King Air

A MAGAZINE FOR THE OWNER/PILOT OF KING AIR AIRCRAFT

APRIL 2018 • VOLUME 12, NUMBER 4 • $6.50

Serving the Northern Skies

Air Inuit lifts northern Quebec

GARMIN'S #1 AFTERMARKET DEALER BRINGS YOU THE NEXT EVOLUTION OF G1000

The next evolution of Garmin's G1000 is now here, the **G1000 NXi!** At Elliott Aviation, we have completed **more Garmin G1000 installations than all other dealers in the world COMBINED!** Let us offer you the same great installation our customers from all over the world have experienced on a G1000 NXi installation with a 15-day, $3,000 per day guaranteed downtime. For current G1000 owners, the NXi gives you a cost-effective, plug-and-play solution that can be completed in **as little as two days.** As a Factory Authorized King Air Service Center, Elliott Aviation offers on-site training to make sure you are comfortable with your system before you leave.

The Garmin G1000 NXi Features the Following Upgrades over the Standard G1000:

- HSI Map Overlay on the PFD (Flight Plans, Datalink Weather, Traffic, Weather Radar, Relative Terrain and More)
- ADS-B In Technology Using Patented TargetTrend and Terminal Traffic as well as Visual Approaches
- Increased Map Performance with Contemporary Animations and Modernized Design
- Optional Cockpit Connectivity Including Wireless Database Updates and Flight Plan Transfer Via Garmin Flight Stream
- Optional Surface Watch Runway Monitoring Technology

GARMIN®

MOLINE DES MOINES MINNEAPOLIS 800.447.6711

ELLIOTT® AVIATION

www.elliottaviation.com

King Air

A MAGAZINE FOR THE OWNER/PILOT OF KING AIR AIRCRAFT

APRIL 2018 Volume 12 / Number 4

EDITOR
Kim Blonigen

EDITORIAL OFFICE
2779 Aero Park Dr.,
Traverse City MI 49686
Phone: (316) 652-9495
E-mail: editor@blonigen.net

PUBLISHERS
J. Scott Lizenby
Dave Moore
Village Publications

GRAPHIC DESIGN
Luana Dueweke

PRODUCTION MANAGER
Mike Revard

PUBLICATIONS DIRECTOR
Jason Smith

ADVERTISING DIRECTOR
John Shoemaker
King Air Magazine
2779 Aero Park Drive
Traverse City, MI 49686
Phone: 1-800-773-7798
Fax: (231) 946-9588
E-mail: johns@villagepress.com

ADVERTISING EXECUTIVE ASSISTANT
Betsy Beaudoin
Phone: 1-800-773-7798
E-mail: betsybeaudoin@villagepress.com

SUBSCRIBER SERVICES
Rhonda Kelly, Mgr.
Kelly Adamson
Molly Costilow
Diane Smith
Jamie Wilson
P.O. Box 1810
Traverse City, MI 49685
1-800-447-7367

ONLINE ADDRESS
www.kingairmagazine.com

SUBSCRIPTIONS
King Air is distributed at no charge to all registered owners of King Air aircraft. The mailing list is updated bi-monthly. All others may subscribe by writing to: King Air, P.O. Box 1810, Traverse City, MI 49685, or by calling 1-800-447-7367. Rates for one year, 12 issues: United States $15.00, Canada $24.00 (U.S. funds), all other foreign $52.00 (U.S. funds). Single copies: United States $6.50, Canada/Foreign $9.00.

COVER PHOTO
Photo courtesy of
Air Inuit

Contents

2
Arctic King Airs
by MeLinda Schnyder

10
Maintenance Tip: Engine Split Rings Revisited
by Dean Benedict

14
Aviation Issues: Undertaking LOC-I, New DC Air Space Requirements and FAA Authorization Bill Status
by Kim Blonigen

16
Ask the Expert: Applying Takeoff Power … and Never Being Surprised Again
by Tom Clements

18
Wichita's Air Racing Legacy – Part Two
by Edward H. Phillips

25
Value Added

30
Technically...

32
Advertiser Index

King Air (ISSN 1938-9361), USPS 16694 is published monthly by Village Press, Inc., 2779 Aero Park Drive, Traverse City, Michigan 49686. Periodicals Postage Paid at Traverse City, MI. POSTMASTER: Send address changes to King Air, Village Press Inc., P.O. Box 1810, Traverse City, MI 49685. Telephone (231) 946-3712. Printed in the United States of America.

ADVERTISING: Advertising in *King Air* does not necessarily imply endorsement. Queries, questions, and requests for media kits should be directed to the Advertising Director, King Air, P.O. Box 1810, Traverse City, Michigan 49685. Telephone 1-800-773-7798.

MANUSCRIPTS: *King Air* assumes no responsibility for unsolicited manuscripts, photographs, or art work. While unsolicited submissions are welcome, it is best to query first and ask for our Writer's Guidelines. All unassigned submissions must be accompanied by return postage. Address queries and requests for Writer's Guidelines to the editor.

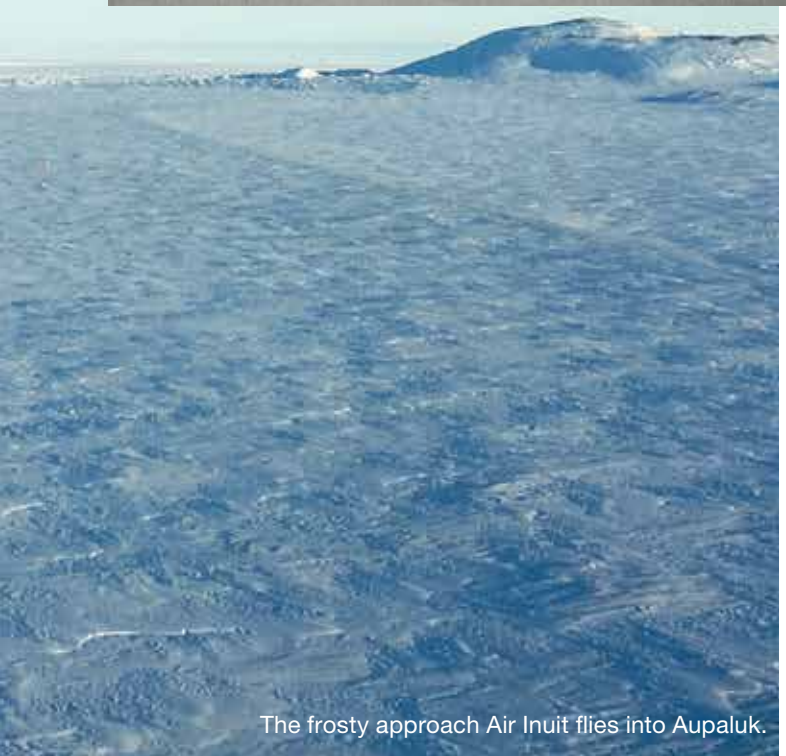
Arctic King

Air Inuit celebrates 40 years of service

by MeLinda Schnyder

Airs

Nunavik is an immense arctic region of frozen tundra, snow forest, scenic mountains, rivers and lakes in the northern third of the province of Quebec, Canada. The 170,000-square-mile territory is north of the 55th parallel and inhabited by about 12,500 aboriginal people, the Inuit, who live in 14 modern villages along the coasts of Hudson Bay, Hudson Strait and Ungava Bay. Only four of those communities have populations of more than 1,000.



The frosty approach Air Inuit flies into Aupaluk.

Air Inuit – founded and fully owned by the Inuit through Makivik Corporation – began operations in 1978 to bring air service to a region that had been mostly inaccessible. They started with one single-engine De Havilland Beaver aircraft and today operate 31 aircraft, including four Beechcraft King Air aircraft, to provide passenger, charter, cargo and emergency air transport services throughout northern Quebec and destinations across Canada and the United States.

In the far north, the aircraft and pilots are put to the test with extreme weather conditions and varying landing options. But providing a much-needed service and the spectacular views from the cockpit are the reward.

"We operate from major international airports such as Montreal and Quebec City all the way to remote community gravel runways," said Jonathan Lukca, Air Inuit's assistant to the Twin Otter and King Air chief pilot. "Since we're a northern operator, we deal with short days in the winter; contaminated runways like snow drifts, ice, blowing snow; icing; and extreme cold. An average northern winter day can reach -30 degrees Celsius, and it dips lower at night.

"During the summer, days are very long, the sun hides below the horizon for only a few hours at 'night' at the end of June. The weather is generally pleasant in the summer; the main issue on a calm day are the flies. The landscape is breathtaking during the day, both in summer and winter, and on a clear night, the northern lights can put on quite a show!"

History of Air Inuit

Makivik Corporation formed in 1975 as the land claims organization mandated to manage the heritage funds of the Inuit of Nunavik provided for under the first comprehensive Inuit land claim in Canada, the James Bay and Northern Québec Agreement. Makivik promotes the preservation of Inuit culture and language as well as the health, welfare and education of the Inuit. The corporation's role includes the administration and investment of these funds and the promotion of economic growth by providing assistance for the creation of Inuit-operated businesses in Nunavik.

One of those businesses is Air Inuit. Shortly after start-up, they added a pair of Twin Otters and one single-engine De Havilland DHC-3 Otter. In 1983, the company purchased the routes north along the eastern Hudson Bay coast from Austin Airways, increasing its Twin Otter fleet to eight. In 1985, the company acquired a Hawker Siddley 748 twin-engined turboprop and began operating it from a base in Kuujjuaraapik, which was later relocated to La Grande (LG2) to address the growing demand to move cargo and heavy machinery throughout the region, primarily for mining purposes. In 1988, Johnny May's Air Charters was purchased as a subsidiary company running single-engine Otters and Beavers during the float season.

All of Air Inuit's King Airs are modified for the Lifeport Plus Installation used for safe and rapid loading and unloading of passengers during medevac operations.

An ambitious expansion plan started in 1995 with the company introducing De Havilland Dash 8-100 service between Montreal and Nunavik. In 1998, they created Nunavik Rotors and purchased an Aerospatiale AStar 350 helicopter to bring rotary-wing service to the region. A couple years later, Air Inuit acquired three King Air A100 aircraft to accommodate an expanding flight network and improve emergency medical transportation flights.

The next big acquisition came in 2008, with the addition of a Boeing 737-200C capable of landing on gravel and specially adapted for northern operations. Air Inuit added a King Air 350 in 2017 for executive charter, commuter and emergency medical transport.

The regional airline built a multi-purpose, state-of-the-art maintenance center and head office at Montréal–Pierre Elliott Trudeau International Airport in 2011, as part of a sweeping modernization initiative designed to meet increased demand for air transport services throughout Northern Quebec and other destinations across Canada and the United States.

King Airs join the fleet

In 1992, Air Inuit purchased its first King Air, a model 200C, from an operator in Australia. The company's then chief pilot, assistant and maintenance director brought the aircraft to Montreal, stopping in Papua, New Guinea; Micronesia; Wake Island; Midway Island; Adak Aleutians and Fairbanks, Alaska; then Edmonton and Winnipeg, Canada. It operated as a northern-based medical passenger transport aircraft between the northern village of Puvirnituq and Montreal and flew south about three times a week. In 1995, Air Inuit increased this service between north and south and replaced the King Air with a De Havilland Dash 8-100.

Several years later, Air Inuit was looking for an aircraft to operate emergency medical transport and executive charters. They acquired their first King Air A100 in 2000. Within three years, two additional A100s were added to the fleet.

"One major factor in deciding which aircraft to get was the engines," Lukca said. "The A100 has PT6A-28 engines and the Twin Otter has PT6A-27 engines. Air Inuit operates seven DHC6-300 Twin Otters. Besides several accessory and governor differences, these engines are identical, thus interchangeable between both these aircraft types. It's an excellent operating solution for Air Inuit compared to a King Air with a -30, -40 or -60 series engines."

Those aircraft are still part of the company's fleet today. Two of the A100 aircraft are based in Kuujjuaq and mainly fly scheduled, charter and medevac flights. Another is based in Schefferville and flies two daily scheduled flights to Sept-Iles on the northern shore of the St-Lawrence River, connecting north and south.

"... when speed is a requirement, the King Air is the way to go. The King Air also allows us to fly above the weather and turbulence. And with a pressurized cabin, medical transport is generally more comfortable in the King Air."

– Captain John Lukca

C-FAIO is a 1972 model with about 27,000 hours, C-FAIP was built in 1974 and has 28,536 hours and C-GAIK is a 1971 model with 29,475 hours. All three underwent a massive avionics upgrade in 2012, going from a factory cockpit to a fleet-wide standard Garmin panel. The A100s are equipped with two Garmin G600 Flight Displays, two Garmin GNS430 WAAS GPS units and an STEC-65 Autopilot.

Jonathan Lukca conducts a flight check on Air Inuit's King Air 350. Lukca has been with the regional carrier since 2008 and has close to 7,000 total hours, including 2,050 on King Air aircraft.

Air Inuit began using Beechcraft King Air aircraft in the early 1990s to accommodate an expanding flight network in northern Quebec and to improve emergency medical transportation flights. Here, a King Air 100 in Kuujjuaq is getting ready for a flight.

"With the new avionics package, we increased safety by standardizing the cockpit layout," Lukca said. "Despite being the same aircraft type, each cockpit had its differences. This makes it easier to transition from one airplane to another. By doing this modification, we also significantly lightened the nose of the aircraft which created significant weight and balance challenges when optimizing flights. We installed two lead nose ballast weighing in at 45 pounds each, so we can operate the A100s at maximum, nine-passenger capacity without any balance issues."

Adding the King Air 350

Air Inuit wanted to bring a newer aircraft into the mix and began researching options in 2016. They considered a Beechcraft 1900, but found the King Air 350 offered the best performance considering the shorter runways in northern Quebec.

"For pilots, going from the 100 to the 350 is like going from a sedan to a top of the line sports car," Lukca said. "They both do the job very well, however the performance of the 350 still impresses me! We're able to fly farther and faster than the 100, meaning we can accomplish missions that would, in the King Air 100, require more time and possibly fuel stops."

Air Inuit acquired a 2000 King Air 350 in early 2017. It has about 6,000 hours and is based in Montreal, where it is mostly used for executive charter and medevac operations.

"Before acquiring the 350, we had a focus group consisting of Patrick Carrière, our King Air and Twin Otter chief pilot, myself, dispatch, the operational control manager and maintenance personnel to determine the most suitable avionics suite for our operation," Lukca said. "We looked at Pro Line 21, EFIS 85, Garmin and Universal cockpit configurations and determined that the Universal cockpit was best suited for our operation. The 350's cockpit was completely overhauled and now consists of the standard Collins autopilot, three Universal EFI 890 Flight Displays and two Universal UNS-1LW Flight Management Systems and USB charging ports for our electronic flight bag."

The 350 is currently in an eight-passenger executive club configuration with room for a ninth passenger at

Air Inuit's three King Air A100 aircraft underwent a massive avionics upgrade in 2012, going from a factory cockpit to a fleet-wide standard Garmin cockpit.

Air Inuit began operations in the far northern region of Quebec, Canada, in 1978 with one single-engine De Havilland Beaver aircraft and today operates 31 aircraft, including four Beechcraft King Air aircraft.

the rear passenger cabin. It can be reconfigured for an emergency medical transport within an hour. Air Inuit also offers the 11-seat commuter configuration.

Current King Air operations

All of Air Inuit's King Airs are modified for the Lifeport Plus Installation used for safe and rapid loading and unloading of passengers during medevac operations. They have also been modified with a cargo net installation on the left-hand side of the passenger cabin for increased cargo capabilities.

"The aircraft are truly multi-purpose," Lukca said. He's flown the King Air A100 as an air ambulance to transport a hiker mauled by a polar bear to a larger hospital as well as flying the model for daily commuters, hauling cargo and conducting flight training.

"All of our King Airs are used for flight training since all our training is completed in the air," said Lukca, who is also a ground and flight instructor and company check pilot for Air Inuit. "King Air simulators are also used in addition to flight training as part of our recurrent training program."

While the King Airs aren't the only aircraft within the Air Inuit fleet that can do the job – whatever that might be – they are among the most flown. Air Inuit flies the King Air A100 aircraft about 1,500 hours per year.

"The DeHavilland Twin Otter is a very versatile airplane, in some cases even more so than the King Air, but when speed is a requirement, the King Air is the way to go," Lukca said. "The King Air also allows us to fly above the weather and turbulence. And with a pressurized cabin, medical transport is generally more comfortable in the King Air."

Air Inuit has approximately 150 active pilots, a dozen of which are based throughout the North on the King Air 100 and three crews on the King Air 350 in Montreal. Maintenance is normally performed in Kuujjuaq for the A100 fleet and the King Air 350 is also maintained in-house in Montreal.

As Air Inuit celebrates 40 years in operation this year, the company says the King Air will continue to play an important and wide-ranging role in its operations. Despite a challenging period for air carriers, Air Inuit continues to expand at a steady, yet temperate pace.

"Additional King Air 350s should be joining the fleet as part of our King Air modernization plan," Lukca said, "and our maintenance department will ready them for the challenging and always fun task of flying northern skies." KA

Engine Split Rings Revisited

by Dean Benedict, A&P

I've looked at a lot of King Airs in my day, and one of the things I always check is the split ring placement. Many times, I find them correctly installed on the engine exhaust port flange. But I still see some installed on the exhaust stack flange, and this is a big "no-no."

Back in 2012, I addressed the subject of split ring reinforcers and their placement in the Mar/Apr and Nov/Dec issues of this magazine. At that time, the King Air 200 manual had it wrong – it depicted the split rings *outboard of the stack flange* rather than *inboard of the engine flange*. Confusion abounded.

There are plenty of shops and mechanics that are getting it right, but I still find some with no idea what the split rings are even for, much less where to put them. I even ran into a shop that knew what the correct placement should be but installed them incorrectly in accordance with the 200 manual. They said in order to sign it off they had to be in compliance with the manual. The poor owner of that King Air had to take it to another shop to get his split rings removed and reinstalled correctly.

The original, very short-lived, exhaust stack for the 200 (top), and the stovepipe stack (bottom).

The Purpose of Split Rings

The split ring is a two-part backup ring installed on the backside of the engine exhaust port flange. The various King Air manuals call them "stiffeners" or "reinforcements." When installed correctly, split rings support to the engine flange once the exhaust stack is bolted on.

The very first model 200s did not come with split rings. The original stacks Beech Aircraft had designed left

A split ring (one-half of a pair shown) is a backup ring divided into two halves which are installed on the backside of the engine exhaust flange.

big swaths of soot on the nacelles. Owners complained vigorously. So, the company designed a longer, smoother, stack to carry the exhaust further away from the nacelles. It was perfectly round and looked like a stovepipe. Back in the day, that's what we called them. The nacelles were cleaner, and everyone was happy except for the engine manufacturer Pratt & Whitney.

The stovepipe stack was heavier and the flanges on the engine exhaust ports weren't designed for that much weight and could crack. If that happened, the engine had to be split, and the power section removed to make the repair.

I remember this was a big deal at the time. Although split rings were already in use on the 100s and A100s, the exhaust stack issues on the 200s prompted a lot of discussion about the integrity of the engine exhaust port flange, and the use of split rings for reinforcement.

Proper Positioning

Unfortunately, as time went on, the purpose for the split rings was forgotten. People were putting them on the exhaust stack flange, where they do no good at all. Further complicating the issue was the mistake in the 200 manual.

Remember, if not directly reinforced by split rings, the engine flange cannot bear the weight of the exhaust stack. Over time, stress fractures develop, and the engine flange can crack. Even the exhaust duct on the engine can crack.

I've seen it all. I've had to split engines, send power sections to engine shops for repair, and submit expensive invoices to King Air owners – all due to split rings installed in the wrong place or missing completely.

Let's review: The exhaust stacks bolt onto the engine exhaust duct ports. The flanges of each fit flush to

one another. The bolts go through the stack flange, then the engine duct flange, followed by the split rings. The flat surface of each split ring goes against the engine port flange, with the rounded surface facing away from it. If the aircraft has UV shields, they go on after the split ring.

UV Shields

Any King Air with the "cat's eye" engine fire detection system (i.e., no fire loop) has UV shields installed at the engine exhaust duct flange. These crescent-shaped pieces of metal prevent sunlight from hitting the forward optical fire detector (fire detector shield or UV deflector are other names). They, too, are frequently installed in the wrong position, between the top split ring and the engine flange. This prevents the top split ring from distributing the weight load of the stack. *The split rings must have direct contact with the engine exhaust port flange all the way around.*

A UV shield (deflector) found on King Airs with the "cat's eye" fire detection system. It prevents sunlight from hitting the forward optical fire detector.

Model 200 Manual Mistake Corrected!

At last, the King Air 200 maintenance manual has a diagram showing correct placement of the split ring reinforcements. See Figure 401 (Revised) below right. You can see the exhaust stack (#4) with its flange. Left of that is another flange. Although not labeled, this is the engine exhaust port flange. The reinforcements (#2) go in between the engine flange and the fire detector shield (#1). The bolts (#3) go in from the stack side. Stack flange, engine flange, split ring, UV shield. Hallelujah!

A Few Exceptions

Outside of the 300 series, I can't think of a King Air that doesn't have split rings. The earliest King Airs (A90s, B90s and a few early C90s) came from the factory with a short, lightweight exhaust stack and no split rings. But later, Beech Aircraft designed a replacement stack that was longer and heavier, and split rings were required.

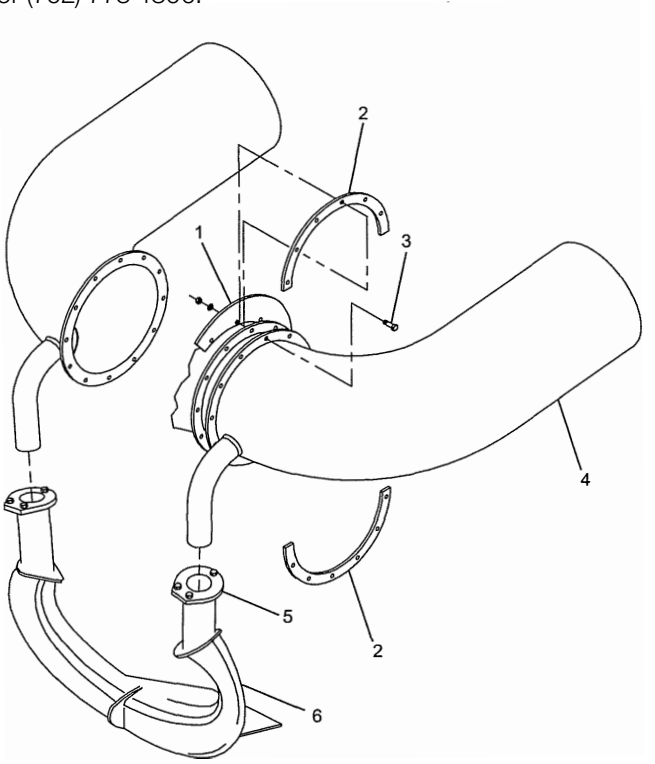
Exhaust stack on left; engine exhaust port on right. Stack is loosely bolted to align holes. Top split ring is already installed; bottom split ring is held to indicate the position where it will be installed, flush against the engine port flange.

Very recently, Pratt & Whitney has beefed up the exhaust port flanges in a few cases, so some of the newest King Airs are exempt from split rings. The maintenance manual identifies by aircraft serial number which King Airs need them and which do not; most do.

There may be an after-market stack that does not need split rings, but I doubt it. The STC paperwork should make this clear. If ever there was a question whether or not to install them, I'd put them on.

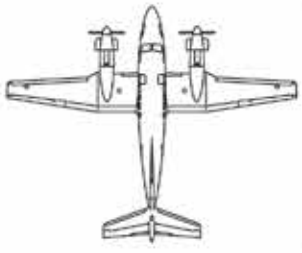
I don't see a downside to split rings and I'd rather be safe than sorry when it comes to protecting the exhaust ducts and flanges on your engines. I've seen what happens when split ring stiffeners are installed incorrectly or are missing entirely. It's a road you do not want to go down. KA

Dean Benedict is a certified A&P, AI with over 40 years' experience in King Air maintenance. He's the founder and former owner of Honest Air Inc., a "King Air maintenance boutique" (with some Dukes and Barons on the side). In his new venture, BeechMedic LLC, Dean consults with King Air owners and operators on all things King Air related: maintenance, troubleshooting, pre-buys, etc. He can be reached at *dr.dean@beechmedic.com* or (702) 773-1800.



1. FIRE DETECTOR SHIELD
2. REINFORCEMENT (2)
3. BOLT, WASHER AND NUT (12)
4. EXHAUST STACK
5. EXHAUST SEAL PLATE
6. AIR INLET ANTI-ICE LIP

The King Air 200 maintenance manual has a corrected diagram, Figure 401 (Revised), showing the right placement of the split ring reinforcements.



EASY FLIGHT PLANS. EASY UPDATES. EASY STREAMING. HARD TO DO WITHOUT.

G1000® NXi incorporates Flight Stream 510 for easy flight plan uploads, Database Concierge updates and more with your mobile device. So you get touchscreen connectivity and added convenience when you're on the fly. Garmin G1000 NXi. How will you use it next? Learn more at Garmin.com/G1000NXi.

GARMIN.

Undertaking LOC-I, New DC Air Space Requirements and FAA Authorization Bill Status

by Kim Blonigen

Meeting Set to Confront LOC-I

On April 24, in Washington, D.C., the NTSB will meet with government and industry leaders as part of the government-industry collaborative effort to undertake loss of control in flight (LOC-I) in general aviation. The meeting will include representatives from the FAA, industry associations, flight schools and technology manufacturers who will be part of three roundtable discussions on pilot training, cockpit technology and next steps needed to address problem areas.

LOC-I continues to be the leading cause for general aviation fatalities and is the only aviation-specific recommendation on the NTSB's Most Wanted List.

NTSB member Earl Weener said that so far, collaboration appears to be happening effectively; and that while it is too soon to say progress has been made, the number of LOC-I and fatal LOC-I accidents trended down in 2016, the latest full year of complete data.

The meeting is open to the public and also will be webcast live online at *http://ntsb.capitolconnection.org*, from 8:30 a.m. until 3 p.m.

New DC Airspace Flight Plan Requirements Effective March 29

The National Business Aviation Association (NBAA) wants pilots to be aware of a NOTAM effective March 29, 2018 that will affect pilots operating in the DC airspace, including DCA Access Standard Security Program (DASSP) operators. On that date, pilots operating in the Washington DC Flight Restricted Zone (DC FRZ) must file flight plans through the FAA's Washington Center Flight Data Unit (FDU), instead of filing a flight plan with the Washington Hub Automated Flight Service Station (Leidos AFSS), by calling 703-771-3476.

The new requirement applies to flights to, from and between all airports in the FRZ, including Washington Reagan National Airport (DCA), as well as College Park (CGS), Potomac Airfield (VKX) and Washington Executive/Hyde Field (W3Z) in Maryland. DASSP operators must now file their flight plans to or from DCA through the Washington Center FDU.

Heidi Williams, NBAA's director of air traffic services and infrastructure said, "The FAA is changing the flight plan filing process in an effort to offload services from a contract Flight Service Station to FAA employees. Although the FAA conducted a risk analysis on the new procedure, the DASSP operations were not part of that analysis."

The new requirement was published in FDC NOTAM 6/7196. Williams points out that this creates a compliance challenge as the existing procedure is currently codified in 14 CFR 93.343 and also 49 CFR 1562.3. The FAA is working to revise the regulations that require pilots to call Leidos AFSS to file DC FRZ flight plans.

Pilots operating VFR departing the FRZ who wish to request search and rescue services will have to file a flight plan separately with Leidos AFSS, in addition to filing with the Washington Center FDU.

"The existing flight plan filing procedures have been engrained in pilots flying in the DC FRZ for over a decade," said Williams. "Since DCA operations were not fully considered as part of the change, NBAA is watching the transition very closely because of the security ramifications and possible operational impact on DASSP operators."

The FAA has indicated subject matter experts who understand DC FRZ procedures will be onsite with Washington Center staff to ensure a smooth transition.

The NBAA asks any member who experiences challenges with the new procedure to advise NBAA's Air Traffic Services of the concern by emailing *airtraffic@nbaa.org*. NBAA will use the information to work with the FAA to ensure proper handling of flight plans in the DC FRZ.

Removal of ATC Privatization Provision from House FAA Bill Gains Appreciation from Aviation Organizations

On February 27, House Transportation and Infrastructure Committee Rep. Bill Shuster (R-Pennsylvania) announced the provision for privatization of the U.S. air traffic control (ATC) system had been removed from the FAA Reauthorization Bill. He said that the proposed reform of ATC in H.R.2997 "did not reach the obvious level of support needed to pass Congress," and he will now work with his colleagues on a reauthorization bill "to provide long-term stability for the FAA."

The response from the various aviation organizations – AOPA, EAA, GAMA, HAI, NATA and NBAA – who worked together to voice opposition, as well as encouraged their members to contact their congress members, was appreciative.

Aircraft Owners and Pilots Association (AOPA) president and CEO Mark Baker commented, "There's now a chance to do something that all segments of aviation have been asking for – a long-term [FAA] reauthorization bill. This is what advocacy is all about."

"This is a tribute to all of you in general aviation who took the time to make yourself heard," said Experimental Aircraft Association CEO and chairman Jack Pelton. "Thanks to the unified fight by the GA community, this bill was not going to pass with ATC privatization as part of it. We can now move ahead with what we have maintained all along – modernization, not privatization. We can fund the FAA long-term and let the agency continue with its already progressing modernization efforts.

"The voice of the entire general aviation community was heard today," expressed HAI president and CEO Matt Zuccaro. "I want to thank our members for their commitment and passion to engage their elected officials. I also want to express our community's gratitude to our representatives for listening. This is a great example of what can happen when people unite and speak with one voice."

"This win for the general aviation community shows what can be achieved when we all pull together toward a common goal, ensuring our airspace system remains for the benefit of all users," said National Air Transportation Association president Martin Hiller.

NBAA president and CEO Ed Bolen stated, "We are profoundly grateful for everyone who has made their voice heard on this critical issue. Now, it is time to focus our full attention on a long-term FAA bill that ensures the U.S. has the world's best air transportation system for decades to come."

With the air traffic control reform settled, House and Senate leaders are now looking toward a short-term extension of FAA authorization while they settle on a long-term comprehensive aviation bill. The FAA's authorization currently is set to expire March 31 under a stop-gap bill Congress approved in late September. The length of an extension is unclear, but a four-month period has been raised as a possibility, providing time to pass a long-term reauthorization bill before the August break. KA

Applying Takeoff Power … and Never Being Surprised Again

by Tom Clements

I addressed this in an article many moons ago, but I still observe lots of King Air pilots who have never been taught the trick that makes setting takeoff power easier and better than the technique they are currently using. The trick? Do not look at the Torque or ITT gauges until you have monitored the propeller speed gauges and verified that they stabilize at the proper takeoff RPM.

For the great majority of you who have the engine instruments arranged in a vertical stack, always make your scan from bottom to top, not top to bottom, when the checklist issues an "Engine Instruments" challenge. We cannot really operate the airplane normally and successfully without looking at the top three instruments often: ITT, Torque, and Propeller Speed (N_p). Yet the bottom three – Gas Generator Speed (N_1), Fuel Flow (W_f), and Oil Temperature/Oil Pressure – get the short end of our attention stick. Seek them out first before going up to the ones that are your old friends. Doing so increases the chances that you will spot any abnormality in these "out of sight, out of mind" gauges.

Following in this habit pattern, as you start adding takeoff power, scan the gauges from bottom to top. A quick check of the Oil Temp and Oil Pressure verifies that a missing or loose oil dipstick has not yet wreaked any havoc. Fuel Flow and N_1? Not much to see there now. But now the important N_p display draws our needed attention.

Perhaps a lot of King Air pilots have unrealistic expectations when it comes to engine control rigging. Yes, in an ideal world, we could advance the power levers side-by-side and both engines would accelerate in perfect synchronization. But in the real world, it very, very rarely works that way! This is why it works so well to watch those N_p gauges like a hawk as you s-l-o-w-l-y begin to advance the power. When one side's propeller speed starts getting ahead of the other side, then stop advancing that side's lever, slide the other side's lever forward a bit, and get those prop speeds matched again.

Why did I emphasize doing this s-l-o-w-l-y? To avoid unnecessarily large ITT spikes. When the engine is at Low Idle – and this is especially true for the three-blade King Airs with their Idle N_1 set closer to 50 percent instead of 60 percent – there is not a lot of excess air for cooling. If the power levers are advanced rapidly, the ITT will rise dramatically as fuel is introduced by

the FCU (Fuel Control Unit), but then fall as the engine accelerates and brings in more cooling air. This rise and fall is the ITT "spike."

Once N_1 speed reaches the High Idle setting of about 70 percent, the engine is able to accelerate more rapidly with hardly any ITT spike at all since the air and the fuel flow increases are better matched.

In every PT6-powered King Air, by the time N_p reaches 1,500 RPM on the ground, N_1 will be great enough that the ITT spiking is not a factor. Also, the mis-match of engine acceleration rates is much less troublesome. Hence, after the prop speed gets to 1,500, move the power levers as rapidly as you wish while still splitting the levers as required to keep the prop speed closely matched, left and right.

As N_p gets within 10 or 20 RPM of takeoff redline, slow or even stop power lever movement momentarily to allow the Primary Propeller Governor to begin its function smoothly and without surging. Not only is this smoother overall, but it 100 percent guarantees that you will observe that the primary governor is truly working correctly. Until pilots have learned to watch the props before torques and temps, it is depressing how many continue a takeoff in the simulator even though one side's prop speed is stabilized on the Overspeed Governor's setting. This error will never happen when the propeller gauges are monitored *first* during the takeoff power application.

Once it is confirmed that propeller speed has become properly governed, now is the time to move the power

CREDIT DAN MOORE VMG LLC

levers rapidly while monitoring torque and ITT. I guess that by now you are quite familiar with the operation of your particular powerplants and will have a good feel for whether full torque can or cannot be reached because of ITT constraints. In the C90GT-series, in the Blackhawk-modified C90 and E90 models, as well as in -52, or -61-powered members of the 200-series, ITT is never a limiting factor if the engine is performing correctly. It cannot get high or hot enough for takeoff power ever to be limited! (Well, maybe in the summer departing from La Paz, Bolivia, with an elevation of 13,325 feet.) On the other hand, the old A90, B90, and C90s powered by the -20 or -20A versions of the PT6 rarely can reach maximum torque, even at Sea Level, when the OAT is hot. Similarly, it does not take much elevation and temperature increases before the 300-series will run into ITT constraints.

"Golly, Tom! It sounds like it's going to take an eternity to set takeoff power!" Yes, it probably does sound like that, but truly it does not. Of course, if we are going "by the book," we set takeoff power before brake release anyway so how long it takes is immaterial. But doing the more common rolling takeoff – on a comfortably long runway – the technique I am teaching can be used and yet full power can be easily attained by the time the airspeed reads 40 knots. It may be hard to believe, but it's true. (Watch some of the videos on the *YouTube King Air Academy* channel and you will see for yourself.) We only go quite slowly until the props are together at 1,500 RPM, then faster and with a small pause as the props hit governing speed, and then very rapidly to target torque or ITT.

As I stated, advancing the power levers side-by-side almost never gives equal power. But there are times when we may *intentionally* want different left and right power. Due to the natural left-turning tendency caused by the clockwise-rotating props, some pilots prefer to have slightly higher power on the left than the right side to combat that tendency without using as much rudder. In a string crosswind, also, leading with the upwind engine is quite common and effective. However, my suggestion is to create the torque split with the power levers only *after* you have used them to smoothly get the propeller speeds matched at the takeoff setting.

Any pilot who spends lots of time with one particular airplane will learn, on a trial-and-error basis, how to best advance power for takeoff and achieve the straight and smooth roll that he or she desires. The technique that I am advocating here will permit you to get in the cockpit of any PT6-powered twin and make your first takeoff power application as nice as your hundredth! KA

King Air expert Tom Clements has been flying and instructing in King Airs for over 44 years, and is the author of "The King Air Book." He is a Gold Seal CFI and has over 23,000 total hours with more than 15,000 in King Airs. For information on ordering his book, contact Tom direct at *twcaz@msn.com*. Tom is actively mentoring the instructors at King Air Academy in Phoenix.

If you have a question you'd like Tom to answer, please send it to Editor Kim Blonigen at editor@blonigen.net

Wichita's Air Racing Legacy Part Two

Clyde V. Cessna once said, "Speed is the only reason for flying," and from 1928-1932 Wichita's grand patriarch of aviation backed up that claim by competing in air races that propelled the Cessna Aircraft Company to new heights of success.

by Edward H. Phillips

On September 5, 1928, 47 pilots prepared to depart Long Island's Roosevelt Field on the first leg of the New York-to-Los Angeles Air Derby. By 4 a.m., the flight line was bustling with activity as pilots double-checked their aircraft, mechanics changed spark plugs and adjusted carburetors, and fuel trucks darted from ship-to-ship topping off fuel and oil tanks.

A total of $57,500 in prize money was up for grabs, and Clyde Cessna was determined to win his share of the bounty. It was still dark when the president of the Cessna Aircraft Company called a meeting of his pilots to discuss final preparations for the race. Clyde had entered six monoplanes in the event – one Model AA flown by Cessna and Curtiss Quick, a Model AW piloted by Earl Rowland, and four Model BW ships flown by Cessna dealers and distributors. Clyde and his fellow aviators reviewed estimated fuel and oil consumption, the best power settings to use, and emphasized the necessity of accurate dead-reckoning navigation between the 16 control points that defined the route westward.

Among the 35 pilots competing in the Class A segment, Rowland knew he and the Model AW would face tough competition from Robert Dake and his American Moth parasol monoplane. Both airplanes featured seven-cylinder static, air-cooled Warner *Scarab* radial engines. At precisely 5:43 a.m., the official starter dropped the red flag as the first airplane took off for Los Angeles, 2,840 statute miles away.

Minutes later 26 other airplanes followed, including Earl Rowland and the Model AW. Cessna was confident that Rowland would be victorious in the Class A division because of the monoplane's speed and the fuel economy of its Warner powerplant. Rowland had been a pilot for the Stearman Aircraft Company in the summer of 1928 when he became interested in flying the Cessna Model AW in the Air Derby. Lloyd Stearman had no objection, and Clyde quickly assigned Earl to fly the silver monoplane bearing race number 99.[1]

After flying for 10 hours, Rowland was 28 minutes ahead of arch rival Dake. Earl was flying a tough, disciplined race, calculating every step and navigating with extreme precision between control points. When the silver Cessna landed at Fort Worth, Texas, it had amassed a lead of more than 30 minutes over the American Moth.

Air racing became increasingly popular in the late 1920s and into the early 1930s and evolved into a national pastime that rivaled major league baseball. One of the famous air racing pilots of that era was James Harold "Jimmy" Doolittle, who posed for the camera with the Laird "Super Solution" biplane he raced during 1931. (JOAN LAIRD POST)

At the El Paso control point, Earl had stretched his lead to more than one hour, but the western half of the nation still lay ahead. After a grueling five days of hard flying, Cessna number 99 landed gently on the grass of Mines Field near Los Angeles, followed only one minute later by Dake and the American Moth. Rowland was officially declared the winner in the Class A division, earning $5,000 for his efforts. Later that day he was given checks totaling $4,000 from the Richfield and Kendall oil companies, sponsors of the event.

Including additional cash awards for achieving lowest elapsed times between certain control points, Earl corralled $10,910 to split between himself and Clyde Cessna. While attending the 1928 National Air Races (NAR), Earl entered number 99 in the 75-mile, "Free-for-All" race and easily won the event, adding another $1,200 to his winnings. In the wake of Earl's victory, orders for the Model AW poured in to the Cessna offices.[2]

Clyde's next foray occurred in May 1929 when he entered two factory-sponsored aircraft – the prototype DC-6 cabin monoplane and a specially-built prototype mail carrier dubbed the CM-1 – in the inaugural Gardner Trophy Race sponsored by Russell E. and Fred W. Gardner. Unlike other competitions, the Gardner race was a full-throttle speed dash and cared nothing about efficiency, load carried and elapsed time. The event consisted of two phases: a qualifying flight starting from five widely separated locations in the United States, and a speed race from St. Louis to Indianapolis and return. The winners of the qualifying flights would earn $750, with the first- and second-place finishers earning the right to fly in the dash between cities. The victor in that event would take home $5,500.

The CM-1 was radically different from production Cessna ships with a modified Model AW wing mounted midway on the welded steel tube fuselage that was covered with laminated plywood to give it a rounded, smooth appearance. An open cockpit was located at the trailing of the wing and a large compartment for air mail was installed in the forward fuselage and accommodated up to 500 pounds of mail and express packages. The fixed landing gear was adopted from the Model AW, and a tail skid supported the aft fuselage. The CM-1 was powered by a Wright Aeronautical nine-cylinder, static, air-cooled radial engine rated at 225 horsepower driving an adjustable-pitch steel propeller. The engine was nestled snugly beneath an NACA cowl.

When CM-1 was finally completed, there was little time for proper flight tests. Cessna had again enlisted the services of local pilot Earl Rowland, who with help from factory workers and mechanics, prepared the airplane as best they could before Earl took off for San Antonio, Texas. He flew unopposed from Texas to St. Louis, Missouri, easily winning his division. Rowland's victory qualified him for the speed dash that was scheduled for Memorial Day to coincide with the Indianapolis 500 automobile race. Unfortunately, the CM-1 suffered from a lack of power from the Wright radial and finished a disappointing and distant fifth behind Charles "Speed" Holman flying a Laird LC-RJ-200 biplane and pilots Sydnor Hall, Art Davis and John Wood. The underpowered Cessna DC-6 flown by Stanley Stanton was so slow it was not competitive and finished in last place.

During the months immediately after the stock market debacle on Wall Street struck America in October 1929, Wichita's aviation industry was forced to its knees as sales of new airplanes slowly grounded to a trickle. By 1930 Walter Beech at Travel Air, Clyde Cessna and Lloyd Stearman were forced to lay off hundreds of workers.

Mr. Cessna was unhappy with the state of the U.S. economy, and in 1930 he turned to air racing as one way to help keep the doors of his company open. American Cirrus Engines, Inc. sponsored the *All American Flying*

Local Wichita pilot Stanley Stanton posed for the camera with the Cessna GC-1 he flew in the Cirrus Derby race in July 1930. A faulty supercharger plagued the red racer and it was not competitive. In 1932 the monoplane was destroyed in a hangar fire. (TEXTRON AVIATION)

Derby – an aerial trek of 5,541 statute miles within the United States – to demonstrate the feasibility of long distance flying in small aircraft featuring engines of low horsepower. Cessna jumped at the chance to capture his share of a $25,000 purse after local pilot Stanley Stanton proposed that a special racer be built to compete in the event. Stanton's employer, Carl B. Haun, forked over $3,500 for Cessna to construct the GC-1 (G: seventh Cessna design; C: Cirrus engine and 1: the first ship of that type built).

Clyde's son Eldon and a few company engineers still on the payroll worked feverishly to complete the all-red racer, which they delivered to Stanton on July 9. A four-cylinder Cirrus *Ensign* rated at 90 horsepower was installed, and featured a supercharger designed by famous race car driver, Ralph De Palma. He claimed it added 30 percent more power to the engine, but it was soon evident that the supercharger needed further development.

Early test flights of the GC-1 revealed a maximum speed of 160 mph – a good pace if the engine/supercharger combination worked properly and gave Stanton an excellent chance of winning the race. In mid-July Stanley flew the airplane to Detroit, joining 17 other competitors anxiously awaiting the drop of the starter's flag. The fleet of small ships took off across the vast expanse of America. Unfortunately, bad weather plagued the race from the beginning, and the GC-1's unreliable supercharger prevented the engine from attaining maximum power. As a result, the Ensign powerplant ran rough, the intake manifold cracked, seals leaked oil and exhaust stacks broke and fell off the engine. Despite these problems, the GC-1 managed to finish in seventh place (and out of the money) with an average speed of only 72 mph. By contrast, Lee Gelbach and his Command Aire monoplane finished in first place averaging more than 127 mph. After the Cirrus derby Cessna mechanics removed the troublesome supercharger and the airplane was entered in the 1930 NAR and took fourth place in a race for open cockpit aircraft with engines displacing 1,000 cubic inches.

Undaunted by the GC-1's lackluster performance, Clyde Cessna built a second racer dubbed the GC-2 featuring a Warner *Scarab* radial engine that produced 110 horsepower. With its mid-wing design and wing span of 24 feet, the GC-2 was almost a carbon-copy of its predecessor. Earl Rowland took the ship aloft for its maiden flight on August 19. He was enthusiastic about the airplane's maximum speed of about 170 mph, and after a few days spent working out some "bugs" in various systems, Rowland flew the GC-2 north to compete in the 1930 NAR in Chicago, Illinois. Clyde and Eldon also attended the races.

The last major air race of 1931 was the *Transcontinental Handicap Air Derby.* The route was from Santa Monica, California, to Cleveland, Ohio, the site of that year's NAR. Clyde's son, Eldon, entered the

The Cessna GC-2 was a duplicate of the GC-1 except for its seven-cylinder Warner Scarab radial engine rated at 110 horsepower. The racer was flown by three different pilots at the 1930 National Air Races in Chicago. (TEXTRON AVIATION)

Model AW flown by Earl Rowland in the 1928 air derby, but the young Cessna had made numerous modifications to the ship in an effort to reduce drag and eke out more speed. Earl Rowland also entered a Model AW sponsored by the Wichita Flying Club.

A total of 63 pilots were registered for the transcontinental speed dash, and when the race began Eldon led the flyers into Arizona, but Rowland was forced out when the normally bullet-proof Warner Scarab engine quit cold. The forced landing badly damaged the monoplane, and Earl spent the next few days dismantling the wreckage and having it shipped back to the factory in Wichita.

Meanwhile, Eldon and his Model AW continued to outpace the rest of the field, but he had slipped to third place when the racers landed at Bartlesville, Oklahoma. Eldon managed to hang on to third place when the race ended in Cleveland a few days later and was happy to pocket $1,200 in prize money. Eldon and the speedy Model AW had distinguished themselves as tough competitors on a national scale, and he had gleaned valuable experience in the air that he would put to good use in 1932.

Back in March 1931, in a move designed to avoid declaring bankruptcy, the board of directors at the Cessna Aircraft Company voted to close the factory and remove Clyde Cessna from the payroll. Sales were non-existent, and investors had run out of patience. Clyde was disappointed, but he understood that their decision was appropriate given the near hopeless state of the nation's small aircraft industry. Undaunted and armed with sufficient cash, Clyde and Eldon formed the C.V. Cessna Aircraft Company and took up residence in a small building located in Wichita. The father-son duo planned to design and build small and fast monoplanes capable of winning air races, because in the severely depressed aviation business, that is where the money was in 1932.[3]

The first product of the C.V. Aircraft Company was the diminutive CR-1 (Cessna Racer-No. 1). It was, indeed, small. The fuselage was only 12 feet long and the shoulder-mounted, full-cantilever wing spanned a mere 16 feet. A retractable main landing gear (manually operated via a crank and chain system) was an innovation for that class of airplane. Clyde was quoted as saying that retracting the gear into the forward fuselage "was the only way to arrange it" because the wings were the strongest part of the airframe and should "not have holes in them."

To power the CR-1 Clyde installed an engine he was thoroughly familiar with – the seven-cylinder Warner *Scarab.* The engine's small frontal area dictated the width of the fuselage, and the Warner was surrounded by a NACA-type pressure cowl. CR-1's first flight occurred on January 18 with Eldon at the controls. The racer was so unstable and difficult to fly that it was also its last. It was rebuilt into the CR-2 and featured an additional two feet of wingspan and the fuselage was stretched two feet. Clyde's friend and racing pilot Roy Liggett made the first flight without incident. A series of tests ensued to check the airplane's behavior in high-G turns around simulated pylons, and to determine maximum speed. In accordance with standard practice for a thoroubred racer like the CR-2, the Warner was modified to operate at 2,500-2,700 RPM – far above the standard redline speed of 2,050 RPMs.

Christened *Miss Wanda* in honor of Clyde's daughter, the tiny monoplane made its competition debut at the Omaha Air Races held in May 1932. Liggett placed fourth in the event for engines of 500 cubic-inch displacement at a speed of 166 mph. The racer's last event at Omaha was a free-for-all that found Roy again crossing the finish line in fifth at a speed of 172 mph. Considering that the little Cessna was competing against racers boasting

as much as 450 horsepower, Liggett had done well. Only 10 mph had separated *Miss Wanda* from first place.

Further modifications were made to Eldon's Model AW to give it a few more miles per hour, while the CR-2 would compete in the 1932 NAR in its original configuration and, hopefully, take the checkered flag for the first time instead of finishing in fourth or fifth place. At the end of the NAR, Eldon in his Model AW and Liggett in *Miss Wanda* had won $1,700 in prize money. Despite these successes, Clyde and Eldon knew that to win races and top money, the CR-2 needed more horsepower and a maximum speed exceeding 200 mph.

Clyde was able to obtain a special version of the Warner engine known the *Super Scarab* that produced 145 horsepower. Installation of the heavier powerplant, however, required a slight increase in the CR-2's fuselage length for weight and balance purposes, and a new cowling had to be fabricated to compensate for the increased outside diameter of the seven-cylinder radial. In addition, Clyde and Eldon further streamlined the little racer to reduce drag. The CR-2 was rolled out of the factory on December 28 for its second "first flight." Speed tests indicated that a full throttle with the Warner screaming at 2,700 RPM, the tiny monoplane easily broke the 200-mph barrier.[4]

Charged with enthusiasm for the racer's potential, Clyde wasted no time having Roy Liggett fly the monoplane down to Miami to compete in the 1933 "All-American Air Races" that kicked off a new season. The Super Scarab engine and drag reduction efforts paid off when the little monoplane won the Colonel E.H.R. Green Trophy race at an average speed of 194 mph. Liggett collected a whopping $6,500 and the victory was made sweeter because he finally beat Johnny Livingston and his modified Monocoupe. The CR-2 had defeated Johnny by a significant margin, and Livingston began to realize that if he was to remain at the top of his sport he needed a Cessna racer. After the races concluded, Liggett flew the ship back to Wichita where it rested in the hangar before the next major race scheduled for July.

In March, while the CR-2 was undergoing further modifications to eke out more speed, Johnny Livingston flew his Monocoupe to Wichita and had a serious chat with Clyde and Eldon Cessna. Before he departed Johnny ordered a custom-built racer that would be known as the CR-3. The ship would incorporate certain changes dictated by Livingston, including a shoulder-mounted wing recommended to him by Dwane Wallace, Clyde's nephew who had recently earned a degree in aeronautical engineering. By late April, the basic airframe was nearing completion, and Livingston removed the Super Scarab from the Monocoupe for installation in the CR-3.

By 1933, Johnny had become one of air racing's all-time top money winners. For example, from 1928-1931 he took the checkered flag 79 times, placed second on 43 occasions and third only 15 times. Johnny was pinning his hopes of dominating the air race circuit with his new Cessna speedster. In May the only task remaining was to have Livingston sit in the cockpit to determine weight and balance calculations. The CR-3 was trundled out of the factory on June 2, 1933, and Livingston handed Mr. Cessna a check for $2,700. During the next few days a series of flight tests were conducted,

Roy Liggett posed with the CR-2 during the 1933 Miami Air races. A more powerful Warner Super Scarab engine had been installed and further modifications made to the airframe to reduce drag. The racer was capable of speeds well in excess of 200 mph and was highly competitive.
(TEXTRON AVIATION)

minor adjustments were made to the airframe and engine, and at last Livingston was ready to unleash his new mount on the unsuspecting competition, including the CR-2.

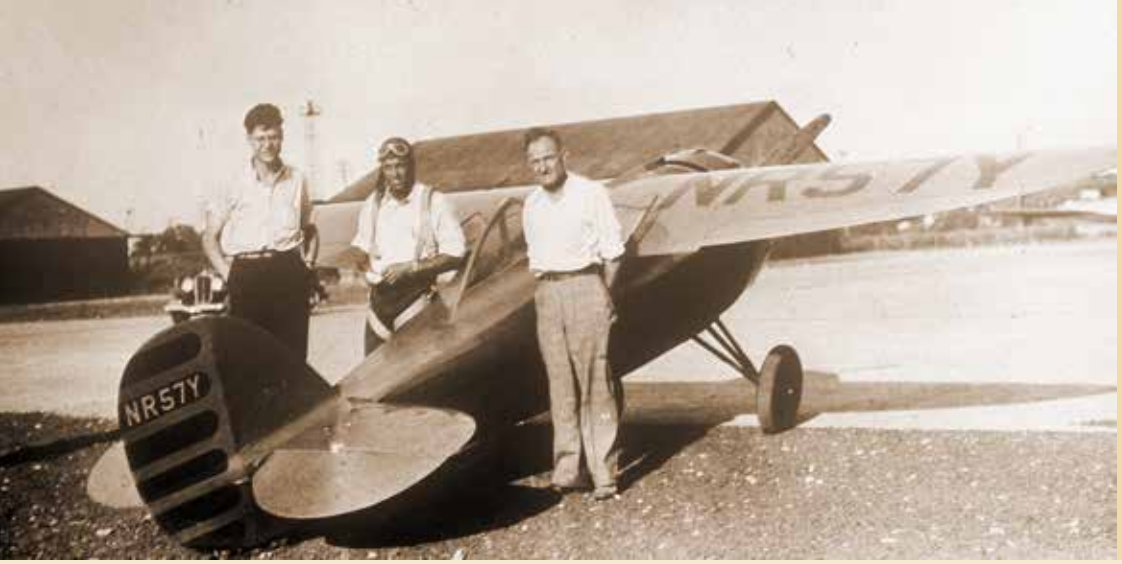
In mid-June Johnny entered his brightly-painted Cessna (yellow overall with red trim) in the Omaha races, beating long-time competitors (and close friends) Benny Howard and Harold Neumann before traveling north to compete in air races held in July near Chicago. It would prove to be a tough competition because the CR-2 would be there, too, this time flown by veteran pilot Arthur J. Davis. Johnny managed to eke out a win in the Baby Ruth Trophy race at a speed of 201 mph, while Davis was right on his tail in second place with a speed of 200 mph. Both Cessna and Livingston knew that the two airplanes were essentially equal and would consistently butt heads in wingtip-to-wingtip fights for the money.

That is what happened on July 4 in the Aero Digest Trophy Race when the two racers appeared to be one airplane as they rounded the course lap after lap. Johnny, however, was able to gain a split-second lead over Davis in the last few pylon turns, thanks to that shoulder-mounted Dwane Wallace had recommended. Only three seconds and a few miles per hour separated first place from second, with Livingston winning $2,250 and Art pocketing $1,250.

To top off that achievement, on July 5, Livingston flew the racer at 237 mph over a 1.9-mile closed course to set a world record for airplanes with engines of less than 500 cubic inch displacement. Unfortunately, the meteoric rise of the CR-3 came to an end on August 1 when Johnny flew the ship to Columbus, Ohio. Although he was able to crank down the landing gear, he could not manually insert one of two pins that locked the gear in the extended position.

After many attempts to force the lock into place, Livingston reluctantly decided to bail out over the airport instead of risking injury or death making a forced landing. When Johnny stood up in the open cockpit, his body so disturbed airflow that the racer snapped into a spin, pinning the pilot against the fuselage. Johnny struggled back into the cockpit, recovered from the spin and climbed higher for another attempt to exit the airplane. This time he rolled the monoplane into knife-edge flight, firewalled the throttle and pushed top rudder while ramming the stick forward. He popped out of the cockpit and fell clear of the stricken racer before pulling the ripcord. As he slowly drifted downward, Livingston watched his undefeated racer dive straight into the ground at a tremendous speed, the Super Scarab screaming at the top of its lungs. Minutes later, surrounded a growing crowd of onlookers, Johnny walked over to the smoking hulk that had buried itself in the ground. In less than 60 days since its first flight, the CR-3 had won a special place in history as one of greatest designs of air racing's "Golden Age."

The CR-2, however, was still alive and well as Clyde and Eldon worked more magic in an effort to gain more speed from the racer. After 30 days of hard work, "Miss Wanda" emerged from the workshop sporting a new paint job, a completely revised cockpit enclosure that included a canopy and small, metal panels (identical to those installed on the CR-3) that covered the wheels when the gear was retracted. A redesigned cowling featuring blisters to clear the engine's rocker boxes were another attempt to reduce drag. The changes warranted a change in the designation to CR-2A. Late in August Roy Liggett completed a series of test flights before flying north to compete in the upcoming 1933 air races held at the Curtiss-Reynolds Airport near Chicago. "Miss Wanda" showed her tail to



In the summer of 1933, racing pilot Johnny Livingston (center) posed with well-known aerobatic pilot Tex LaGrone (right) and a friend on the new CR-3 that was custom-built by Clyde and Eldon Cessna for Livingston. The yellow and red monoplane won every race Johnny entered but was destroyed in a crash only 60 days after its first flight. (TEXTRON AVIATION)

the competition during qualifying heats and it looked as though the racer would enjoy great success and a lot of prize money.

On September 2, as strong winds blew across the airport, Liggett climbed aboard the CR-2A and took off in an attempt to set a speed record. With the Warner engine at full throttle, Roy leveled off at about 300 feet after a shallow dive to gain speed when suddenly a section of the cowling blew off the engine and struck the left wing, breaking it off near the root. As Clyde Cessna watched in horror, the airplane snapped into rapid rolls to the left and crashed into a cornfield in an explosive ball of flame, scattering wreckage over a wide area. Liggett was killed instantly. According to Eldon Cessna and others who knew Clyde well, the accident stripped the pioneer aviator of his enthusiasm for racing and for flying itself. Never again did C.V. Cessna possess that dynamic drive and determination to succeed that had served him so well for the past 22 years. Liggett was survived by a wife and two children whom Clyde supported financially for an undisclosed period.

The Cessna CR-2 and CR-3 racers were a special breed of airplane flown by a unique breed of pilots who were not afraid to fly those machines to their limits. Perhaps more importantly, the speedsters of Clyde and Eldon Cessna brought Wichita not only fame but embellished the prairie city's already solid reputation as the undisputed "Air Capital of the World." KA

NOTES:

1. Clyde Cessna was confident that the Model AW would win the Class A division chiefly because in service it had consistently demonstrated a fuel economy of 21 miles per gallon while averaging more than 110 mph – excellent performance for 1928.
2. Sales of the speedy Model AW continued unabated until the Wall Street debacle in October 1929. During 1930 production slowed to trickle and only 50 of the popular monoplanes were delivered to customers. The Cessna Aircraft Company locked its doors in 1931 after manufacturing about 240 cabin monoplanes (Model AW, DC-6A and DC-6B, and custom-built air racing ships) from 1927-1931.
3 The building was initially built to house Quick Air Motors, but Curtiss Quick failed to occupy the facility. The Swift Aircraft Corporation was the next resident, but the stock market crash forced the company into receivership. Last, none other than the talented designer/engineer Al Mooney used the building to construct his advanced Mooney A-1 cabin monoplane before leaving Wichita.
4 At 2,700 RPM the engine was producing about 175 horsepower. Modifying engines to operate at higher RPM than a stock powerplant was common within the air racing community during the 1930s.

Ed Phillips, now retired and living in the South, has researched and written eight books on the unique and rich aviation history that belongs to Wichita, Kan. His writings have focused on the evolution of the airplanes, companies and people that have made Wichita the "Air Capital of the World" for more than 80 years.

Garmin® Increases Connext® Wireless Cockpit Connectivity Portfolio

Garmin International, Inc. recently announced an expanded Connext ecosystem that now includes the FltPlan.com website and the FltPlan Go app on Apple and Android mobile devices. With compatible Garmin avionics[1], pilots can simply create a flight plan within the FltPlan.com website, share it within the FltPlan Go app and wirelessly transfer it to select avionics once they arrive to the aircraft via the app on a mobile device. FltPlan Go customers can also wirelessly receive and display aviation weather products from various sources including Flight Information Service-Broadcast (FIS-B) as well as Automatic Dependent Surveillance-Broadcast (ADS-B) traffic, GPS position data and back-up attitude information.

A companion to the popular FltPlan.com website, the FltPlan Go app can be utilized within the Connext ecosystem to wirelessly communicate with select Garmin avionics[1]. Flight planning is streamlined with Flight Stream 510, which enables wireless flight plan transfer between the FltPlan Go app and the GTN™ 650/750 and G1000® NXi. Wireless flight plan transfer is also available between the Flight Stream 210 and GTN 650/750 or GNS™ 430W/530W. In addition, flight plans may be transferred from Fltplan Go to the Garmin Pilot application for iOS and Android users.

FltPlan.com and FltPlan Go iOS app compatibility are available now. FltPlan Go Android app compatibility is expected to be available soon. For additional information, visit *www.garmin.com/connext.*

[1] Features and compatibilities vary, see website for additional details.

ForeFlight 9.6 Now Available

The new version contains improvements in the following areas:

Pack from Flights View for Better Workflow

The Flights tab organizes flight planning into a logical and efficient workflow. And now you can Pack right from this view, ensuring you have the charts, weather, NOTAMs, and data needed for flight. Pack analyzes your route to determine the data you need, then prompts you to download with a single tap. Pack also includes Icing and Turbulence map layers for Pro Plus and Performance subscribers.

Faster, Smarter Routes

For Performance subscribers, the new Recommended Route feature (formerly AviationCloud Autoroute) gives you the best route based on your detailed aircraft performance profile, current and forecast wind and temperature data, and time/fuel savings, while also accounting for preferred and trending ATC cleared routes. Use Recommended Route for more 'cleared as filed' flight plans optimized for your aircraft.

COMBAT WOUNDED
THEY'VE GOT HEART, THEY NEED WINGS

Imagine returning home from combat facing devastating injuries
and long-term hospitalization-- in a facility hundreds of miles away from your family.

Imagine somebody brings you together.

The VAC provides free air transportation to wounded veterans and their families for medical and other compassionate purposes through a national network of volunteer aircraft owners and pilots.

FIND OUT HOW YOU CAN MAKE A DIFFERENCE.

VeteransAirlift.org

952-582-2911

Airport and Runway Closure Warnings

Prominent warning banners make it clear when an airport or runway is closed by NOTAM. The closure warnings are updated in flight when connected to Stratus, Scout, select Garmin equipment, or other compatible ADS-B In accessories.

To find other new items in version 9.6 go to *www.foreflight.com* or go to the App store to download the new version.

Stevens Aviation Adds AOG Techs, New Locations

Stevens Aviation has added five new technicians to its Rapid Response AOG team, increasing the company's mobile force to more than 30 technicians. The company has also announced it has designated new AOG facilities in Jacksonville, Florida, and Savannah, Georgia, starting May 1, bringing its total AOG locations to 13.

The five new technicians added to Stevens Aviation's Rapid Response team will join the other technicians in providing support for aircraft including the King Air. Its Rapid Response team technicians perform scheduled and unscheduled maintenance, as well as remote inspections.

Adding the two new AOG locations, Stevens Aviation will operate five AOG service centers in Florida, including its facilities in Destin, Fort Lauderdale, Miami, Opa-Locka, and Jacksonville. The company also maintains facilities in Atlanta and Savannah, Georgia, as well as in Greenville, South Carolina, Nashville, Tennessee and Richmond, Virginia.

Hampton Aviation Announced as Garmin Authorized Dealer

Hampton Aviation of Mena, Arkansas, has joined Garmin's international network of authorized dealers and installers.

VALUE KA ADDED

Hampton Aviation has been performing King Air inspections, repairs and modifications on all King Air models for many years, and since 2003 has been the premier King Air inspection and repairs facility for the U.S. Army, Air Force and Navy. The maintenance facility's capabilities include complete inspections, heavy structural repair and maintenance, spar replacement or repair, sheet metal work, pre-purchase inspections, and quality paint and interior work.

For more information, *visit hamptonaviation.com*.

PWI Adds Shopping Cart for Easy Online Purchasing

PWI has announced that they have become one of the first aircraft lighting Original Equipment Manufacturers (OEM) to offer an online shopping cart feature on their website.

The online shopping cart gives customers the freedom to purchase PWI products 24/7 – patrons now can shop outside of traditional business hours and across international time zones, instead of calling or sending an e-mail request for a quote.

The online feature allows the customer to specify the quantity of the product they would like to order, while calculating the discount at each quantity price break. The shopping cart accepts Visa, Mastercard, Discover and American Express credit cards.

PWI says the online shopping cart is currently limited on which products customers can purchase. LED Reading Lights are currently the only PWI product available for online purchase, but more products will be added. There is a flat rate shipping charge of $16 domestically, and special shipping pricing can be calculated upon request. To receive special pricing, please call PWI.

Customers will still be able to purchase PWI products the traditional way. They may send in for a quote on the website, call, email or order through any of our Authorized Installation Centers and Distributors.

You can visit their website at *pwi-e.com*.

Skandia Inc. Awarded PMA for Aero Armor

Skandia, Incorporated has received FAA Parts Manufacturing Approval (PMA) for its line of aircraft exterior erosion protection products. Known by its brand name Aero Armor™, the line of exterior protection products is the market's highest performing aircraft exterior paint protection film available.

VALUE ADDED

With FAA PMA approval in hand, Skandia customers purchasing Aero Armor products can be confident of original equipment quality manufacturing processes. Aero Armor is the only product of its kind available with FAA parts manufacturing approval.

The Aero Armor line of aircraft protection film products is used to protect aircraft surfaces from contamination and erosion that impede airborne weather radar performance, exterior antennae performance, and degraded paint on leading edge surfaces from bugs and other debris.

The Aero Armor™ Radome and Antennae lines are offered in pre-formed condition and available for most every aircraft nose or radome surface. The PMA approval defines a clear path to return the aircraft to service. Offered in a variety of widths, Aero Armor™ Edge Tape can be applied to aircraft leading-edge surface, from wheel pants, struts, wings and tails. It will never discolor or fade in its appearance.

Aero Armor is sold directly by Skandia to original equipment manufacturers, maintenance and repair operations, as well as paint completion centers worldwide. It will soon be available for purchase online via Skandia's website *www.skandiainc.com*.

From Beechcraft Service Letter # MTL-52-01

Date: February 21, 2018

Doors – Cabin Door Lock Inspection

Effectivity: King Air C90GTi, Serial Numbers LJ-2130 through LJ-2137; King Air B200GT, Serial Numbers BY-259 through BY-277, BY-279 through BY-285; King Air B200CGT, Serial Number BZ-1; King Air B300C, Serial Numbers FM-67 through FM-69; and King Air B300, Serial Numbers FL-1063 through FL-1089.

Reason: Textron Aviation has received two reports that on the main entry door lock, the lockset became disengaged from the housing.

Description: This service document provides parts and instructions to inspect the main entry door lock to determine if the plunger has been ground to the point where looseness occurs between the housing and the lockset plunger.

Compliance – Recommended: This service document should be accomplished at a scheduled maintenance period or inspection.

A service document published by Textron Aviation may be recorded as *completed* in an aircraft log only when the following requirements are satisfied:

1) The mechanic must complete all of the instructions in the service document, including the intent therein.

2) The mechanic must correctly use and install all applicable parts supplied with the service document kit. Only with written authorization from Textron Aviation can substitute parts or rebuilt parts be used to replace new parts.

3) The mechanic or airplane owner must use the technical data in the service document only as approved and published.

4) The mechanic or airplane owner must apply the information in the service document only to aircraft serial numbers identified in the *Effectivity* section of the document.

5) The mechanic or airplane owner must use maintenance practices that are identified as acceptable standard practices in the aviation industry and governmental regulations.

No individual or corporate organization other than Textron Aviation is authorized to make or apply any changes to a Textron Aviation-issued service document or flight manual supplement without prior written consent from Textron Aviation.

Textron Aviation is not responsible for the quality of maintenance performed to comply with this document, unless the maintenance is accomplished at a Textron Aviation-owned Service Center.

Labor Hours:

Work Phase	Labor-Hours
Modification	2.5
Inspection	0.5

Warranty: This service document is *recommended*. Eligible airplanes may qualify for parts and labor coverage to the extent noted in the *Labor Hours* and *Material Availability* sections of this document.

Eligibility: Airplanes identified within the serial number effectivity of this service document must have active airframe warranty coverage on the original issue date of this document and the coverage must be active on the day the work is accomplished.

Parts Coverage: Textron Aviation-owned and Textron Aviation-Authorized Service Facilities, operators, or other maintenance facilities may submit a claim for the parts required to accomplish this service document as defined in the *Material Availability* section of this document.

Labor Coverage: Textron Aviation-owned and Textron Aviation-Authorized Service Facilities rated to perform maintenance on the specific model of Beechcraft Aircraft may submit a claim for the labor necessary to accomplish this service document as defined in the *Labor Hours* section of this document.

Credit Application: After this service document has been accomplished, a claim must be submitted to Textron Aviation within 30 days of the service document completion. Claims for compliance of this service document are to be filed as a W4 type claim.

Expiration: February 21, 2019 (After this date the owner/operator assumes the responsibility for compliance costs.)

Textron Aviation reserves the right to void continued airplane warranty coverage for the parts affected by this service document until the service document is accomplished.

Note: As a convenience, service documents are now available online to all our customers through a simple, free-of-charge registration process. If you would like to sign up, please visit the Customer Access link at *www.txtavsupport.com* to register.

The above information may be abbreviated for space purposes. For the entire communication, go to www.txtavsupport.com.

Pilots N Paws®
is an online meeting place for pilots and other volunteers

who help to transport rescue animals by air. The mission of the site is to provide a user-friendly communication venue between those that rescue, shelter, and foster animals; and pilots and plane owners willing to assist with the transportation of these animals.

A general aviation transport requires just one pilot volunteer and is far more efficient and dependable than time-consuming ground transportation for these animals who are often in danger of euthanization. Volunteer pilots retain complete authority of their planning and flights, and can give as much or as little time as they like.

SIMPLE AS 1-2-3

No bothersome paperwork required! If you love to fly, and you love animals, please join us now! It's easy, it's fun, and it's extremely rewarding. Joining is easy and takes just a minute of your time.

1. Go to www.pilotsnpaws.org and register
2. Post your information and read other posts
3. Wait for contacts / make contact with others

WHY JOIN THE PILOTS N PAWS NETWORK?

- Enjoy flying while helping a worthwhile non-profit organization
- Flights are tax-deductible 501c3
- Expand your network of pilot/aviation contacts and other professionals
- Gain flight experience and log more hours
- Explore new geographical areas
- An extremely rewarding experience every time

Pilots N Paws®
www.pilotsnpaws.org

ADVERTISING INDEX

Airtext 9
Apex Aviation Inc 15
AVCON Industries Inc. 11
B & S Aircraft 30
B/E Aerospace, Inc. 5
Blackhawk Modifications ..... Back Cover
CenTex Aerospace 11
Cleveland Wheels & Brakes 17
Computer Air Technology 23
Corporate Angel Network ..... Inside Back Cover
Elliott Aviation ..... Inside Front Cover
Garmin International 13
Hillaero Modification Center 19
King Air Academy 29
Lee Aerospace 21
LightHawk 28
MORE Company 11
Murphy Acquisitions Inc 7
National Flight Simulator 30
Paul Bowen Photography 32
Pilots N Paws 32
Precision Aviation Group 27
Recurrent Training Center 23
Select Airparts 24
Shaw Aerox LLC 19
Textron Aviation 29
Trace Aviation 15
Veterans Airlift Command 26
Winner Aviation Inc. 25
Yingling Aviation 31

Cancer Patients Fly Free...

...in Empty Seats on Corporate Jets.

Corporate Angel Network arranges free flights to treatment for cancer patients in the empty seats on corporate jets.

Since 1981, Corporate Angel Network, a not-for-profit organization, has worked with more than 500 corporations including half the *Fortune* 100, to fly more than 54,000 cancer patients to specialized treatment and currently transports 225 patients each month.

The process is simple. Call or visit our website for more information.

54,000 flights and counting!

Corporate Angel Network

(866) 328-1313 WWW.CORPANGELNETWORK.ORG
TWITTER: @CORPANGELNET
INSTAGRAM: @CORPORATEANGELNETWORK

BRINGING CANCER PATIENTS
CLOSER TO THEIR CURE.

EXPERIENCE A HIGHER PLANE

THE BLACKHAWK XP135A ENGINE+ UPGRADE

WELCOME TO UPGRADE HQ

Your new aircraft may be the one you already own. The Blackhawk XP135A ENGINE+ UPGRADE transforms your legacy aircraft to new, modern standards while avoiding the risk of uncertain engine overhaul costs. Factory-new, more efficient engines deliver the highest performance levels available, saving you both time and money - two more powerful reasons to upgrade your aircraft into something new.

Blackhawk

(844) 832-4456 • blackhawk.aero