



Air Venture 2018

THE YEAR OF THE TANKER

Text by Henry M Holden and photos by Steve Owen



THE C5M GALAXY PROVIDES THE UNITED STATES AIR FORCE WITH A HEAVY INTERCONTINENTAL-RANGE STRATEGIC AIRLIFT CAPABILITY. THE GALAXY HAS MANY SIMILARITIES TO ITS SMALLER LOCKHEED C-141 STARLIFTER PREDECESSOR, AND THE LATER BOEING C-17 GLOBEMASTER III. THE C-5 IS AMONG THE LARGEST MILITARY AIRCRAFT IN THE WORLD

IT MAY be termed "The Year of the Tanker" but, to be more precise, the latest EAA Air Venture should be known as the year its attendance numbers set a new record with an estimated 601 000 visitors having passed through the entrance gates – two percent up on last year's record crowd.

Other records included the fact that over 5 000 volunteers helped with the organisation and running of the event making it upbeat and exciting. In addition, more than 10 000 aircraft – that's more than three times the number of civilian aircraft estimated to roam Africa's skies – landed at nearby airfields bringing thousands of visitors from the four corners of the Americas and overseas. To cope with this aluminium overcast, were more volunteers such as Wittman Field's intrepid controllers who managed 19 588 aircraft operations over the 11 days from July 20 to 30, for an average

From a massive turnout of modern and vintage warbirds, to innovations such as quiet flight, showcasing the future of aviation, EAA AirVenture 2018 had something for everyone.

The EAA at Oshkosh celebrates milestones every year. This year, AirVenture also celebrated the end of World War 1, one hundred years ago, and the Royal Air Force's 100th anniversary. Mooney celebrated 70 years, and the Air Force Reserve Command Centre (AFRC) also celebrated 70 years. They brought with them a large

collection of U.S. Air Force heavy metal unlike anything seen in Oshkosh in years past.

THE YEAR OF THE TANKER

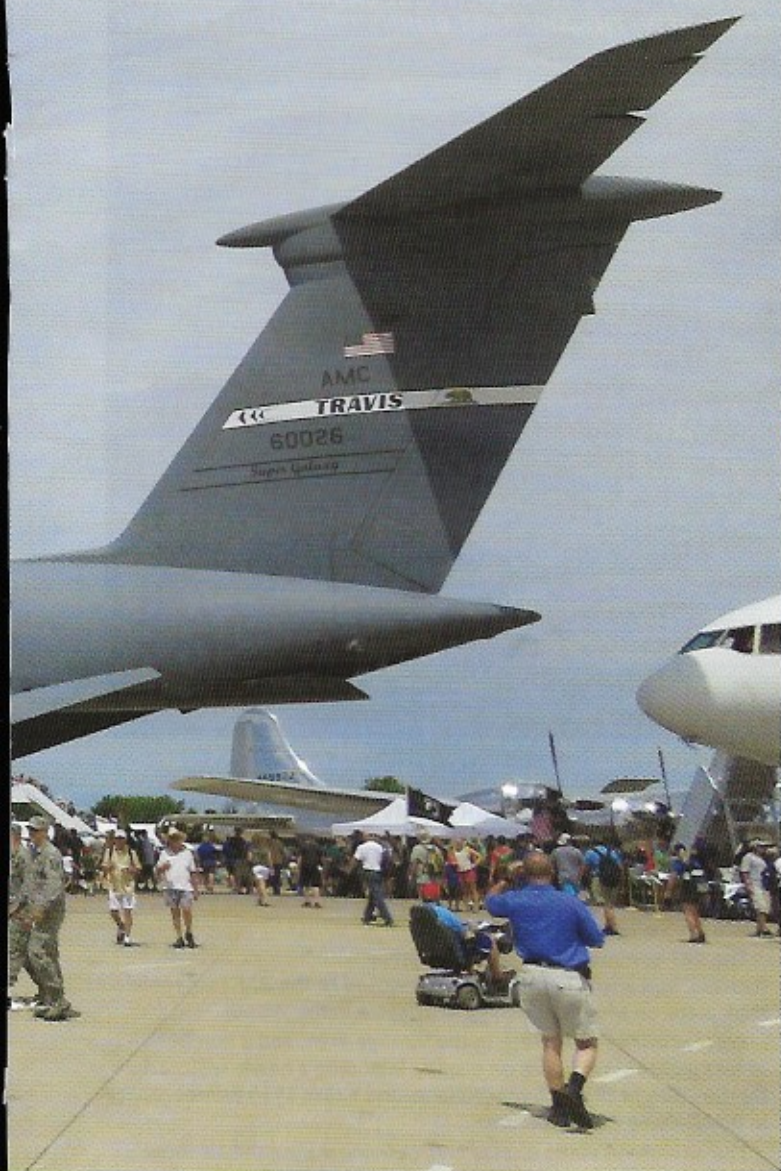
The Year of the Tanker recognized the tactical airlift and air-to-air refuelling capabilities of the military and National Guard. Fans of modern military air power had even more to be excited about, as nearly every airframe in the current U.S. Air Force inventory either flew in or was on static display throughout the week.

According to EAA Director of Flight Operations, Dennis Dunbar: "The Air Force Reserve Command Centre flies just about every type of airframe in the U.S. Air Force inventory."

Boeing Plaza had aircraft such as a McDonnell Douglas KC-10A Extender, a Lockheed C-5M Galaxy, an F-18A/F Super Hornet, a Lockheed HC-130N Combat King, two Sikorsky HH-60G Pavehawks, and two Lockheed Martin F-22A Raptors all making an impressive presentation.

During a special flying tribute linking the Year of the Tanker with the 70th anniversary of the AFRC, AirVenture attendees saw a Boeing KC-135R Stratotanker simulate an aerial refuelling (dragging) of a Rockwell B-1B Lancer. This pass was followed by a KC-10A dragging two F-22A Raptors.

Following the two jet-powered tankers was a HC-130N dragging two HH-60G Pave Hawk helicopters. At the end of this parade of



THIS IS A RARE 1915 BLÉRIOT REPLICA IN ROYAL FLYING CORPS COLOURS. THIS TYPE WAS USED IN WORLD WAR I AS A BASIC FIGHTER PLANE WITH A SOLDIER IN THE BACK SEAT OPERATING A MACHINE GUN



X-57 ELECTRIC AIRPLANE. WILL HAVE TWELVE SMALL HIGH-LIFT MOTORS ALONG THE LEADING EDGE OF THE WING. AND THE PROPELLERS WILL BE ACTIVE DURING TAKEOFF, CREATING THE LIFT NECESSARY TO GET X-57 AIRBORNE

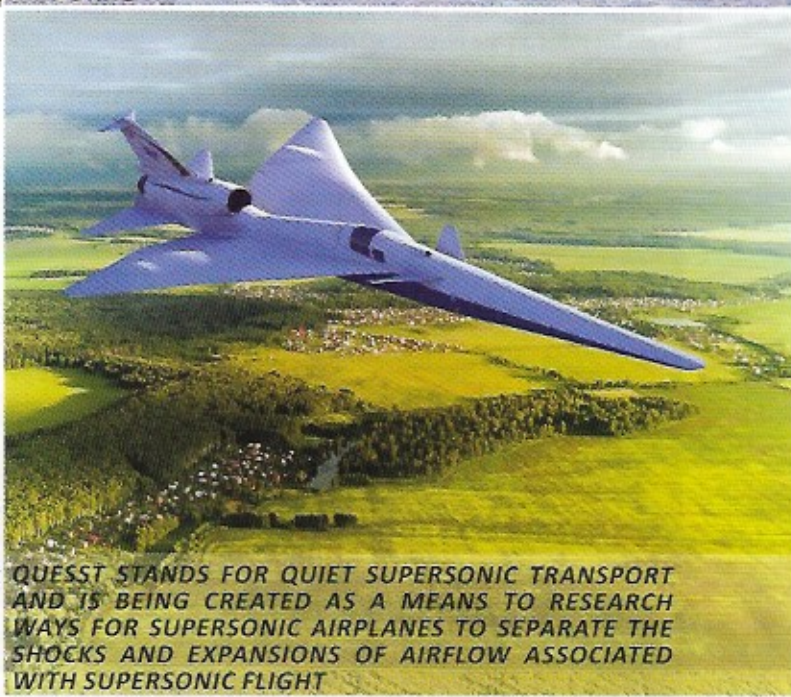
tankers, the F-22 Raptors made a few passes that brought cheers from the audience.

This year marked the return of the Boeing C-17 Globemaster III Demo Team to Oshkosh. This workhorse executed its high-performance takeoffs, minimum radius turns, tactical approaches to short-field landings, and three-point turns, where the aircraft uses its reversers to taxi backward.

The F-16 Viper Demo Team performed a modified tactical demonstration followed by a heritage flight. The Air Force Heritage Flight Foundation provides dramatic displays pairing modern U.S. Air Force tactical aircraft with warbird fighter aircraft from the World War II, Korea, and Vietnam eras.

The U.S. Navy and Marine Corps also got in on the year of the tanker. Air Test and Evaluation Squadron Nine sent a trio of Boeing F/A-18F Super Hornets and Boeing EA-18G Growlers to Oshkosh where they simulated a Super Hornet refuelling a Growler. A Super Hornet was on static display showing off the aerial refuelling system pod as well.

Although no longer a Navy asset, NASA brought the only airworthy Lockheed S-3 Viking to Oshkosh for both static display and flyovers. While known primarily as an anti-submarine warfare aircraft, the S-3 was also a force multiplier when serving in the aerial refuelling capacity.



QUESST STANDS FOR QUIET SUPERSONIC TRANSPORT AND IS BEING CREATED AS A MEANS TO RESEARCH WAYS FOR SUPERSONIC AIRPLANES TO SEPARATE THE SHOCKS AND EXPANSIONS OF AIRFLOW ASSOCIATED WITH SUPERSONIC FLIGHT



DOC, THE BOEING B-29 SUPERFORTRESS THAT FIRST CAME TO AIRVENTURE LAST YEAR RETURNED STILL LOOKING SHINY AND BRAND NEW. THE AIRCRAFT BURNS 100 GPH PER ENGINE



B-29 "DOC" OFFERED RIDES

Doc, the Boeing B-29 Superfortress that first came to AirVenture last year, returned still looking brand new. Doc has logged about 45 flying hours since its visit last year with a total of 80 hours since restoration. According to Tony Mazzolini, the aircraft performed flawlessly and is running like a Swiss watch, with zero surprises.

Mazzolini resurrected Doc from its desert boneyard grave and guided its restoration. "The aircraft burns 100 gph per engine," Mazzolini said, adding that to the upkeep and maintenance, Doc can consume up to \$10,000 per flight hour.

To help defray this cost, Doc's Friends, Inc., was added to the list of approved warbirds carrying passengers. The FAA granted the group's request for exemption and Doc's Living History Flight Experience programme, which cleared the way for ticket sales to begin for rides on the historic warbird.

Each B-29 Doc Flight Experience lasts about 90 minutes and includes a 30-minute ride. Passengers experience a pre-takeoff crew briefing and learned more about the history of the B-29 and the role it played in World War II.

ROYAL AIR FORCE 100 YEAR ANNIVERSARY

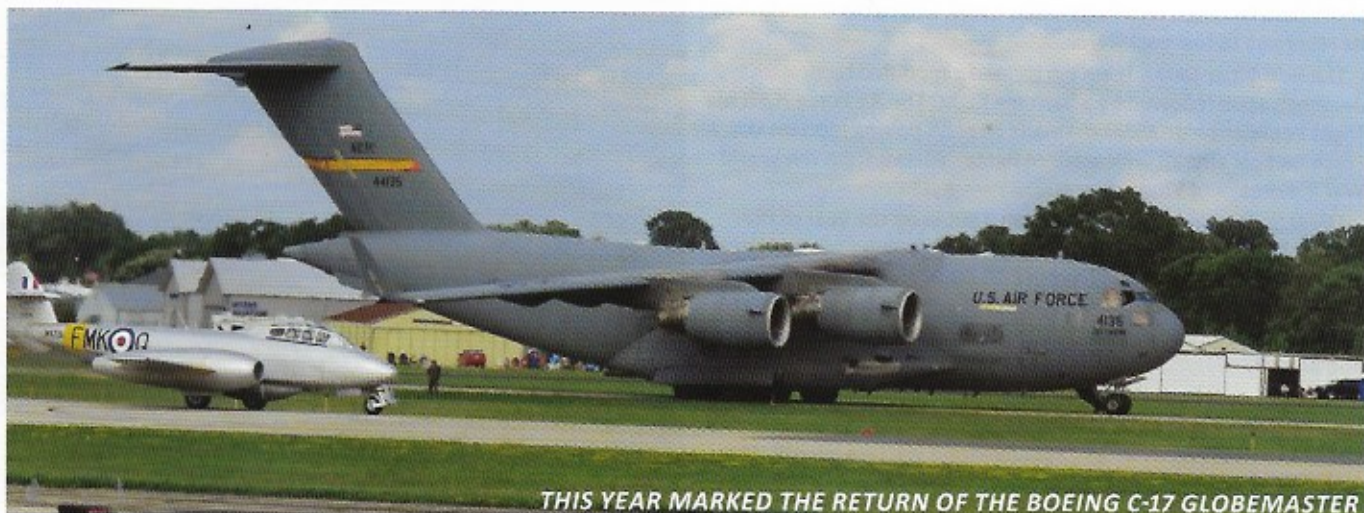
The UK's Royal Air Force (RAF) was born in the final year of World War I. Military aviation had existed in the UK since 1911, but the RAF was formed by merging the Royal Flying Corps and the Royal Naval Air Service, in April 1918.

The RAF commemorated its centennial with historic aircraft, flyovers, and a special programme devoted to the RAF centennial took place on Monday evening at Theatre in the Woods.

WWI activities took place in the Vintage area, and a number of historical aircraft were on display, including a newly restored Dayton-Wright DH.4 Liberty biplane, and a rare 1915 Blériot replica in Royal Flying Corps colours.

The aircraft on static display and/or flying during the air show included a collection of World War I and World War II aircraft, including a restored Sopwith Snipe, a full-scale Sopwith Camel replica, and several Supermarine Spitfires, and more.

continued on page 22



THIS YEAR MARKED THE RETURN OF THE BOEING C-17 GLOBEMASTER



An original RAF Gloster Meteor, the Allies' first operational jet fighter, was on display and flying as was a de Havilland Vampire.

MOONEY CELEBRATES 70 YEARS

"Seventy Years of Innovation is our theme for AirVenture this year," said Lance Phillips, marketing director at Mooney International. "But it's so much more than a simple slogan," he continued. "Seventy years is certainly a very special anniversary," said Phillips. "But we're not stopping here. We want to take ease of ownership, celebration of speed, and enjoyment of the Mooney brand to an entirely new level."

Phillips announced the launch of Fill & Fly — a first of its kind programme designed to make ownership of a new Mooney easier than ever. "Fill & Fly covers the costs of all consumables for three years, as well as the cost of all required inspections and regular maintenance," said Phillips, adding: "This coverage is in addition to the company's existing standard three-year warranty on engine, airframe, and avionics for every new aircraft. In addition, the Fill & Fly programme also provides a \$10,000 flight-training allocation for owners to use at their discretion. The bottom line: Owners can fill their new airplane with fuel and fly it — and be worry-free when they do."

BLACKFLY COMES TO AIRVENTURE

What all-new, fixed wing, all electric, eight motor, amphibious, vertical takeoff and landing aircraft showed up at the show?

It's called BlackFly and it is an ultra-light, fly-by-wire, for the recreational pilot who may or may not hold a pilot certificate.

Opener has announced that its BlackFly ultralight VTOL aircraft had been qualified for use in the US. The company says that BlackFly is simple to operate and master with no formal licensing needed in the US. BlackFly is fully amphibious and is designed to operate from small grassy areas for distances of up to 25 miles.

There are many different personal electric aircraft vehicles in development and few have some impressive working prototypes. Opener is adding itself to the list with the unveiling of its BlackFly. The company has been developing the aircraft under the radar for nine years and it is just now showing what it has been working on.

SOUTH AFRICANS SET ATTENDANCE RECORD

Neil Bowden, of EAA Chapter 322, in Johannesburg, has been

coming to AirVenture for 22 years and has watched more of his countrymen attending each year.

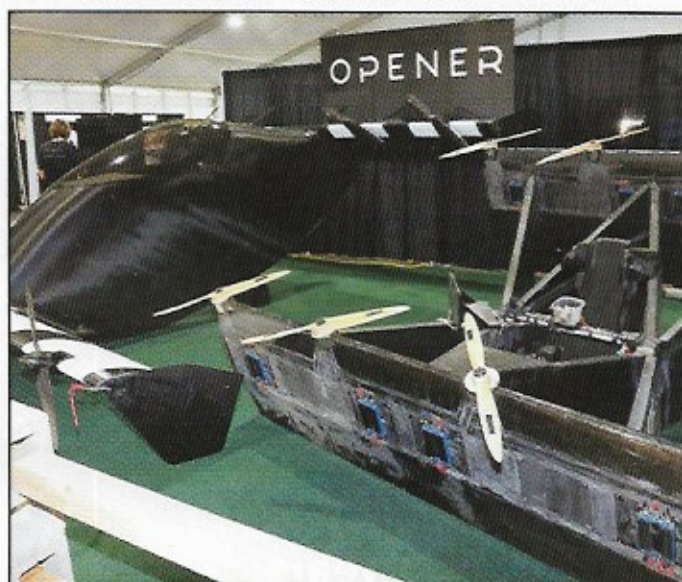
"Last year we set a record of 163 people," said Bowden who has been organising the annual adventure travel packages from South Africa since 1997. "This year we have 237."

The South Africans became the first group to set up their permanent Camp Scholler location with a small permanent structure in 2003. "It's difficult coming from South Africa," said Bowen. "We can't over pack and we can't bring a recreational vehicle or an aircraft, so now we can store our camping equipment. That makes it a whole lot more comfortable for a week's stay."

"For those building aircraft, AirVenture represents a major opportunity to compare and select avionics engines and other gear for their projects."

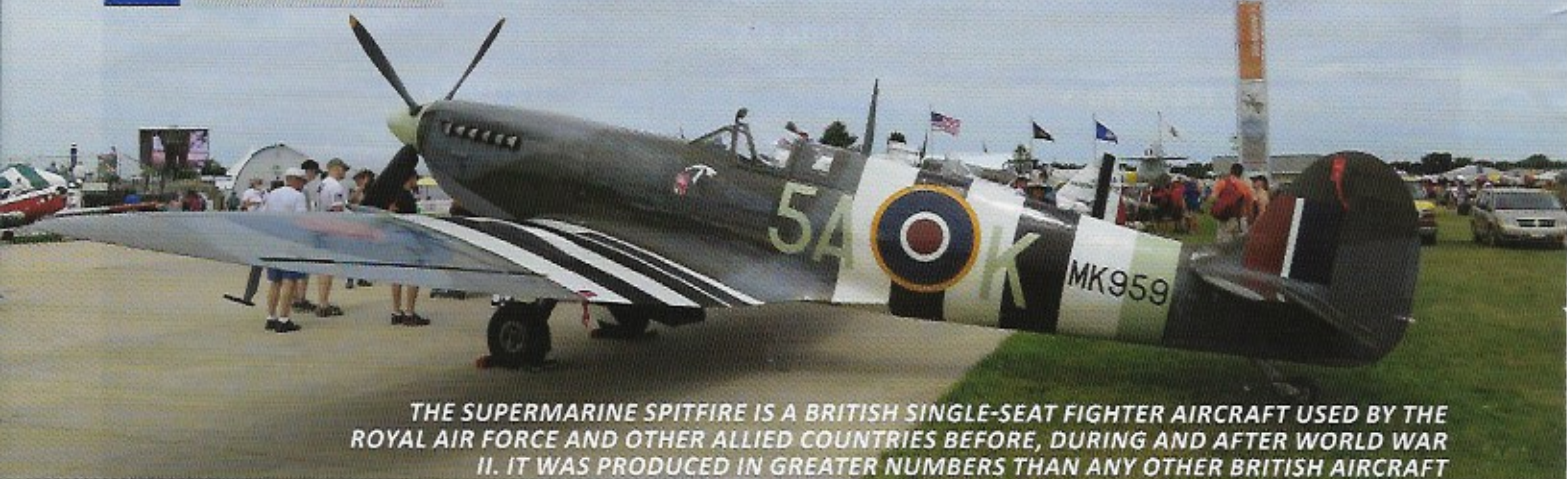
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BLACKFLY IS DESCRIBED AS 'THE WORLD'S FIRST ULTRALIGHT, ALL-ELECTRIC, FIXED-WING, VERTICAL TAKE-OFF AND LANDING (VTOL) AIRCRAFT' THE LATEST WORKING PROTOTYPE OF A NEW ULTRALIGHT ALL-ELECTRIC PERSONAL VTOL AIRCRAFT HAS ABOUT A 25 MILE RANGE



ONE OF TWO F-22 RAPTORS THAT PERFORMED IN THE SHOW





THE SUPERMARINE SPITFIRE IS A BRITISH SINGLE-SEAT FIGHTER AIRCRAFT USED BY THE ROYAL AIR FORCE AND OTHER ALLIED COUNTRIES BEFORE, DURING AND AFTER WORLD WAR II. IT WAS PRODUCED IN GREATER NUMBERS THAN ANY OTHER BRITISH AIRCRAFT

QUIETER FLIGHT IS COMING

In 1947, the first manned supersonic flight took place. The pilot was Chuck Yeager and the plane, the Bell X-1. Now, 71 years later, NASA is getting ready for yet another achievement in supersonic flight: a Concorde replacement that could reach Mach 1.4 above inhabited areas, without causing a sonic boom.

Nils Larson chief pilot at NASA Armstrong Flight Research Centre and lead pilot on the X-59 project, discussed the project in a forum called "Zoom Without the Boom." To illustrate the aircraft he brought a large scale model.

QueSST stands for Quiet Supersonic Transport and is being created as a means to research ways for supersonic airplanes to separate the shocks and expansions of airflow associated with supersonic flight.

"This separation can reduce the sonic boom to as much as 60 dB, the volume you get in your average conversation with a friend," said Larson. "By comparison, the Concorde was rated at 90 dB."

NASA AND ELECTRIC FLIGHT

While NASA is working on quieter supersonic flight it is also working on an all-electric airplane. Featuring 14 electric motors and propellers on the leading edge of a high aspect ratio wing, the X-57 Maxwell hopes to demonstrate a 500 percent reduction in the energy needed to cruise at high speed. In addition, the test programme looks to demonstrate flight much quieter and with zero in-flight carbon emissions.

The X-57 is a modified gas powered Tecnam P2006T which will undergo four phases of modification and wing testing. Initially it will start replacing the two gas engines with all-electric engines building up to eight engines on the wing. The airplane's original wing will be replaced with a new longer and skinnier, high aspect ratio wing, which will help reduce drag on the aircraft.

Phase IV will feature 12 added small high-lift motors along the leading edge of the wing. These motors and the propellers will be active during takeoff, creating the lift necessary to get X-57 airborne. Then during the cruise phase of the flight, the propellers will stop turning and the blades will fold to eliminate drag. Two electric motors will be added to the tips of the wing to counter the drag created by wingtip vortices seen on conventional aircraft. The 12 motors will be activated again during landing.

MAGNUS 212 MAKES US DEBUT

Magnus Aircraft introduced its Magnus Fusion 212 to the U.S. market at this year's AirVenture. The Magnus Fusion 212 is a side-by-side Hungarian-built LSA certified for the European market since 2012. Several are flying in Austria, China and Russia. The trainer aircraft is powered by a Rotax 912 engine and the 6G aerobatic version will use a Lycoming O-320.

"The highly tapered wing on the carbon fibre aircraft was adapted by designers from a Redbull design they created," said

Balazs Feher, the company's flight test engineer. "It is well-suited to meet the coming FAA mandate for Upset and Prevention and Recovery training for pilots," he said.

The company will also offer the 212 Sentinel designed as a low-cost surveillance platform equipped with a FLIR system that can be controlled by an onboard operator or remotely from a distance of up to 100 km (about 62 miles). Buyers have a choice of Dynon or Garmin G3x glass panels. The price is US \$139 000.

FULL-SCALE CESSNA DENALI TURBOPROP MOCKUP

The long-awaited next step took place this week when Textron Aviation displayed a full-scale mock-up of the Cessna Denali passenger cabin and cockpit.

Introduced in 2015, Textron showed the aircraft's cabin concept in 2016, and has been fine-tuning the cabin and cockpit after input from its customer base.

Designed using cues from Textron's large-cabin business jets, the company says the Denali has the largest flat-floor design of any airplane in the class.

The Denali will be powered by the 1 240 shaft horsepower full FADEC-controlled Catalyst engine, which was developed by GE Aviation. The engine will have a 4 000-hour TBO and Textron said the Denali was projected to have cruise speeds in the 285-knot range and full-fuel payload of 1 100 pounds. The Denali will have a digital pressurisation system that maintains a 6 130-foot cabin altitude at 31 000 feet.

Flight testing is programmed for 2019 with production starting the following year.

714 STRATOS BECOMES 716

After feedback from potential customers about the size of the 714 cabin, Stratos Aircraft Engineering Manager, Carsten Sundin, said the company had decided to "bite the bullet" and make the changes early in the development process.

The new design will change the 714 single-engine jet into the 716, a three-foot longer version with a larger and more comfortable cabin.

Sundin said details of the resulting new aircraft would not be released until the fourth quarter of this year, but he called it a "true six-place aircraft."

"The overlap market between turboprop twins and small bizjets is still our target," said Sundin. "The product will outperform anything in that market. Production models of the 716, will cost more than the \$3.5-million predicted by the company for the 714. The company hasn't released the price for the new 716.

"The first kit version of the 716 is in production and will be finished later this year," Sundin said. The company intends to begin as a kit builder, and hopes to be able to certify the aircraft for factory production in three to four years. →