boyne**, a U.S. Air Force Reserve remotely-piloted aircraft pilot based in Nevada; **Sydney Kathryn Faruzzi**, a captain for *Delta Air Lines*; and **Zachary Mathews**, an ATP-rated pilot flying helicopter air ambulance flights in the Washington, D.C. area. **Charlie Williams**, chair of NGPA's University and Flight School Chapters Committee, was elected to a one-year term. Additionally, the board elected the following directors as officers for 2024: **Scott Konzem** (chair), **Doug Carr** (vice-chair), **Ryan Davis** (secretary), and **Alan Miles** (treasurer).

**Cristine Kirk**, CEO of *Malone AirCharter*, was named vice chair of the *National Air Transportation Association* (NATA) board of directors. Kirk joined *Malone AirCharter* in 2010. Further, **Allen McReynolds** was elected to the NATA board. McReynolds is currently COO of *West Star Aviation*.

**Gail Erwin** joined *Thornton Aviation* as manager of contracts and sales. She formerly held the same position at *Western Jet Aviation*.

*Jet Access* has promoted **Kevin Legault** to v-p of flight training operations and chief flight instructor. Legault previously served as the senior assistant chief flight instructor/director of flight training ops. **Corrie Bennett** has been promoted to v-p of marketing. Her previous position was director of marketing and public relations at *First Wing Jet Center*. **Danny Kirby** joined the *Jet Access* team as flight training maintenance director. His former position was process improvement administrator at *FedEx Express*.

*ExecuJet* promoted **Nadia Coetzee** to general manager of its MRO facility at *Brussels International Airport*. Coetzee previously was the technical services department manager at the



GAIL ERWIN



NADIA COETZEE

company's global headquarters near Johannesburg, South Africa, overseeing all aspects of aircraft maintenance projects.



GUILHERME PAIVA

*Embraer* has appointed **Guilherme Paiva** as director of investor relations and mergers and acquisitions. He was previously managing director of Morgan Stanley.

**Yvonne Bilshausen** has joined *Aecom* as global head of airport architecture and engineering. She was previously v-p of aviation at Hill International.

*Duncan Aviation* has promoted **Tony Curtis** to components repair and parts and rotables sales manager. He was previously assistant manager of component repairs.

*Blackhawk Aerospace* appointed **Bill Cadow** as engine sales manager. He formerly was v-p of sales and marketing/director

of sales at Raisbeck Engineering.

*MPIJet* hired **Beth Stebenné** as director of sales and service. Previously, Stebenné was chief of staff for XOJet Global.



BETH STEBENNÉ

*West Star Aviation* has promoted **Charles Brooks** to second shift manager at its East Alton, Illinois facility. Since joining West Star in 2016, Brooks has held both technician and lead positions.

After nearly 55 years in the industry, **Joe Esmerado** is retiring from *Leading Edge Aviation Solutions*. He has served as v-p of aircraft technical services since 2006. In 2017, Esmerado received the Charles Taylor Master Mechanic Award from the FAA for 50 years of service dedicated to aviation safety.



JOE ESMERADO



## AWARDS AND HONORS

The *National Aeronautic Association* (NAA) named **Cassandra Bosco** as the recipient of the 2023 Frank G. Brewer Trophy in honor of her “lifetime of leadership and service as an effective advocate for shaping and cultivating the next generation through aviation education.” Established in 1943, the Brewer Trophy resides in the National Air and Space Museum, recognizing individuals and organizations for significant contributions of enduring value to aerospace education in the U.S.

Bosco, who has been involved in industry advocacy for four decades—including holding positions with GAMA and NBAA—was a founding board member of Women in Aviation International (WAI), where she played a leading role in establishing the organization’s Young Professional Advisory Group. Bosco also played a key role in the creation of WAI’s Super Mentor Program and Jobs Connect platform.

While at NBAA, she developed the AvKids (Aviation for Kids) program to provide resources and activities on aviation, and business aviation in particular, to educators at the elementary level. NAA identified her launch of a successful “Leadership for Women in Aerospace and Aviation” program at Embry-Riddle Aeronautical University as one of Bosco’s most impactful

collaborations. The program has drawn more than 2,200 attendees to date. The co-chair of the Aviation Accreditation Board International Industry/Educator forum, she also has served as interim director for the University Aviation Association.

*ExecuJet*, the global ground handling arm of Luxaviation Group, has received honors for its Africa division. At this year’s South Africa Civil Aviation Awards presentation, the company earned top rank in the categories of aviation innovation, people development, aviation security, and aviation customer service. It was also named first runner-up in the aircraft operator segment, one in which it competed against all operators, including scheduled airlines.

The awards, established by the South African Civil Aviation Authority in 2018, recognize aviation entities operating in the country for their excellence.

ExecuJet Africa—which offers a wide variety of aviation services including aircraft charter, sales, management, and insurance, along with FBO operations, tours, and air cargo—earned top honors in aviation customer services and people development in the inaugural edition of the South Africa awards, along with first runner-up in Aviation Support Services.



► continued from page 10

There were no nonfatal mishaps involving Part 135 operations last year compared with five in 2022. One 2023 nonfatal accident involved a Part 91K operation—the first U.S. fractional operator accident recorded since November 2021. Coincidentally, the number of reported incidents of N-numbered business jets was precisely the same over the last two years (79 each year).

Nine people were killed in three fatal non-U.S.-registered business jet accidents in 2023 compared with 17 fatalities in four accidents in 2022. Charter operations were involved in one accident in each of those periods, and private flights accounted for two fatal crashes in 2023 and one fatal crash in 2022.

The number of nonfatal and fatal accidents changed little over the last two-year period for U.S.-registered turboprops, but fatalities decreased from 37 in 2022 to 25 last year. All but one of the 10 fatal accidents last year involved Part 91 operations. Five people were killed in a single Part 135 crash in 2023. Fatalities increased from Non-N-numbered turboprop accidents: from 26 in 2022 to 46 last year.

Runway excursions continued to be the most common type of incident or accident. Last year recorded 71 excursions of turbine business aircraft. Turboprops were involved in 32, of which 12 were classified as accidents. Of the 39 excursions by business jets last year, 16 were classified as accidents, one of which was fatal to all four aboard the non-U.S. charter flight.

The Aug. 23, 2023, crash in Russia of a privately-operated Embraer Legacy 600 that was fatal to all 10 people on board is not included in our charts because suspicion of malfeasance persists in what downed the twinjet.

Also not included in our charts is a U.S.-registered, privately-operated Gulfstream G-III that disappeared Dec. 12, 2023, shortly after taking off from Grenadine. At this writing there is no evidence that the aircraft suffered a mishap. ■



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**Aviation International News** (ISSN 0887-9877) is published twelve times per year (monthly). Periodicals postage paid at Midland Park, N.J., and additional mailing offices. **Postmaster:** Send address changes to AIN Media Group, 214 Franklin Ave., Midland Park, NJ 07432.

Allow at least eight weeks for processing. Include old address as well as new, and an address label from a recent issue if possible.

Subscription inquiries: +1 (201) 345-0085 or email: [subscriptions@ainonline.com](mailto:subscriptions@ainonline.com).

**Aviation International News** is a publication of AIN Media Group, 214 Franklin Ave., Midland Park, NJ 07432; Tel.: +1 (201) 444-5075.

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