Clare Leavens Award • Joe Chase Award • Aviall High Achievement Award

AirMaintenance UPDATE

The Magazine for Aircraft Maintenance Professionals

Transport Canada Approved for R/T

RAISING THE BAR:
FAILURE TO COMMUNICATE

OPINIONS:
INDUSTRY INSIGHTS

DEAR COMMISSIONER
ABOUT THAT STUDY:
AIRLINE COMPETITION

TRANSPORT CANADA REPORTS

AME & PAMA NEWS

Publication Mail Agreement No. 0041039024
and Return Undeliverable Canadian Addresses to
Alpha Publishing Group (2004) Inc.
Unit 100 - 6660 Graybar Rd, Richmond BC V6W 1H9
email: amumagazine@outlook.com

August - September 2024
Volume 23 / Issue 2

$7.95

Canadian Aero Accessories Ltd.

Component Sales **Overhaul & Repair**

Trusted
Experience
Since 1964

CALL US FOR THIS & MORE !

- Fire Bottles • Oxygen Bottles • Escape Slides • Life Rafts
- Starter Generators • AC Generators • Generator Control Units
- Boost Pumps • Fuel Pumps • Blowers • Valves • Brakes
- Hydraulics 5606 and Skydrol • Electronics/GCUs
- Actuators - Hydraulic and Electrical

Authorized repair Station For

GOODRICH

Ice protection systems

170 George Craig Blvd. N.E., Calgary, AB, Canada T2E 7H2
ph: 403.250.9077 • fax: 403.250.6841
sales@cdnaero.com

www.canadianaero.com

Boeing Woes Mount

Just Can't Keep Those Damn Tires On

PHOTO: ABC NEWS

BOEING JUST CAN'T CATCH A BREAK it seems. The latest round of bad news involves a United Airlines flight departing Los Angeles on July 8, when the incident 757-200 aircraft lost a tire during takeoff. This was the second Boeing aircraft to have lost a tire in four months. In March, a Japan-bound United flight lost one of its main landing tires seconds after takeoff from San Francisco International Airport. The tire landed in an employee parking lot and damaged several vehicles. The Boeing 777, which carried 235 passengers and 14 crew members, made an emergency landing at LAX and was towed away with no reported injuries.

The Boeing 757-200 involved in the Los Angeles incident continued to its destination at Denver International Airport even after losing the tire, according to the Federal Aviation Administration. The plane landed safely around 10:10 a.m. with no reported injuries on the aircraft or on the ground, United Airlines said in a statement.

"The wheel has been recovered in Los Angeles, and we are investigating what caused this event," United told media. The company did not say which tire on the aircraft was lost.

The plane had 174 passengers and seven crew members on board, according to United. United and FAA said they would investigate what caused the tire to fall.

United did not respond to a media inquiry about whether the causes for the incidents were potentially the same. ■

— John Campbell, Editor

Departments

Features

AMU is viewable online: subscribe and download at www.amumagazine.com

AirMaintenance Update
Unit 100 - 6660 Graybar Road
Richmond BC V6W 1H9 Canada
phone: (604) 214-9824
fax: (604) 214-9825

email: chrissie@amumagazine.com
website: www.amumagazine.com

editor: John Campbell
art director: Cliff Vickstrom/aka: DQ
publisher: Bill Carter
sales manager: Bill Carter
Advertising inquiries: (604) 214-9824

production manager: Chrissie Harvey
circulation: Anne Gervin
cover photo: Dreamstime.com

Published by Alpha Publishing Group (2004) Inc.

Publication Mail Agreement Number 0041039024 and Return Undeliverable Canadian Addresses to:
Alpha Publishing Group (2004) Inc.
Unit 100 - 6660 Graybar Road
Richmond BC V6W 1H9 Canada

Subscription Rates: 1 Year: $40 2 Years: $60
AirMaintenance Update is published 6X annually.

Corporate Member of:
HAC · Helicopter Association International · NBAA

Publications Mail Registration No. 0007198278
ISSN 1703-2318

Upcoming Events

Toronto salutes RCAF 100th Anniversary

THE CANADIAN INTERNATIONAL AIR SHOW returns Labour Day weekend to celebrate 75 historic years of soaring over Toronto and the 100th Anniversary of the Royal Canadian Air Force. To celebrate these milestones, the show will feature two of the best demonstration teams in the world, the Canadian Forces Snowbirds and the must-anticipated return of the Royal Air Force Acrobatic Team, the Red Arrows.

"This is our biggest celebration to date with two milestone anniversaries, two jet teams, two demonstration teams, as well as one of only two flying Lancaster's in the world," said Lori Duthie, Executive Director of the Canadian International Air Show.

Founded in 1946, CIAS is celebrated as the longest-running air show in North America, attracting over one million visitors to Toronto's Waterfront every Labour Day weekend. At the inaugural CIAS, an Avro Lancaster was among the featured aircraft. This year, the show will pay tribute to its origins by showcasing the Canadian Warplane Heritage Museum's Lancaster.

Additional 2024 Canadian International Air Show program highlights include the United States Air Force F-22 Demo which showcases the Raptor's exceptional maneuverability; the Douglas C-47 Dakota and the B-25J. Also on hand will be Trevor Rafferty and his homebuilt Pitts 12 which is modeled off a 1930s barnstormer with 400 horsepower. And watch in awe at Kyle Fowler with his backwards looking plane, the Long-EZ.

New in 2024, fans are invited to visit the free STEM area, featuring full-size aircraft on display, a unique virtual reality experience, aerospace exhibits, and more. Air Show ticket holders can continue the adventure with same-day admission to the Canadian National Exhibition. ✪

For more information: www.cias.org

COMING EVENTS

Canadian General Aviation Expo
September 7, 2024
Burlington, Ontario
www.canadiangeneralaviationexpo.ca

Annual Atlantic AME Golf Tournament
September 13, 2024
Bayside, Nova Scotia
www.atlanticame.com

Airshow London Skydive
September 13-15, 2024
London, Ontario
www.airshowlondon.com

California International Airshow
September 27-29, 2024
Salinas, California
www.salinasairshow.com

Ontario Aircraft Maintenance Conference
October 2-3, 2024
Mississauga, Ontario
www.ame-ont.com

Careers in Aviation Expo, West
October 29, 2024
Edmonton, Alberta
www.careersinaviation.ca

ATAC Canadian Aviation Conference and Tradeshow
November 5-7, 2024
Vancouver, British Columbia
www.atac.ca

Advertisers Index

STCs & new products

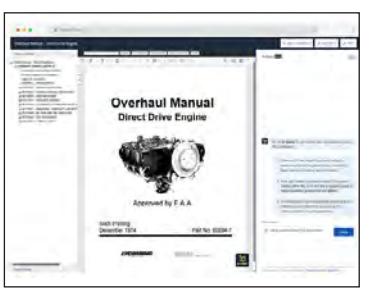
STC granted to aerial firefighter system

Recoil Aerospace has received Transport Canada Supplemental Type Certificates for its T1000-E and T650-E aerial firefighting systems. This approval allows Recoil to offer its firefighting solutions to Canadian firefighting agencies operating eligible Super Puma AS332 and EC225 helicopters. The T1000-E and T650-E systems are designed to provide rapid and effective fire suppression, catering to different operational needs. The T1000-E has a 3,785-litre external tank, while the T650-E features a 2,460-litre external tank making it suitable for a wider range of firefighting applications and helicopter types. **www.recoil-usa.com**

Optical measuring machine ensures accuracy

The new **Metrios 332 optical measuring machine** features a 300x300mm X-Y measuring range and a 200mm parts passage. It holds parts up to 20 kg on the stage. A wide-field sensor detects the parts on the stage and measures them at maximum speed. Its ultra-high magnification sensor can detect points in X-Y-Z even on the smallest details. A comprehensive lighting system ensures accurate measurement results even on difficult-to-detect surfaces. The Metrios 332 combines the simplicity and speed of automatic optical measurement with the accuracy of multi-sensor machines directly in the production environment. **www.metrios.net**

Chatbot retrieves real-time maintenance info



Veryon AI Assist is a generative artificial intelligence (AI) chatbot within Veryon Publications, enabling guided and rapid troubleshooting for aircraft maintenance professionals. Designed by and for aircraft maintenance professionals, Veryon AI Assist uses advanced AI models with natural language processing and real-time information retrieval, offering instant insights from a comprehensive OEM knowledge base. Whether clarifying procedures or troubleshooting, Veryon's AI-powered chat is designed to help operators quickly return aircraft to service, enhance operational efficiency and scale, and make critical information easily accessible. **www.veryon.com**

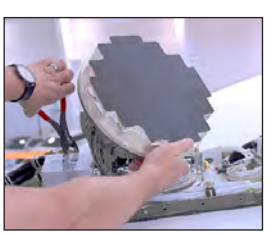
WD-40 Formula now in a portable pen

The WD-40 Brand now includes a Precision Pen with a compact design that's ideal for tight spaces across projects of all sizes. It flows with pinpoint precision and applies the exact amount of product needed to small areas and tight spaces with ease. Portable and pocket-sized the Precision Pen fits perfectly in a tool belt, glovebox, or back pocket for quick fixes anytime, anywhere. For multi-purpose use it's perfect for work, home, DIY projects, and on-the-go repairs, the Precision Pen. The WD-40 Precision Pen is now available at Home Depot locations. **www.wd40.ca**

S-seats can withstand powerful G-forces

Bushliner Aircraft now has design rights to **JAARS S-seats** featuring S-frame inertia-absorbing technology and is offering the seats to Experimentals, OEM manufacturers, and retrofits including STC'd installations in the Cessna 206, 185, and others. The JAARS S-Seats are FAA certified and have been tested to withstand forces of up to 30 Gs. They can be easily removed and reinstalled in various cabin configurations while unused passenger seats can be conveniently folded and stored in the aircraft's cargo compartments, adding a layer of flexibility for operators. **www.bushliner.com**

Ka-band terminal receives FAA approval



Satcom Direct has confirmed approval by the Federal Aviation Administration for the first **Supplemental Type Certificate for the SD Plane Simple Ka-band tail mount terminal** for a Gulfstream G650. Equipping the Gulfstream GVI-type with the advanced technology represents a significant milestone in the SD Plane Simple antenna series rollout. The antenna complements existing SD hardware which includes a Satcom Direct gateway router and WiFi hub to distribute high-speed broadband to all passenger and crew devices. SD Plane Simple Ka-band hardware is now available for installation through authorized Gulfstream and Jet Aviation Service Centers. **www.satcomdirect.com**

To announce your STC or new product, email a JPG photo and a product description to John at: amu.editor@gmail.com

JetBed™

Easy to Carry • Easy to Stow • Ready to Go

"Thank you for finally providing a solution to a comfortable, restful sleep on a corporate jet . . . back support is superb . . . the quality of your bed is evident. . . a real winner."

Lusardi Construction Co.

The Comfortable Way to Fly

Easy to use, easy to stow! Removable mattress, for easy cleaning. Meets or exceeds FAR-25-853a standards for flammability. JetBed™ weighs no more than 20lbs!

Available for:

Cessna CJ-1
Cessna CJ-2
Cessna CJ-3
Cessna XL & XLS
Cessna XLS-PL, XLS Plus
Cessna Encore & Ultra Encore
Citation X & Sovereign
Gulfstream G200
Gulfstream 550
Gulfstream G-IV
Gulfstream G-V
Challenger 300
Challenger 600 Series
Falcon 2000
Global Express
Learjet 45
Hawker 800
Falcon 50

". . . a long flight was proof that JetBed was the right decision. Without hesitation, I would recommend JetBed to any operator seeking ease, reliability and quality . . . Kudos to you and your Jet Bed staff for such a quality and innovative solution. You have surpassed all of my expectations . . ."

JetBed™

". . . a great addition to our cabin requirements . . . deployment is extremely easy . . . stores easily . . . definitely a satisfied JetBed customer."

Qualcomm Flight Department

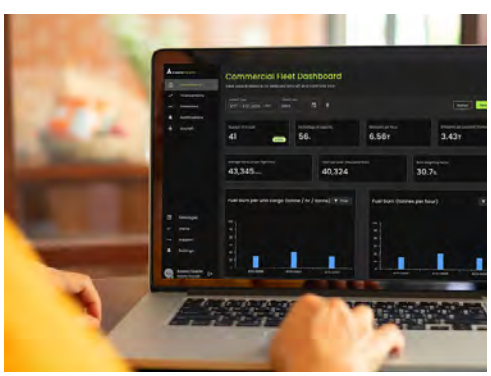
BKD
mobility products
Approved distributor

Tel: 604.247.2128 Fax: 604.214.9825

www.bkdaerospace.com
info@bkdaerospace.com
BKD Aerospace Industries Inc.

HARTZELL ROLLS OUT NEW PROP PROGRAM

The Hartzell Service Center in Piqua, Ohio has introduced a purchasing program for used serviceable propeller cores and serialized parts directly from aircraft owners, fleets, and MROs. The enhancement aims to help reduce overhaul lead times, while giving customers more buying options when acquiring parts. At Hartzell's discretion, customers can reduce the purchase price of a new or used Hartzell propeller by selling their existing serviceable propeller of any general aviation aircraft make or model. All core purchases require complete logbook information detailing maintenance history, applicable 8130-3 certificates, and a recorded Time Since New (TSN).



PILOT PROJECT WILL TRACK EMISSIONS

The Montreal-based tech firm Azzera has been awarded a contract through the Government of Canada's Innovative Solutions program to test CELESTE, its digital platform supporting total emissions management for aviation operators. In this pilot project, being managed by Transport Canada, Azzera will deliver its real-time emissions tracking platform to three Canadian airlines for testing. CELESTE offers solutions specifically to address the emissions generated by aircraft, such as Sustainable Aviation Fuel, compliance allowances, and high-quality CORSIA-eligible carbon credits. With the integration of CELESTE, these airlines will benefit from a streamlined approach to emissions management and a one-stop shop for mitigation solutions.

FIRST-EVER H160 MEDICAL HELICOPTER

Memorial Hermann Life Flight has placed orders for one H160 and four H145s to replace its current fleet of EC145 helicopters. The nationally recognized emergency medical services program will be the first in the world to operate the H160 for helicopter emergency medical services (HEMS). Memorial Hermann Life Flight has exclusively relied on Airbus helicopters since its inception and has flown more than 166,000 lifesaving missions. "The enhanced technology and safety features, larger cabin and cargo space, increased fuel load and shorter reconfiguration times will provide us with the capabilities of a mobile intensive care unit," said Tom Flanagan, Consultant and Program Director.

COMBI CONVERSION DELIVERED TO ALASKA

Textron Aviation has now delivered its first Cessna SkyCourier twin-engine utility turboprop equipped with a Combi interior conversion option. The aircraft was received by Everts Air, an Alaskan-based operator serving passenger, cargo and charter needs throughout Alaska. The Federal Aviation Administration granted certification for the SkyCourier Combi interior configuration in May 2024. The recently certified option adds more flexibility to the 19-seat passenger

variant of the aircraft by allowing operators to modify the interior to accommodate passengers and cargo at the same time. The aircraft will join the Everts Air Alaska 135 fleet, which also includes a Cessna SkyCourier freighter variant.

SOLAR PANELS NOW COVER LONDON

Bombardier says that more than 3,000 solar panels have now been installed on the roof of the company's London Biggin Hill Service Centre located at the London Biggin Hill Airport, with the purpose being to promote sustainable aviation industry practices and to reduce Bombardier's energy consumption at its worldwide facilities. The recently completed project was developed in collaboration with Zestec Renewable Energy. The new PV solar panels will generate more than 1.133 million kWh, lowering the annual carbon emissions by up to 252 tons and providing up to 32 percent of the facility's total energy demand from an on-site renewable source.

P&W F-35 PROGRAM STILL ON TRACK

Pratt & Whitney says it is on track to fully enable the F-35's future needs and reports it has successfully completed the F135 engine core upgrades preliminary design review. The upgrade is intended to deliver increased engine durability and performance and enable next generation weapons and sensors. Earlier this year, the U.S. Department of Defense formally selected the F135 ECU as the only modernization solution for the F-35's propulsion system because it assessed that Pratt & Whitney alone "has the experience, special skills, proprietary technical documentation, software/algorithms, and technical expertise required to furnish the supplies and services."

PREMIUM HELICOPTER DELIVERED TO CANADIAN OPERATOR

Canadian private aviation provider Chartright Air Group has taken delivery of Canada's first corporate ACH160. The helicopter will enter into service immediately, as the first to be delivered in North America. The ACH160 is the premium version of the H160 which was certified by Transport Canada in December 2023. It is equipped with Airbus Helicopters' Helionix suite and also features sound-reducing Blue Edge rotor blades for quieter operations. It is powered by two Arrano engines from Safran Helicopter engines that offer an 18 percent reduction in fuel burn. Larger windows are said to create the brightest cabin in its class.

SHARKS INSPIRE CHINESE SCIENTISTS

Chinese scientists have developed a new 3D-printed structure for turbofan engines, the design of which is based on shark skin or dermal denticles. The structures are robust and have been shown to dramatically reduce drag reduce drag by as much as 10 percent and increase aerodynamic efficiency. The skin is made from high-strength, large-scale titanium alloy, as reported by South China Morning Post. While not directly related to Chinese development, other work has been conducted by companies like BASF that also draws inspiration from shark skin. In 2022, BASF developed a shark skin coating for civilian aircraft. ■

Dear Honourable Minister O'Regan

The recent dispute between WestJet and its Air Maintenance Engineers spurred your AMEC-TEAC interim president to pen the following letter of concern to then-Federal Labour Minister Seamus O'Regan.

AS **AMEC-TEAC,** we represent groups of Aircraft Maintenance Engineers (AME) across the country. As a non-profit professional organization, we are committed to ensuring that Canadian AMEs have access to good training, adequate regulations and that the industry is attractive to young people looking for a stimulating career, have access to competitive remuneration for their level of responsibility and that they remain there with the aim of passing on their knowledge and experience to the next generation of AMEs entering the market.

Let us not forget that these men and women have a job that is vital to the Canadian economy: they ensure that people and goods transported on aircraft in Canada and abroad arrive at their destination safely. They achieve this by obtaining a Transport Canada licence which will only be acquired after several years of a demanding basic training, 48 months of experience to be acquired and examinations with the Ministry of Transport, without forgetting the certification of an experience logbook by Transport Canada inspectors.

It is a minimum of four or five years from the start of the studies until an Aircraft Maintenance Engineer can finally do a Maintenance Release on an aircraft. This Maintenance Release means that the AME takes responsibility in which the maintenance work carried out on the aircraft will have been done following the very strict standards of the Department of Transport of Canada as well as the aircraft manufacturer.

The roles and responsibilities of an Aircraft Maintenance Engineer are largely unknown to the travelling public and in general, which does not help AMEs obtain fair and equitable treatment in the industry, especially in relation to their major responsibilities, their knowledge to be constantly updated, their level of exposure related to their job, as well as coverage 24 hours a day, 365 days a year, working outside, etc.

As everyone says, AMEs are of capital importance in the operation of commercial aircraft which themselves are neces-

Left: Federal Labour Minister Seamus O'Regan resigned from cabinet just as this issue was headed to press.

Above: WestJet AMEs made national news by publically voicing longstanding grievances.

Right: It is a minimum of four or five years from the start of the studies until an Aircraft Maintenance Engineer can finally do a Maintenance Release on an aircraft.

sary for a healthy economy. This is all the more true in Canada given our population density and the distance between large cities. People and goods need to move, and aviation is essential to do it.

For several years a severe labour shortage has hit the Aircraft Maintenance Engineer profession. Indeed, statistics show that there are more AMEs who retire than new ones who arrive in the industry and who stay there. We see that too few AMEs recommend this career to their own entourage when looking for a new career. How is it that such a stimulating and passionate profession has such difficulty recruiting young people? Is this due to the attraction of new high-tech professions? Not only.

Indeed, for decades, AMEs have found themselves in a situation in which they have struggled to freely negotiate their employment contracts since they can only rarely exercise their right to strike given the strategic importance of their profession in an industry essential to the Canadian economy. In doing so, all AMEs found themselves in a situation in which they cannot improve their condition as much as they desire and deserve, which endangers the next generation who end up losing interest in this profession in order to turn to other careers.

Minister, we believe that it is time for AMEs to be treated up to the level of their responsibilities and the demands of their profession. They are in fact responsible for the airworthiness of the aircraft that we all take for both personal and professional travel.

We ask that you take these considerations into account in collective bargaining between WestJet Aircraft Maintenance Engineers (represented by AMFA) and their employer. We believe that it is very important to listen to what these maintenance professionals have to say, and that this consideration could lead the industry to reposition itself with the aim of making the profession of Aircraft Maintenance Engineer attractive again to Canadians.

Thank you for your consideration.

Xavier Pallares (AME)
Interim President, AMEC-TEAC

Dear Prime Minister

The Royal Aeronautical Society has published a position paper calling on the UK's new government to focus on modernizing its aerospace systems and infrastructure.

The Royal Aeronautical Society is calling Keir Starmer's newly elected government to action.

AEROSPACE AND AVIATION connect people, business, and countries, while generating value for nations, creating high-value jobs, and contributing to the protection and security of its citizens. The Royal Aeronautical Society (RAeS) published a position paper in July reminding the United Kingdom's new Keir Starmer-led government that it has a vital role in keeping the UK globally connected, and secure by maximizing the value of UK aerospace and driving sustainability, air power and space, and innovation. The following are key points of the position paper.

1. MODERNIZE AVIATION INFRASTRUCTURE

A strategic approach for safe and secure infrastructure modernisation, focusing on sustainable development and the incorporation of

The Royal Aeronautical Society was established nearly 165 years ago.

Investment in aerospace, aviation, and space remains vital for the UK's economic growth.

green technologies to meet environmental targets is an imperative. As we move towards 2025 and beyond, the UK's focus on modernising its aerospace systems and infrastructure to support global mobility will require a collaborative effort. Commercial aviation is at a turning point with consideration being given to alternative solutions and fuels which will inevitably require government support. By leveraging technological innovations, and prioritising safety and sustainability, the UK can maintain its position in the global aerospace arena, ensuring a secure, connected, and prosperous future.

2. INCREASE AIR POWER AND SPACE CAPABILITY

The government as a priority should urgently address gaps in vital air power capability and accelerate investment in the creation of an agile, resilient, and technologically advanced air force to ensure the UK remains well defended and secure and maintains its role in supporting global security. It is essential for the Global Combat Air Programme (GCAP) to move forward at pace. Space exploration and satellite technology are also of vital strategic importance for national security, global telecommunications, and Earth observation. The Government should support UK growth in this sector and its integration with the global space economy. The government cannot afford to neglect air power and space defence considering the growing geo-political challenges facing the world over the coming decade.

3. ACCELERATE REGULATORY FRAMEWORKS FOR FUTURE FLIGHT TECHNOLOGY

The government should accelerate the development of new legal and regulatory frameworks with the Civil Aviation Authority (CAA), as well as maintaining access to EU frameworks through the European Aviation Safety Agency (EASA). Creating flexible, forward-looking regulatory frameworks will be paramount in harnessing the potential of future flight technologies. This approach will ensure the UK's airspace remains safe, competitive, and conducive to innovation, positioning the country as a leader in the next generation of aviation and aerospace development.

4. MAXIMIZE ECONOMIC BENEFITS

Investment in aerospace, aviation, and space remains vital for the UK's economic growth and national security. An investment-friendly environment should include regulatory stability, tax incentives, and streamlined procurement processes. The government will need to sustain, multi-year investment in industry to support the UK's global competitiveness. Any new strategic approach by the government should be underpinned by providing an attractive investment environment, addressing on-going workforce shortages, and putting the UK on a more resilient, competitive footing.

5. DEVELOP FUTURE AND EXISTING TALENT

To maintain a steady stream of skilled personnel into the sector, including pilots and engineers, the government should ensure that vocational training and STEM is accessible to everyone to prepare the next generation of aerospace engineers, technicians, and scientists. This includes expanding apprenticeship programs, enhancing university-industry collaboration, and ensuring diversity and inclusion within the workforce through professional careers advice and support in schools from an early age to industrial placements with technical colleges and universities. The government can play a stronger coordinating role to maximise the initiatives and programmes in addressing the current skills gap.

Setting out the Society's priorities for the new government RAeS Chief Executive, David Edwards FRAeS said: "From the outset the new government should continue to invest in essential air power capability, enable the sustainable growth of aviation through research with alternative fuels, invest in new airport infrastructure and airspace modernisation, optimise the economic potential of future flight vehicles and satellite and space technology, and help maintain a steady flow of diverse talent in the industry.

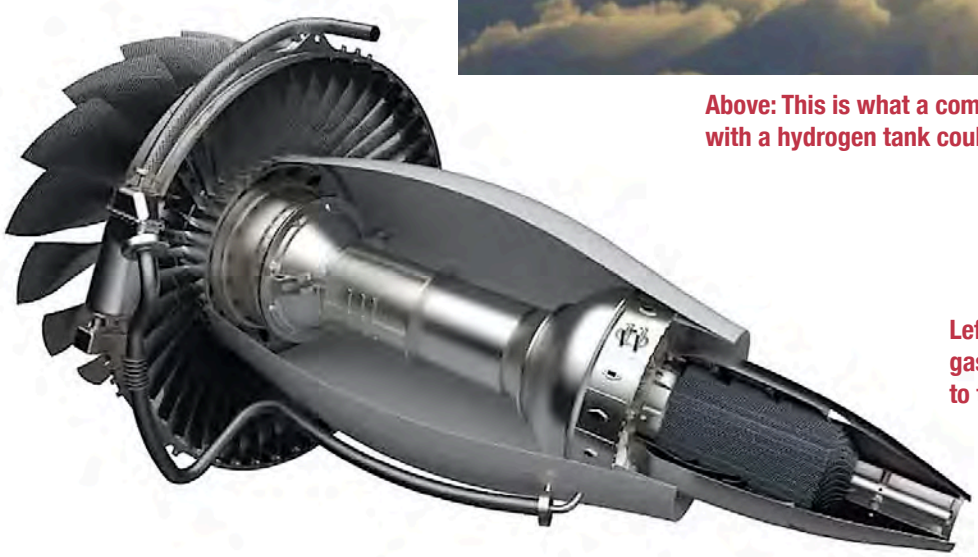
"With the active support from and in partnership with the government, the aerospace sector can reach its' goals and assure the UK's leading position in air connectivity, maintaining international competitiveness and keeping the country secure." ■

(The Royal Aeronautical Society is the only global organization serving the entire aviation, aerospace, and space communities as both a learned society and a professional engineering institution.)

Air Target 2045

Researchers in Sweden report promising results for heat exchangers on hydrogen aircraft

Above: This is what a commercial aircraft with a hydrogen tank could look like.



Left: Heat exchanger with exhaust gas preheater, developed according to the new concept.

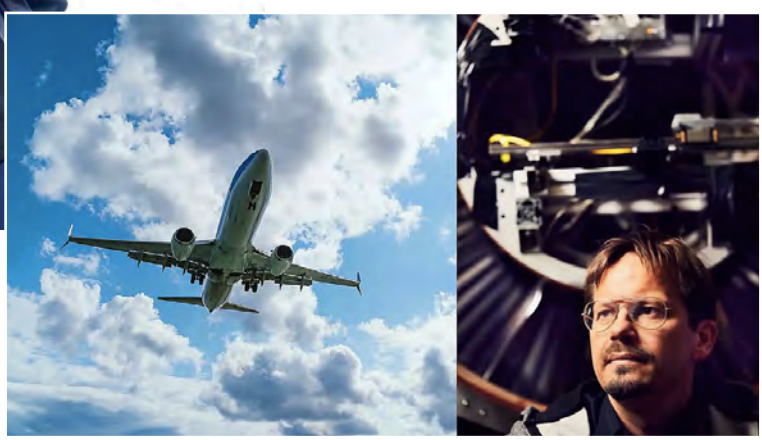
HYDROGEN-POWERED engines open up opportunities for fossil-free aviation, and the fuel system is a key component. Hydrogen contains more energy per kilogram than today's kerosene, and also has the advantage that the residual product of combustion is mainly water vapour. Short and medium-haul flights, for example within Europe, offer the best opportunities for a transition to hydrogen-fuelled engines. A study from Chalmers University of Technology in Gothenburg, Sweden published earlier this year shows that hydrogen-powered aircraft could meet the needs of 97 percent of all intra-Nordic flights by 2045.

In the transition to hydrogen, industry manufacturers expect to be able to continue using the same type of turbofan engines as in today's aircraft, which means that engine fuel systems will have to be adapted to handle the very low temperature of liquid hydrogen. To keep the weight of the aircraft down, the hydrogen needs to be stored in liquid form, which requires a temperature in the tank of around -250C, and injecting the fuel for combustion at that temperature means significantly reduced efficiency with increased fuel consumption as a result.

For several years, researchers at Chalmers have been working on various projects to develop a completely new type of heat exchanger, for which a patent application has now been filed by the partner GKN Aerospace. The system utilizes the low storage temperature of hydrogen to cool engine parts, and then uses waste heat from the exhaust gases to preheat the fuel by several hundred degrees before it is injected into the combustion chamber.

"Each degree of temperature increase reduces fuel consumption and increases range," says Carlos Xisto, an associate professor at the division of Fluid Mechanics at the Department of Mechanics and Maritime Sciences, and one of the researchers involved in developing the new technology.

Above: GKN Aerospace is the study partner for the Chalmers University hydrogen project.



Right: Swedish researchers believe that hydrogen-powered aircraft could meet the needs of 97 percent of all intra-Nordic flights by 2045.

In the recently published study "Compact Heat Exchangers for Hydrogen-fuelled Aero Engine Intercooling and Recuperation," the researchers investigated the effect of the heat exchanger on short- to medium-range aircraft equipped with hydrogen-fuelled turbofan engines. Among other things, they measured a reduction in fuel consumption of almost eight per cent during take-off. The lead author of the study, Alexandre Capitao Patrao, explains why this is a more impressive figure than you might think.

"Eight percent may not sound like much, but in an aircraft engine that is a mature and well-established technology, it is a very good result for a single component," says Patrao. "These kinds of improvements also have a reverse snowball effect, as the size and weight of the aircraft is reduced, there are further savings in fuel consumption. With more optimization, this type of technology in a standard commercial aircraft such as the Airbus A320 could improve range by up to 10 percent, or the equivalent of the Gothenburg-Berlin route."

Interestingly, the study also describes that emissions of environmentally harmful nitric oxides decreased by 37 percent while engine efficiency increased. To reduce emissions, the engine needs to be cooled, and with traditional technology this reduces efficiency, but in a hydrogen engine with a heat exchanger this does not happen, as the energy is recuperated in the process.

The technology has been developed within the EU project ENABLEH2, and the PATH project which was funded by Chalmers' Transport Area of Advance. The projects ran between 2018-2022, during which time the infrastructure was constructed that has since been used to test new engine components and carry out simulations. Within Chalmers' centre Tech for H2, research is ongoing to further develop the technology. ■

Invader Reborn

To honour those who served, one maintenance team with FBO provider Million Air undertook the ambitious task of bringing back to life a valiant World War Two gladiator.

The Million Air maintenance team dedicated countless hours to restoring the bomber, ensuring it was airworthy and ready for its historic journey and its mission to honour the legacy of those who served.

AS THE WORLD commemorated the 80th anniversary of D-Day, a pivotal event in World War II history, FBO provider Million Air announced the completion of a special restoration project. The Million Air aircraft maintenance team, headquartered in Houston, had meticulously restored a historic Douglas A-26 Invader bomber aircraft. This twin-engine light bomber, which played a crucial role during the later stages of World War II and in the post-war years, has been brought back to its former glory.

Million Air CEO Roger Woolsey, along with several members of the Million Air Maintenance team, undertook the ambitious task of flying the restored bomber transatlantic to Normandy for the anniversary celebrations on June 6. The journey, which took approximately 30 hours of airtime one way, started from Houston and included stops in Alexandria, Syracuse, Canada, Greenland, Iceland, and Scotland before finally landing in Normandy.

Thousands of people descended on Normandy's French coast to honour the soldiers, sailors, and airmen who participated in D-Day, Operation Overlord, and the Battle of Normandy on June 6, 1944. The Douglas A-26C Invader now named 'Million Airess,' was originally manufactured by Douglas Aircraft in Long Beach, California, in November 1944. It served with distinction in Europe with the 9th Air Force during the Battle of the Bulge and later saw action during the Korean War with the 3rd Bomb Wing, Far East Air Forces, Kunsan Airforce Base, Korea.

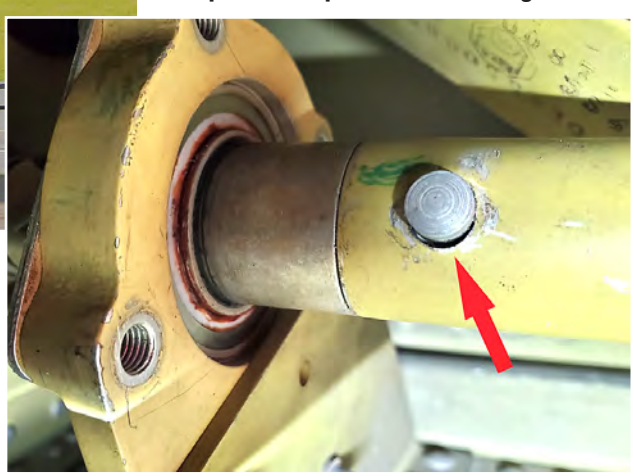
The Million Air maintenance team dedicated countless hours to restoring the bomber, ensuring it was airworthy and ready for its historic journey and its mission to honour the legacy of those who served.

"Million Air is proud to pay homage to the history of this remarkable aircraft and the brave individuals who flew it," said Woolsey. "As a privately held, family-operated FBO network, we live and breathe aviation. The restoration of Million Airess is a reflection of our dedication to excellence and our deep respect for aviation history."

Million Air invites the public to join in celebrating this significant achievement and to honor the memory of those who fought for freedom during World War II. ■

★ TRANSPORT CANADA ★
Reports and Comments

The following are selections of Canadian Aviation Service Difficulty Reports originally published as "Feedback" by Transport Canada.



Torque Tube Taper Pin Hole - Elongated.

REPORT: BEECH 200

Landing Gear Torque Tube Taper Pin – Security of Attachment

Subject:

While performing the biennial airframe inspection, it was noted that the outboard taper pin hole of the middle right-hand main landing gear torque shaft was elongated and cracked. The torque tube damage appears to be caused by repeated torque loads. A review of the technical records indicated that this was probably an original factory installation. A complete failure of this shaft or the taper pin, part number AN386-2-8A, would have prevented the right-hand main landing gear from extending or retracting.

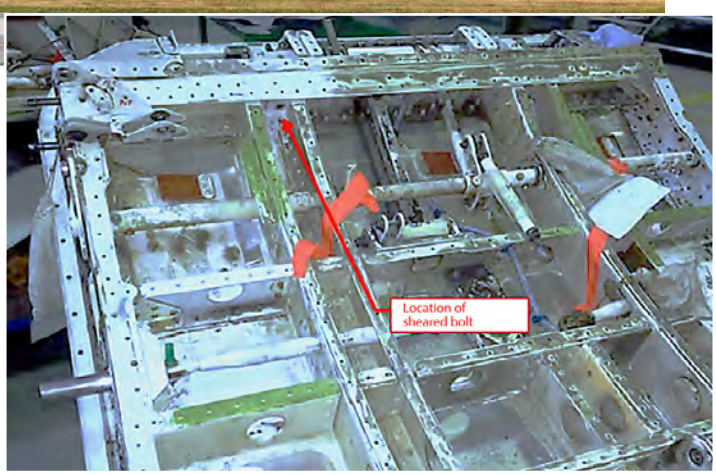
Transport Canada Comments:

Human error has been identified in multiple King Air gear collapse accidents where a taper pin was not installed correctly. When completing maintenance that requires removal and reinstallation of taper pins, it is extremely important that the correct torque is applied as specified by the appropriate Instructions for Continued Airworthiness (ICA) to ensure security of attachment.

It is worth noting that the absence of a taper pin in the torque tube will not allow the landing gear to be extended in an emergency. There is no system redundancy, the emergency extension system utilizes the same torque tube connection to the mechanical actuator as the electric motor during extension / retraction. Additional information on the installation of taper pins can be found in King Air Communique No. 2003-02.

Left: Broken bolt location back side.

Right: Door showing broken bolt location.



REPORT: BOMBARDIER CL600/CRJ 900

Passenger Door Aft Fitting Cracks and Fitting Attachment Bolts Sheared

Subject:

While working on the passenger door, maintenance personnel observed that one of the four bolts which secures the upper aft latch fitting was sheared and the latch fitting had a crack in the radius. The broken bolt was removed, a new bolt was installed, and the cracked fitting was replaced. The aircraft times in service were 44329 hours and 22558 flight cycles.

On a second aircraft in the same operator's fleet, while working on the passenger door, maintenance personnel observed that one of the four bolts which secures the upper aft latch fitting was sheared. The broken bolt was replaced. The maintenance personnel also discovered the fitting in the upper aft door structure was cracked in the radius, so the fitting was replaced. The aircraft times in service were 44113 hours and 22761 flight cycles.

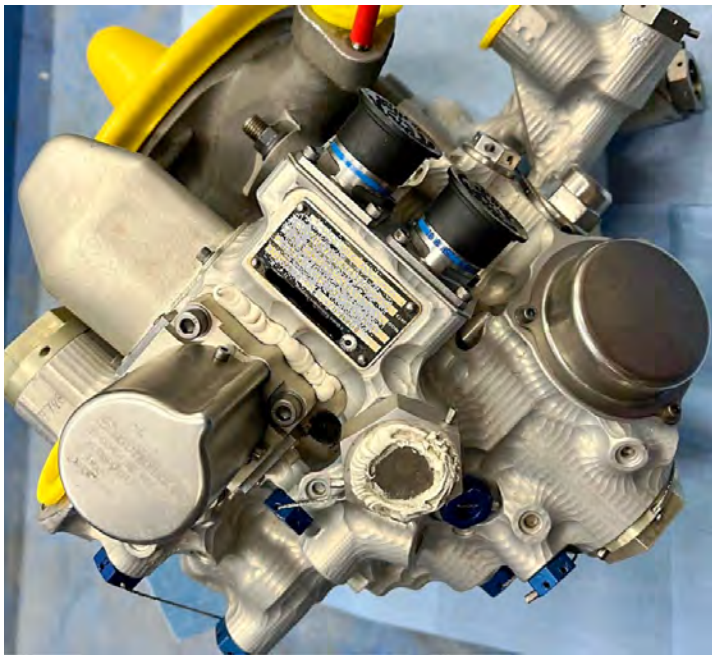
On a third aircraft in the same operator's fleet, while removing access panels on passenger door assembly during the aircraft maintenance heavy check visit, a crack was observed on the upper outer internal frame fitting. Further inspection also revealed one of the fitting attachment bolts was sheared. The broken bolt was removed, a new bolt was installed, and the cracked fitting was replaced. The aircraft times in service were 46309 hours and 23868 flight cycles.

Transport Canada Comments:

As highlighted in previous Feedback articles, this area of the passenger door is prone to water ingress and corrosion which can lead to cracked and broken bolts. In this case, along with broken bolts the operator found cracks in the door fittings.

These, as well as previously reported corrosion and bolt breakage events have been assessed by the design approval holder and determined to pose minimal safety risk provided the recommended inspections and standard aircraft maintenance practices are respected. The area is the subject of a lengthy inspection interval and the maintenance instructions do not require the removal of the bolts to inspect for corrosion.

Aircraft operated in roles where the door stairs are used frequently in harsh environments may wish to consider preventively replacing the bolts during the inspection to provide additional reliability and prevent in-service failures and their associated operational delays.



P&W. Fuel metering unit.

REPORT: PRATT & WHITNEY PW150A

Scored Fuel Pump Transfer Tube Bores

Subject:

A fuel metering unit (FMU) assembly was issued from stock to be installed on an aircraft and found to have scoring marks in the fuel transfer tube bores, which were beyond the Component Maintenance Manual (CMM) limits. The unit had been received from repair in 2020 and was in stock since that time.

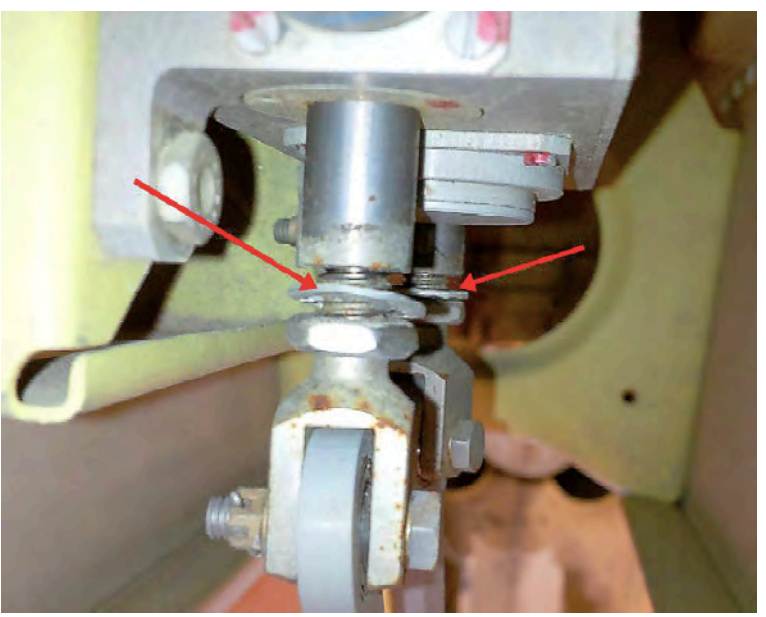
Transport Canada Comments:

Although this event is still being investigated by the manufacturer and a root cause for the scoring has yet to be determined, some possible causes could be a damaged O ring or misalignment of the transfer tube, allowing the transfer tube to contact the bore.

Transport Canada Civil Aviation (TCCA) brings awareness of this event to operators and maintainers of similar models to check these bores prior to installation and report any findings to TCCA through their Service Difficulty Reports (SDR) reporting system.

Well done to this operator/maintainer for performing a meticulous inspection of the FMU and pump before installation.

Below: Rudder trim actuator loose jam nuts.



REPORT: PIAGGIO P180 AVANTI II

Loose Jam Nuts on Rudder Trim Actuator

Subject:

During inspection, it was noticed that the rod end jam nuts were not secure on the rudder trim actuator.

Transport Canada Comments:

After consultation with the service difficulty report (SDR) submitter, Transport Canada Civil Aviation (TCCA) understood that the area was inspected in accordance with Service Bulletin (SB) 80-0444. No other occurrences have been reported to TCCA. Operators and maintainers of these aircraft are reminded, that whenever performing maintenance in this area, to remain vigilant and observant for this reported condition. If the condition of loose jam nuts is found, please submit an SDR accordingly.

Left:
Fractured gear impacting the runway.

Right:
Close-up of the lug with corrosion present in the bore.

REPORT: PILATUS PC12 45

Main Landing Gear (MLG) Fracture and Collapse

Subject:

The MLG lower trailing link broke away from the upper yoke fitting. The pivot pin attach lug on the yoke fitting, inboard side, broke in half, allowing the lower trailing link bushing and pin to separate from the upper gear leg.

Transport Canada Comments:

This Feedback Article aims to raise awareness in the PC 12 community of potential undetected corrosion being present under specific bushings of the yoke fitting assembly. It is suspected that this corrosion weakens the bore in the yoke fitting which can cause the separation of the lug from the rest of the yoke assembly. This specific aircraft was positioning for takeoff at the end of the runway when the lower trailing link broke away. The gear assembly is presently with Pilatus in a Swiss lab for investigation.

Pilatus specifies in their MLG Component Maintenance Manual (CMM) that up to "25,000 flying hours or 30,000 landings (whichever comes first), the overhaul of the MLG is done 'on condition' and requires the disassembly, cleaning, check, repair (if necessary) and assembly of the component". The overhaul consists of an examination and dimensional check of the bushings, but removal is optional.

Transport Canada Civil Aviation recommends that operators pay extra attention to these bushings during all routine maintenance checks for signs of corrosion. The Pilatus MLG CMM provides specific instructions for the subject bushings' removal, inspection, repair and reinstallation.

Above, right: Worn magneto shaft.

REPORT: TELEDYNE CONTINENTAL IO-550-F

Seized Magneto

Subject:

At approximately 1500 feet indicated, 750 feet Above Ground Level (AGL) the pilot felt a sudden power reduction. The aircraft was put into a decent and a turn was made back towards the area on the lake the aircraft had departed from. The pilot conducted a brief cause check but could not determine the cause of the loss. The aircraft made a safe landing back on the water. A visual inspection of the aircraft on the dock revealed that the left magneto had separated from the engine. The magneto`s case and the engine adapter both showed damage consistent with a sudden seizure of the magneto. No other damage to the engine/aircraft was noted. Both magnetos were replaced with overhauled units and a replacement engine adapter was installed. Aircraft was grounded and flight checked serviceable.

Transport Canada Comments:

Transport Canada Civil Aviation (TCCA) has received several similar Service Difficulty Reports (SDRs) which indicate broken magneto mount flanges and/or adapters as well as impulse coupling fractures.

TCCA recommends that maintainers and owners pay particular attention to the flanges and adapters while inspecting the ignition system. SLICK Service Bulletins (SB) SB1-19A and SB2-19A address reports of impulse coupling broken rivets and stop-pins liberating and potentially entering the gear train, which could contribute to seizure of a magneto. The failed magneto in this event appears to still have the pin in place but it is difficult to determine if the rivets were a factor due to the damage.

Transport Canada continues to monitor for these types of failures. Maintainers, owners, and operators of these products are encouraged to continue reporting similar events through TCCA's Web Service Difficulty Reporting System. ■

PACIFIC

Pacific AME Association

Silver Wings Awards

PAMEA has decided to formally transfer Membership Administration to AMEC/TEAC which is currently handled by the Ontario Association. What this means for the Membership is that our web site page will send you to the Ontario Association Membership pages for you to sign up if you are a new member or to complete your renewal as a PAMEA Member.

In the meantime, visit the pages of our associate members, including the British Columbia Aviation Council (www.bcaviationcouncil.org) which reports that its annual Silver Wings Industry and Scholarship Awards Celebration will take place October 18th at the Vancouver Convention Centre West in Downtown Vancouver. The awards are how the BCAC recognizes aviation and aerospace industry colleagues for specific achievements. As well, the Council disburses approximately $150,000 through its Scholarship Awards Program to hard-working students enrolled in aviation and/or aerospace programs in British Columbia.

Additionally that evening, BCAC's Board Chair, Co-Secretary, and Past Chairs will be hosting a pre-Silver Wings event called "Chair's Women in Aviation and Aerospace Reception (CWAAR)." Admission is by invitation and a voluntary donation to the Mary Swain Scholarship fund which supports women in aviation. For an invitation to CWAAR, please reach out to Dave Frank, Executive Director. Please note that registration for the CWAAR is separate from the Silver Wings Awards Celebration **www.amec-teac.ca/pacific**

WESTERN

Western AME Association

Keep a close watch for counterfeit parts

Steve C. Logged into our Linkedin page to offer the following advisory:

"Sadly there are thousands of counterfeit and incorrectly made 'Standard Parts' floating around in the depths of suppliers warehouses which are sold to the unwary - sometimes on purpose and other times by mistake.

"There are regulatory agencies out there which, for some reason, believe that "The Aircraft Manufacturer makes these parts" when in fact they usually buy them from a part-seller or part re-seller.

"The regulatory agencies often accept Mil-Spec parts when included on the aircraft designers drawings and parts call-outs used to obtain a production certificate due to the strict controls employed by the US DoD to ensure consistent quality. The Civil Aviation Regulator does not 'approve the manufacturers of Mil-Spec / Mil-Std parts' — the US Military does.

"Unless an aircraft manufacturer has gone thru the certification process to obtain manufacturing approval from the US Military the 'Std Part' part cannot simply be made by an aircraft Mfr. just because 'they have a copy of the Mil-Spec design drawing.' A production certificate issued by the Aviation Regulator to an aircraft or aircraft parts manufacturer does not allow the aviation manufacturer to manufacture of these parts."

Website still down

Due to our website crash, please temporarily email WAMEA at md@werkasset.com. The Western Aircraft Maintenance Engineers Association (WAMEA) is an organization equipping its members with the knowledge and professionalism which distinguishes the occupation of Aircraft Maintenance Engineers (AMEs) in the aviation industry (AME-M1 and/or M2 ,AME-E and AME-S and AME-Baloon).

Visit our website at: **www.wamea.com**

CENTRAL

Central AME Association

Manitoba's Annual Aviation Symposium

Exciting news! The 2025 CAMEA Annual Aviation Symposium is back and is scheduled to take place **February 20-21, 2025** at the Canada Inns Destination Centre in Winnipeg. Stay tuned for updates on registration — it will be available soon.

About Us

The Central Aircraft Maintenance Engineer Association is an organization dedicated to maintaining and enhancing the standards, rights & privileges of all AME members in the central region of Canada. CAMEA is a not-for-profit organization run by a volunteer group of AMEs. We elect members of our organization to be part of our Board of Directors. \Members of CAMEA are comprised of AMEs, AME apprentices, students, non-licensed persons working in the industry and corporate members.

Visit our website at: **www.camea.ca**

AME Association of Ontario

#613 - 7360 Bramalea Road, Mississauga, Ontario L5S 1W9
tel: 1-905-673-5681 email: association@ame-ont.com website: www.ame-ont.com

ONTARIO

A Long Weekend in July

Aircraft Maintenance Engineers certainly grabbed the spotlight on the first long weekend of July. WestJet AMEs went on strike for what they deemed a fair contract. We saw extensive encouragement for these AMEs from their maintenance comrades and their fellow employees at WestJet and other airlines. Support was shown to reinforce the importance of our profession, from rotary wing to fixed wing, M1 and M2, unionized and non-union workers alike.

Although it may have been well intended, the Labour Minister's attempt to illegally stop the strike and impose binding arbitration worsened the situation. WestJet did its best to show what the expression "cannot organize its way out of a wet paper bag" really means, as it left many passengers stranded. It is unfortunate that the innocent travelling public had to endure the chaos.

Our six AME associations from across the country are using the opportunity to remind everyone of the necessity of having AME services to ensure the safety of the nation's aircraft. We are bringing the public's attention to the Canadian Aviation Regulations, CARs 605.85, which state: "… no person shall conduct a take-off in an aircraft or permit a take-off to be conducted in an aircraft that is in the legal custody and control of the person, where that aircraft has undergone maintenance, unless the maintenance has been certified by the signing of a maintenance release…" and ultimately, who has the legal responsibilities for signing the maintenance release.

While AMEs are represented within their companies by unions, these representations are for pay and working conditions. All AMEs should join their regional AME association for licensing representation. Our national association, the Aircraft Maintenance Engineers of Canada (AMEC/TEAC), consists of the six regional associations that we are all members of. This united voice communicates with Transport Canada and TCCA. One successful outcome of our requests was the allowance for a special temporary change, which extended the "recency" of the licence from six in 24 months to six in 30 months. This preserved many individuals' AME licences when they were furloughed or laid off during the pandemic.

So, for your AME's licence sake, join your regional AME Association, and good luck to those unionized AMEs who, we hope, will finally get the financial recognition and respect that all AMEs deserve.

Submitted by Stephen Farnworth
For the Board of Directors
www.ame-ont.com

Quebec AME Association

Association des Techniciens/Techniciennes d'Entretien d'Aéronefs du Québec

C.P. 34510, 3131 Côte-Vertu; CSP Place Vertu, Saint-Laurent, Qc, H4R 2P4
email: info@ame-tea.com website: www.ame-tea.com

QUÉBEC

Mission Statement

The association's mission is to represent all AMEs in Quebec regardless of the company or the contracts on which they work. Regardless of the type of aircraft on which the AME works, he/she will be welcome. We will simply recognize ourselves as a holder of an AME Transport Canada M1/2, E or S licence with an attachment in Quebec.

The Association will ultimately become the AME's voice to Transport Canada's ears and will work with existing AME associations from coast to coast to make our profession stronger and more cohesive. One of the great goals of our association is to elevate ourselves to the status of a professional and to be recognized as such by the various federal government bodies. The other major mission of our association will be to make our profession better known to the public and to get involved with young people so that they know what AME's work is and consider it as a career choice.

In addition, our association will offer many benefits to its members such as group discounts from various vendors, free magazine subscriptions, and discounts for insurance companies offering products designed for AMEs.

énoncé de mission

Cette association se donne pour mission de représenter tous les TEA au Québec quelle que soit la compagnie ou les contrats sur lesquels ils travaillent. Quel que soit le type d'aéronefs sur lequel le TEA travail, il/elle sera bienvenu. Nous nous reconnaîtrons simplement en tant que titulaire d'une licence de TEA de Transport Canada M1/M2, E ou S et ayant un attachement au Québec.

L'Association deviendra à terme la voix des TEA aux oreilles de Transport Canada et travaillera de concert avec les association de TEA existantes d'un océan à l'autre afin de rendre notre profession plus forte et en y insufflant une plus grande cohésion. L'un des grand objectifs de notre association est de nous élever au rang de professionnel et d'être reconnu comme tel par les différentes instances gouvernementales fédérales. L'autre grande mission de notre association sera de mieux faire connaître notre profession au public et de nous impliquer auprès des jeunes pour que ceux-ci sachent en quoi consiste le métier de TEA et qu'ils le considèrent en tant que choix de carrière.

De plus, notre association offrira de nombreux avantages à ses membres tels que des rabais de groupes chez différents fournisseurs, des abonnements à des magazines gratuits ainsi que des rabais pour des compagnies d'assurances offrant des produits conçus pour les TEA.
www.ame-tea.com email: info@ame-tea.com

ATLANTIC

Atlantic AME Association

Human Factors Workshop

Air travel is considered one of the safest means of transportation in the world today, yet every now and again an accident that shakes our complacency occurs. All too often, as we look at the accident cause, we say, "How could such simple errors have combined to cause such a catastrophe?"

An in-depth review of the events after the fact will reveal, time and again, that a series of human errors (known also as a chain of events) was allowed to form until the accident occurred. In about one in 10 accidents, maintenance errors are part of that chain of events. If we can break the chain of events at the maintenance level, the accident will not occur.

This year's workshop, which was held in April, was the "Human & Organization Factors in Aviation Maintenance." This workshop developed by Norbert Belliveau for the Atlantic AME Association is one of two workshops developed by Norbert to meet the requirement of Human Factors Training every three years as prescribed under CARs 573.06(1),(2),(3),(4) & (5).

The workshop is continuously reviewed and revised to include updated materials.

Various training programs to address human factors, human error, and error management in an aviation maintenance environment were developed and delivered across Canada. These educational training sessions have played a major role in raising the awareness of errors at the "sharp end" (direct human contact with the process), while perhaps not fully addressing the effect of the environment and organizations may have had on people at the sharp end.

At the beginning of the twentieth century, the science of Human Factors worldwide had started to recognize that the cause of errors is not just the cause of "bad people" but more so of people working within a specific context. This context may include: undiscovered errors and factors that are already embedded or part of an organization, and have potential to contribute towards actions and decisions people take.

The Human & Organization Factors in Aviation Maintenance workshop will broaden your knowledge and increase your awareness to the facts that organizational factors also plays a key role in aviation maintenance errors and mitigation. Consider signing up for the workshop the next time opportunity allows.

Bob Pardy
President
AME Association (Atlantic)
www.atlanticame.com

SOCAL

SoCal PAMA Chapter

Flight Safety Detectives Episode 229: the Insidious Pilot Killer

Hypoxia is a significant danger in aviation and an insidious killer of passengers and pilots. Special guest Miles O'Brien hosts a discussion with aviation experts Todd Curtis, Greg Feith, and John Goglia that covers how hypoxia impacts all forms of aviation. They discuss personal experiences with hypoxia and share insights from several hypoxia-related accidents.

Hypoxia is a condition where the human body is deprived of oxygen which can reduce mental function. Hypoxia can be particularly hazardous for pilots because someone experiencing hypoxia may not be aware of its symptoms or its effects on their performance.

One high-profile incident in 1999 took the life to golfer Payne Stewart. He was a passenger in a Learjet 35 that took off from Orlando Executive Airport and became non-responsive to air traffic control. Fighter jets intercepted the plane and determined the crew was unconscious. After 1500 miles the jet ran out of fuel and crashed over South Dakota.

Greg, Todd, Miles, and John have all experienced hypoxia in controlled altitude chambers. They share their experiences, which include feelings of euphoria, reduced mental capacity, reduced physical performance, and even a case of high-altitude bends.

Key to understanding hypoxia is the concept of time of useful consciousness, which is the amount of time a person can spend at altitude without feeling the effects of hypoxia. That period of time gets smaller as altitude increases. Age, stress, and other factors may shorten those times.

www.socalpama.org

Performance and recordation go hand-in-hand

By Kathy Yodice, AMT Lawyer

All certificated AMTs know that maintenance activities performed on aircraft having U.S. airworthiness certificates must be appropriately recorded in the associated maintenance record. The "logging" requirement also applies to the performance of inspections requiring approval or disapproval of aircraft for return to service. The content, form and disposition of maintenance record entries is set out in FAR parts 43.9 and 43.11, and additional advisory information is contained in AC 43-9C. These resources relate the minimum information needed for compliance. It's fairly straightforward, right?

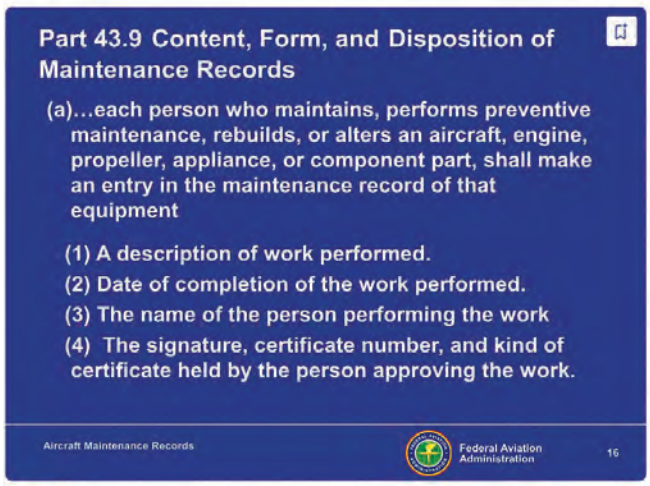
Well, at least one mechanic got in big trouble for what he recorded and, notably, what he failed to perform. It's not that the mechanic was deficient in describing the work, but rather, he failed to do the work he described—he made the entry before the work was completed. The FAA alleged the mechanic made an intentionally false statement and, additionally, alleged that he performed other maintenance not in accordance with the methods, techniques, or practices acceptable to the Administrator, violations of 43.12(a)(1) and 43.13(a), respectively. The FAA sought revocation of his mechanic's certificate on an emergency basis.

The case was first heard by an NTSB administrative law judge (ALJ) in 2017. The ALJ affirmed the FAA's revocation order and the respondent-mechanic appealed the decision to the NTSB's full board, which ruled on the matter in 2019. I have pared down much of the detail of the case in the interest of brevity and to focus on the titled theme of this article.

The respondent-mechanic in this case was tasked with repairing an Evektor SportStar Plus, a Czech built LSA, that had been damaged in an accident. Unrelated to the damage, the respondent-mechanic also undertook to perform a brake upgrade and an increase to the aircraft's maximum takeoff weight. The latter was to be done in accordance with a factory bulletin which called for the installation of vortex generators, an airspeed indicator marking change, a bigger nose tire, replacement of various placards, replacement pages in the aircraft operating instructions and maintenance and inspection procedures and recordation of the performed bulletin in the aircraft log book.

Fast forward past numerous delays over numerous months. The respondent-mechanic returned the aircraft to the owner and the associated log book entry stated "Performed Evektor Service Bulletin SportStar 011 b, MTOW increase to 1320 pounds". We assume there were additional log entries related to other work performed, including the brakes, but no other entries are quoted in the case record. Subsequent to the hand-over, the aircraft owner and his consulting-mechanic expressed concerns to the FAA about the maintenance work performed by the respondent-mechanic. This led to an FAA inspection that revealed the rudder cables were not properly attached to the rudder pedals (loose castle nuts and no cotter pins) and that the MTOW bulletin was not fully complied with (no modification to the airspeed indicator, no modified placards, no revision of the pilot operating handbook and maintenance manual).

At the initial NTSB hearing, the respondent-mechanic testified that the logbook entry was made "to document what I did to the airplane before returning it to be repaired." He further alleged that the entry indicated that he completed the "mechanical work" and did not intend to convey that he performed the entire service bulletin. He also indicated that he gave the owner's consulting-mechanic an envelope with maintenance items to be completed.



The owner's consulting-mechanic also testified at the hearing and confirmed that he received an envelope containing maintenance records, but that the respondent did not say anything to him about the condition of the aircraft or outstanding maintenance items. The respondent-mechanic ultimately conceded that anyone reading the entry would be led to believe the MTOW bulletin had been fully completed. The ALJ ruled that the respondent-mechanic's log entry was a false representation of a material fact that he made with knowledge of its falsity and thus found him guilty of intentional falsification. The respondent-mechanic appealed the ALJ's ruling.

On appeal, the respondent-mechanic argued, among other things, that the ALJ gave improper deference to the FAA on the choice of revocation as the sanction and failed to consider mitigating factors. The respondent-mechanic's not-so-novel argument that the ALJ failed to consider his lack of aviation accidents, incidents or prior enforcement actions and his cooperation as mitigating factors, produced a commonly repeated response from the NTSB: "We view a violation-and incident-free history as status quo, rather than a mitigating circumstance." The respondent-mechanic's appeal was denied and the emergency revocation of his mechanic certificate was affirmed.

In our experience, the FAA and the NTSB are resistant to favourable consideration of a mechanic's after-the-fact explanation of an entry, especially one that seems clear in its language. The FAA relies heavily on the accuracy and integrity of records, mainly because the FAA is not able to oversee all records as they are made, therefore the FAA has to trust those of us in the system to make accurate, understandable entries. When FAA discovers an inaccurate entry that is part of a record meant to endure for years or decades, as done here, they tend to treat the author severely. The clear lesson: AMTs with log recording responsibilities should take great care to make compliant and accurate entries upon completion of their work.

www.copama.org

Transportation Safety Board of Canada | Bureau de la sécurité des transports du Canada

FAILURE TO COMMUNICATE

One captain's long-standing habit of disregarding protocols finally leads to negative consequences.

The occurrence aircraft in flight. PHOTO: Erik Sleutelberg

AT **1748 MOUNTAIN DAYLIGHT TIME** on 01 November 2021, the Air Tindi Ltd. de Havilland DHC-6-300 Twin Otter aircraft (registration C-GNPS, serial number 558) departed Yellowknife Airport (CYZF), Northwest Territories, as flight TIN223, a visual flight rules flight to Fort Simpson Airport (CYFS), Northwest Territories, with 2 flight crew and 3 passengers on board.

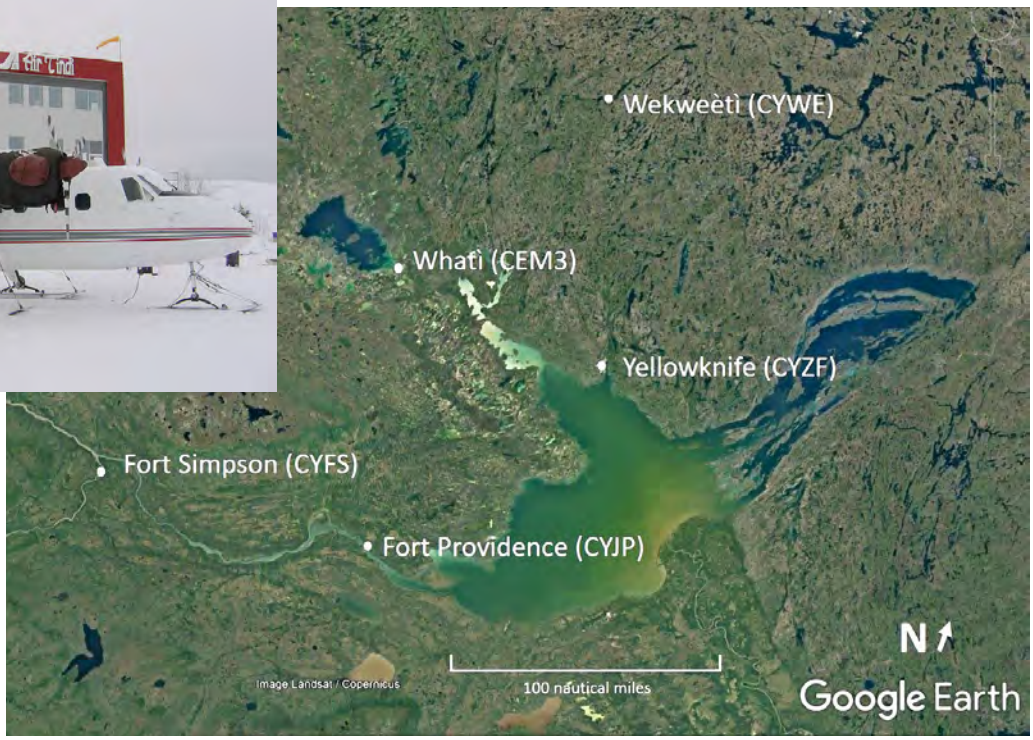
Approximately 40 minutes into the flight, the flight crew realized that there was insufficient fuel to continue to CYFS or to return to CYZF. The flight crew diverted the aircraft to Fort Providence Aerodrome (CYJP), Northwest Territories, and informed the company of their decision. The left engine was intentionally shut down to conserve fuel. The right engine then flamed out.

A forced landing onto muskeg was performed at 1851 Mountain Daylight Time, 6.7 nautical miles (14 km) northwest of CYJP. A signal from the emergency locator transmitter was received by the Canadian Mission Control Centre shortly after. Approximately 4 hours after the forced landing, all occupants were recovered by rescue personnel. All occupants received minor injuries related to hypothermia. The aircraft sustained substantial damage.

HISTORY OF THE FLIGHT

On 01 November 2021, the Air Tindi Ltd. (Air Tindi) de Havilland DHC-6-300 Twin Otter aircraft (registration C-GNPS, serial number 558) was scheduled to depart Yellowknife Airport (CYZF), Northwest Territories, at 1030 to conduct the following 3 return flights under visual flight rules (VFR):

- The 1st return flight was from CYZF to Whatì Airport (CEM3), Northwest Territories: flight TIN218 out and flight TIN220 back.



Above: The Air Tindi base in Yellowknife.

Right: Figure 1. Area map showing locations.

Below right: Figure 2. Photo of the occurrence aircraft after the forced landing in the muskeg, looking east.

• The 2nd return flight was from CYZF to Wekweètì Airport (CYWE), Northwest Territories: flight TIN212 out and flight TIN213 back.

• The 3rd return flight was from CYZF to CEM3: flight TIN220 out and flight TIN221 back.

Following those 3 return flights, the last trip of the day was flight TIN223 from CYZF to Fort Simpson Airport (CYFS), Northwest Territories.

The same flight crew was to conduct all 7 flights and then overnight in Fort Simpson. This was the first time this flight crew had flown together. All flights consisted of a mix of passengers and cargo and were to be conducted under Canadian Aviation Regulations (CARs) Subpart 703 (Air Taxi Operations), except for flight TIN212, which was to be conducted under CARs Subpart 704 (Commuter Operations).

During the last inbound flight of the day to CYZF (flight TIN221 on the day of the occurrence), it was typical for the flight crew to inform the flight coordinator how much fuel was required for the next flight. The flight coordinator would then place an order for fuel with the fuel company. The investigation was unable to confirm whether the flight crew had requested fuel from the flight coordinator for the occurrence flight; however, the flight coordinator did not call the fuel company with a fuel order. Flight TIN221 arrived at CYZF at 1725. The crew and passengers deplaned and entered the passenger boarding lounge. Then, the process of unloading and preparing for the last flight of the day (flight TIN223 to CYFS) began.

At 1738, the first officer returned to the aircraft from the passenger boarding lounge and began the external pre-flight inspection. Approximately 1 minute later, the captain returned to the aircraft and entered the cockpit through the front left door. While getting into his seat, the captain observed a fuel receipt in the door map pocket and assumed it was for the fuel he thought he had ordered for the flight to CYFS. He did not read the fuel receipt, which was from a flight 3 days prior.

Since landing, no fuel truck had arrived at the aircraft and consequently no fuel was added to the aircraft. According to the operational flight plan, the aircraft would have arrived in CYZF on flight TIN221 with approximately 533 pounds of fuel remaining. The operational flight plan for flight TIN223 to CYFS indicated that 2500 pounds of fuel were to be on board, which was standard for this flight.

The captain began preparing the aircraft for engine start by conducting the Before Start checks of the Air Tindi DHC6 Cockpit Checklist using a geographic flow. At the same time, passengers started boarding the aircraft, and the captain interrupted the checks to converse with one of them with whom he used to work. After a short conversation, the captain resumed the checks.

At 1740, when passengers had finished boarding and the cargo had been loaded, the first officer briefed the passengers for the flight. The first officer then sat down in the cockpit and asked the captain if he would like to commence the Before Start checks. The captain declined and started the engines at 1743.

Unlike the first few legs of the day, the ensuing After Start, Taxi, and Line Up checks were completed by the captain from memory only. At 1747, the occurrence aircraft departed CYZF on flight TIN223, with the 2 pilots and 3 passengers on board. The aircraft climbed towards the planned cruising altitude of 6500 feet above sea level (ASL). The After Takeoff and Cruise checks were completed by the first officer without reference to the checklist.

By this time in a typical flight, the flight crew would have been directed by Air Tindi DHC6 Cockpit Checklist on 3 separate occasions to observe the fuel quantity. At 1750, the fuel company at CYZF called the Air Tindi flight coordinator to ask whether the occurrence aircraft needed fuel. The flight coordinator informed the fuelling company that the aircraft was already airborne and on its way to CYFS.

Based on the fuel burn analysis, the low-fuel-level caution light for the aft fuel tank illuminated at 1813. At this time, there were approximately 60 U.S. gallons of fuel left in the aircraft, including 8 U.S. gallons of fuel in the left-wing auxiliary tank and 9 U.S. gallons in the right-wing auxiliary tank. This would have given the aircraft about 40 minutes of flying time at cruise power before complete fuel exhaustion.

At 1826 (38 minutes after takeoff), when flight TIN223 was approximately halfway to CYFS, the flight crew noticed the illuminated low-fuel-level caution light for the aft fuel tank. The flight crew immediately realized that they had departed with insufficient fuel and began the process of determining where to divert to. It was decided that Fort Providence Aerodrome (CYJP), Northwest Territories, was the closest runway and, at 1829, flight TIN223 turned southbound towards it. During this time, the captain climbed the aircraft to 7000 feet ASL.

The captain informed the Air Tindi flight coordinator of the situation via the aircraft's satellite radio. The flight coordinator relayed a suggestion from the chief pilot to consider shutting 1 engine down to conserve fuel, and the pilot agreed. At 1834, the captain began to draw fuel out of the auxiliary fuel tanks located in the wings, and the first officer briefed the passengers about the diversion. Shortly after, the captain commenced an intentional shutdown of the left engine and feathered the left propeller, which was completed at 1838. Power was then reduced on the right engine to conserve fuel and a slow descent was commenced. Fuel continued to be drawn from the right-wing auxiliary fuel tank. It was calculated during the investigation that an estimated 69 pounds of fuel remained in the forward fuel tank at this time and it is likely that the low-fuel-level caution light for the forward tank had illuminated.

At 1843, the captain noticed that the PUMP FAIL R TANK light had illuminated, indicating that the right-wing auxiliary fuel tank was nearly empty. The switch was then placed in the REFUEL position.

At 1847, flight TIN223 was about 11 nautical miles (NM) from CYJP, descending through 3300 feet ASL when the right engine began to surge. The flight crew shut down the engine and feathered the propeller, and the captain began slowing the aircraft to the optimal glide speed for maximum range of 86 knots indicated airspeed. The first officer briefed the passengers for a forced approach to an off-airport landing. The captain looked for a suitable place to land. In the darkness, he was able to discern an area of muskeg and chose that area rather than a treed area.

Just before touchdown, the captain requested flaps to 10° and then full flap; the first officer selected those flap positions. The stall horn activated when the aircraft was just above the muskeg and seconds before touchdown. The aircraft touched down on the muskeg at 1851, 6.7 NM northwest of CYJP, and came to a stop in an upright position (Figure 2).

The Canadian Mission Control Centre, in Trenton, Ontario, received an emergency locator transmitter signal for the aircraft on frequency 406 MHz shortly after. Approximately 4 hours after the forced landing, all occupants were recovered by rescue personnel.

AIRCRAFT INFORMATION

The occurrence aircraft, a de Havilland DHC-6-300 Twin Otter, is a twin-engine turbo-prop aircraft that features a high wing with struts, a fixed landing gear, and an unpressurized cabin. The aircraft was configured with seating for 8 passengers for flight TIN223.

DHC-6-300 FUEL SYSTEM

The DHC-6-300 fuel system consists of 2 main fuel tanks located in the belly of the aircraft beneath the passenger cabin and contains a total of 382 U.S. gallons (2574 pounds), of which 378 U.S. gallons (2548 pounds) are usable.The forward fuel tank feeds the right engine and has a capacity of 181 U.S. gallons (1220 pounds) of usable fuel. The aft fuel tank feeds the left engine and has a capacity of 197 U.S. gallons (1327 pounds) of usable fuel. There is also unusable fuel: 3.8 U.S. gallons (26 pounds) in the main fuel tanks and associated fuel lines. This amount is not considered part of the aircraft fuel tank capacity and is included in the basic weight of the aircraft.

Refuelling of the main forward and aft tanks is accom-

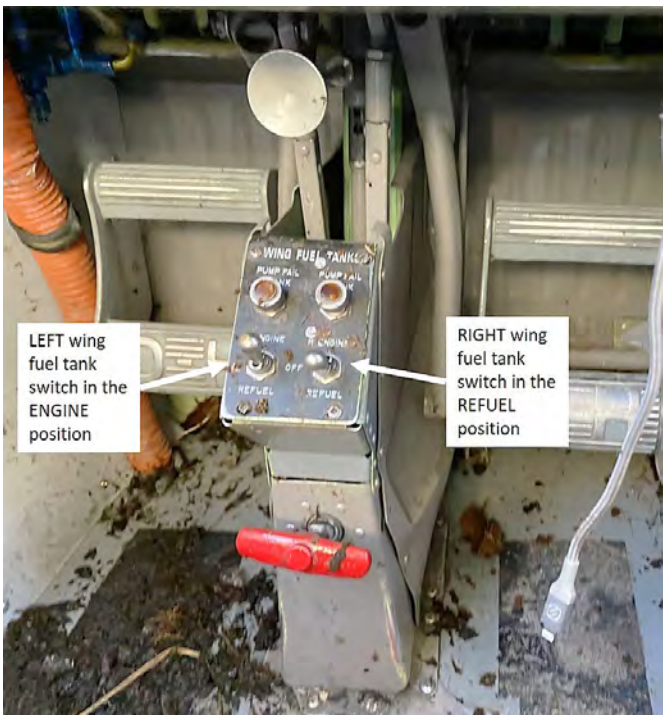


Figure 3. Photo of the occurrence aircraft's wing fuel tank panel after the accident.

plished through 2 fuel filler ports located on the left side of the aircraft, just below the main cabin floor line. It takes approximately 15 minutes to upload 297 U.S. gallons (2000 pounds) of fuel with the equipment used by the fuel company that Air Tindi uses at CYZF.

The quantity of fuel in the main fuel tanks is indicated in the centre of the forward instrument panel and is viewable from either pilot seat. There is one gauge for each tank. The gauges are calibrated in pounds and are driven from a capacitance probe system in each fuel tank. There were no reports of erroneous readings for the occurrence aircraft and the gauges on the aircraft were reasonably accurate.

Two low-fuel-level caution lights are located on the caution light panel and are labelled FWD FUEL LOW LEVEL and AFT FUEL LOW LEVEL. Each light is controlled by a float switch in the related tank when a predetermined fuel level is reached. In level flight, the low level trigger point is 75 pounds of usable fuel remaining in the forward tank and 110 pounds of usable fuel remaining in the aft tank. An average fuel consumption rate for the DHC-6-300 is 10 pounds of fuel per minute. When both low-fuel-level lights illuminate, there are approximately 18 minutes of usable fuel left in the main fuel tanks before fuel exhaustion and loss of engine power. The aircraft flight manual (AFM) advises pilots to land as soon as possible, and in no case later than 15 minutes, after illumination of both lights.

The occurrence aircraft was equipped with optional auxiliary fuel tanks located in the outboard section of each wing (wing fuel tank). These wing fuel tanks each contain 44 U.S. gallons (296 pounds) of fuel and are to be used in cruise flight only. Fuel can be added to the wing fuel tanks from over-wing fuel filler ports or from the main fuselage tanks while the aircraft is on the ground by utilizing the fuel pumps. The transfer rate is about 2.5 U.S. gallons per minute. The AFM prohibits the refuelling of the wing fuel tanks while in flight. The control panel for the wing fuel tanks is located on a lower panel on the captain's side of the flight deck (Figure 3). The selector is a 3-position locking lever toggle switch. The positions are: ENGINE, OFF, and REFUEL.

During single-engine operation, it is possible for fuel from the wing tank of the shutdown engine to be used by the operating engine. Press-to-test amber caution lights marked PUMP FAIL L TANK and PUMP FAIL R TANK are located on the control panel. These illuminate when there is insufficient pressure from the associated wing-tank pressure pump.

A post-accident examination of the occurrence aircraft revealed that there were no issues with the airframe fuel system, engine fuel system, or fuel quantity indication and alerting systems, and no fuel leaks were noted. During recovery of the aircraft, 7.0 U.S. gallons of Jet A-1 fuel were drained from the right-wing fuel tank and 5 U.S. gallons of Jet A-1 fuel were drained from the left-wing fuel tank, for a total of 12.0 U.S. gallons (80.7 pounds) of fuel. Negligible fuel was observed in the forward and aft main fuel tanks, but 5 U.S. gallons total were recovered from the fuel lines before the aircraft was recovered from the accident site.

AIRCRAFT PERFORMANCE

During the investigation, several performance calculations relevant to this accident were conducted to estimate the two-engine long-range cruise, the single-engine long-range cruise and the power-off glide speed for maximum range. The conditions at the time the crew noticed the fuel situation were used for the calculation were as follows: temperature International Standard Atmosphere of +10°C at an altitude of 7000 feet ASL and an aircraft weight of approximately 9000 pounds.

TWO-ENGINE LONG-RANGE CRUISE

Using the chart for supplementary operating and performance data (landplane) given in the AFM, long-range cruise performance can be calculated. This chart requires an aircraft configuration of both engines operating, the intake deflectors retracted, and the engine bleed air off. Taking the conditions at time when the fuel situation was noticed by the crew, a specific range of 0.325 NM per pound of fuel at a true airspeed of 136 knots is calculated.

SINGLE-ENGINE LONG-RANGE CRUISE

For single-engine long-range cruise performance, the chart requires an aircraft configuration of one engine at maximum continuous power, one engine shut down with the propeller

feathered, the engine intake deflectors retracted, and the engine bleed air off. Taking the conditions at time when the fuel situation was noticed by the crew, a specific range of 0.394 NM per pound of fuel at a true airspeed of 143 knots is calculated.

POWER-OFF GLIDE SPEED FOR MAXIMUM RANGE

The maximum glide range for the DHC-6 is predicated on a descent gradient of 8.18% or approximately 2 NM of horizontal distance for every 1000 feet of descent. To achieve this gradient, the aircraft must be at the correct speed for its weight and be configured with flaps retracted and both propellers feathered. Using the data in the AFM and an aircraft weight of 9000 pounds, a calibrated airspeed of 86 knots is calculated.

FINDINGS AS TO CAUSES AND CONTRIBUTING FACTORS

When the captain saw the pink fuel slip in the door of the aircraft, it reinforced his belief that the aircraft had been fuelled for the last flight of the day, when, in actuality, it had not been refuelled.

While conducting the Before Start checks from memory, the captain interrupted his routine by conversing with a passenger. Consequently, the fuel quantity check was missed and the preparation for flight continued without the captain being aware that the aircraft did not have sufficient fuel for the flight on board.

Over time, the captain developed an adaptation of not conducting the challenge and response checklists where required by the standard operating procedures. The absence of negative consequences reinforced the captain's practice until it became routine.

On the day of the occurrence, the first officer's adaptation regarding checklist usage was influenced by the seniority of the captain, the captain's non-standard use of checklists, and the absence of negative repercussions from this adaptation.

While taxiing to the runway, the captain conducted the Taxi checks alone, silently, and from memory. Consequently, the fuel check on the checklist was missed and the aircraft departed with insufficient fuel for the flight.

The first officer completed the cruise checks silently and without reference to a checklist. As a result, the fuel state of the aircraft was not identified by either flight crew member.

As a result of fuel starvation, the flight crew conducted a forced landing into muskeg, which resulted in significant aircraft damage.

FINDINGS AS TO RISK

If flight crews do not maintain a scan of the flight instrument panel and alerting systems, there is a risk that they will not identify an abnormal aircraft state that escalates to an unsafe situation.

If flight crews do not refer to performance charts when attempting to fly for maximum range, an inappropriate power setting and aircraft configuration may be selected and maximum range may not be achieved.

The DHC-6 wing fuel tank switch is designed such that it can be moved to the REFUEL position in flight, increasing the risk of inadvertent transfer of fuel from the main fuel tank to the respective wing fuel tank.

If flight crews descend rather than maintain altitude in fuel-critical situations where a possibility of fuel exhaustion is likely, the aircraft's gliding distance will be reduced, increasing the risk of landing on unsuitable terrain.

If flight crews do not use the company reporting procedures to communicate safety concerns related to operational deviations, there is a great risk that company management will be totally unaware of unsafe practices and be unable to take corrective action.

OTHER FINDINGS

These items could enhance safety, resolve an issue of controversy, or provide a data point for future safety studies.

The aircraft fuel quantity indication and alerting systems were functional and performed as designed. There were no leaks or abnormalities in the aircraft airframe or engine fuel systems.

The aircraft landed with a total of 12 U.S. gallons of usable fuel, 6.7 nautical miles from the Fort Providence Aerodrome. This amount of fuel was sufficient for approximately 8 minutes of flight at cruise speed, or a range of about 20 nautical miles.

SAFETY ACTION TAKEN

The following actions were taken by Air Tindi Ltd. after the occurrence:

- Individual de-briefs were conducted with each flight crew member that flies the DHC-6.
- A company memo was sent to flight crews, emphasizing the requirement to follow all procedures and checklists.
- A company memo was sent to flight crews requiring the captain to verify fuel uplift and sign an acknowledgement on every fuel slip before engine start.
- A company memo was sent to flight crews to inform them of the requirement to communicate fuel on board to the Operations Control Centre before each departure.
- The fleet challenge – response checklists were revised to become challenge – response – verification checklists.
- Amendments to the company standard operating procedures were made to reflect the new checklist revisions. ■

(These were excerpts from the Transportation Safety Board of Canada's investigation into this occurrence. The Board authorized the release of this report on 19 October 2022. It was officially released on 24 November 2022.)

DEAR COMMISSIONER:
About that Study

This summer the Competition Bureau Canada put out a call to action to the aviation industry, asking for feedback on a new market study it is currently drafting entitled: 'Competition in Canada's Airline Industry.' Following is how the Air Transport Association of Canada responded. ATAC has questions too.

From John McKenna - President & CEO, ATAC

Dear Commissioner Matthew Boswell,

The Air Transport Association of Canada appreciates the opportunity to comment on the scope of the study being planned by the Competition Bureau in drafting the terms of reference of its market study on the Competition in Canada's Airline Industry. The scope of the study aims to answer three principal questions, namely:

What is the state of competition in the Canadian airline industry?
How can policymakers further support airline entry and expansion?
How can policymakers further support consumers when shopping for airfares?

WestJet and Air Canada have scaled back their operations into Western and Eastern Canada leading to increased fares for flights in those regions.

The Canadian airline market is still largely serviced by a duopoly.

THE STATE OF COMPETITION IN THE CANADIAN AIRLINE INDUSTRY

It is critically important that the Competition Bureau distinguish among the various segments of the commercial air transport markets in Canada. The One-Size-Fits-All approach must be avoided at all costs. The northern, rural and remote regions of Canada face an entirely different reality than that of the major market destinations in Canada. The state of the competition is very different, as are the levels of service offered, the equipment needs and the quality of aviation infrastructure. The concentration of services is sometimes the only way that service can be guaranteed given the huge but sparsely populated territory.

The Competition Bureau must recognize that the user-pay model cannot be applicable to those markets as it cannot sustain service to those regions that often depend entirely on aviation.

The study of the northern, rural and remote markets should focus less on the state of competition than on the quality of the infrastructure required to not only grow the market but to maintain the current level of service and safety. The Competition Bureau must keep in mind that maintaining services in certain small markets, limited in terms of size and potential, is a greater preoccupation than the presence of strong competition.

John McKenna was President and CEO of the Quebec Air Transport Association before taking up the position of President and CEO at ATAC.

Matthew Boswell was appointed Commissioner of Competition on March 5, 2019, for a five-year term.

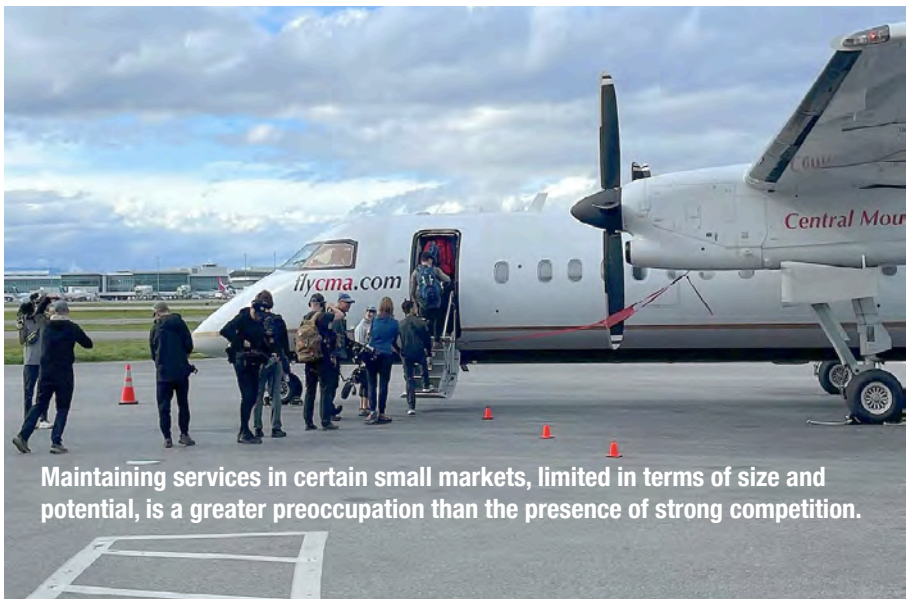
HOW CAN POLICYMAKERS FURTHER SUPPORT AIRLINE ENTRY AND EXPANSION?

Reinvesting a majority, if not all, of its aviation generated government revenues back into aviation infrastructure would certainly help sustain Canada's air industry. We do not stand a chance of being competitive if the Government continues to see aviation as no more than a cash cow.

We have been plagued for the past ten years with new legislation and regulations that have added hurdles to the development of the airline industry. The high cost of operating air services in Canada is affected by many factors, a significant portion of which are fees and charges added directly to the price of tickets or indirectly through fuel excise taxes, carbon taxes, airport taxes, regulatory costs, outrageous APPR compensation and charges, and non-subsidized services. These cumulative costs make it impossible for airlines to offer competitive services in Canada, compared to other markets, or other modes of transportation. How can that possibly help stimulate competition or lower the cost of air travel?

> *"Competition in the north is greatly limited by a number of factors, a major one being the limited number of paved runways and... runway infrastructure*

The Government should better plan the implementation of new laws and regulations in such a way as to work with industry towards improved service instead of "kicking the industry when it was down," as it struggled to recover from the pandemic.



Maintaining services in certain small markets, limited in terms of size and potential, is a greater preoccupation than the presence of strong competition.

The Canadian market is huge geographically but with a relatively small client base, making it very difficult to operate efficiently. Although that is the case for all of Canada, the north is particularly impacted by that reality. Competition in the north is greatly limited by a number of factors, a major one being the limited number of paved runways and limited availability of runway infrastructure such as high intensity runway approach and taxiway lighting etc., which really limits the type of aircraft that can be used.

With the gradual but steady withdrawal of Boeing 737-200 Series equipped for operations on gravel runways, smaller less efficient aircraft must be used to service those communities.

THE BUREAU'S PUBLIC INTEREST REASONS FOR THE STUDY

THE AIRLINE INDUSTRY is important to Canadians and the Canadian economy. It provides an essential mode of transportation for both business and leisure purposes. In 2022, the industry served 72 million passengers on domestic services. Since the Canadian population is spread out over vast distances, other modes of transportation are often not feasible replacements for air travel. And for some remote areas, air transportation services may be the only available option. This is why Canadians need affordable and accessible air transportation.

The industry has faced challenges associated with the COVID-19 pandemic, including labour shortages. However, there are also reasons to ask whether competition could work better in this market. The domestic air travel market is concentrated with only two major airlines, Air Canada and WestJet, who together are estimated to account for close to 95 per cent of industry revenue. There are also signs that domestic airfares in Canada may be relatively high. Additionally, average airfares remain above pre-pandemic levels.

Recent travel experience has included congestion, flight delays, cancellations and baggage issues during busy travel seasons in 2022. In addition, Canadians are filing an increasing number of complaints with the Canadian Transportation Agency about air travel services in recent years. Commentators have noted that WestJet and Air Canada have scaled back their operations into Western and Eastern Canada, respectively, leading to increased fares for flights in those regions. Conversely, new and growing airlines serve busy domestic routes and winter sun destinations, leading to reduced fares on those routes.

Despite the promising entry and expansion by some airlines, the Canadian market appears challenging for many carriers. This includes low-cost and ultra low-cost carriers, which seem to face more difficulties in Canada compared to other countries. For example, Lynx Air recently ceased operations.

These initial market observations suggest that a study of competition in the airline industry will be informative for the Bureau and policymakers. In addition to recent events, there is a long history of competition enforcement in the sector by the Bureau and other global competition agencies. The Competition Bureau has previously called for more competition in the airline sector, including advocating for changes to the foreign ownership rules, and allowing foreign carriers to operate within Canada's domestic borders, also known as cabotage rules.

Since then, the Government of Canada increased international ownership limits from 25 to 49 percent of voting interests for Canadian air carriers. This history further underscores the importance of studying the state of competition in the airline industry. Greater competition can complement other policies aimed at improving air travel.

TIMELINE OF THE STUDY

The duration of the proposed market study will be 12 months.

June/July 2024: Publish final terms of reference for market study

August 2024: Deadline for written submissions from the public

Summer/fall 2024: Stakeholder engagement and research

Winter/spring 2025: Analysis of potential solutions and recommendations

June/July 2025: Publish final report

The Bureau may modify the schedule as needed. Should there be any material change to this schedule, the Bureau will update the notice and advise stakeholders of the changes through the market study webpage.

Given their smaller payloads, more of the smaller aircraft are needed, which means more pilots and maintenance personnel, none of which are readily available. Government investment in airport infrastructure in the north is long overdue and badly needed.

Drafters of new aviation policies must keep in mind that our country is served by carriers of all sizes, all of which play an important role in the connectivity, both domestic and international. Policies should not be drafted with only the largest carriers in mind but consider the smaller size, structure and complexity of the other carriers in the air transport mix serving Canadians.

The key to promoting greater competition in the Canadian airline industry is a thorough understanding of our air travel industry needs, infrastructure and market.

The various segments of our industry require made-to-measure policies tailored to their size, complexity and potential to provide the air service Canadians need and deserve. It would be disastrous to once again suggest that cabotage is an option for air travel in Canada. That would literally be a quick death sentence for the airline industry in this country and the thousands of direct and indirect jobs it supports.

HOW CAN POLICYMAKERS FURTHER SUPPORT CONSUMERS WHEN SHOPPING FOR AIRFARES?

The concept of low-cost carriers is unsustainable and an impossibility in Canada if we continue to operate solely on a user-pay model. No other jurisdiction imposes the whole cost of aviation security and airport infrastructure solely on the shoulders of passengers. Asking carriers to fund the cost and infrastructure of air navigation in Canada just adds to making this country a high-cost market that more and more foreign operators are avoiding and does not help provide passengers with multiple travel options.

Competition in the north is greatly limited by a number of factors, a major one being the limited number of paved runways.

CONCLUSION

Although the market is still largely serviced by a duopoly, it is fair to say, however, that Canadian air travelers have more options today in travel decisions as they are less limited to one or two airlines. Consumers can now choose to travel with Porter Airlines and other large carriers to most major markets and cities in Canada. Greater travel options put a downward pressure on prices. The Competition Bureau should suggest ways that the Government can promote greater competition by limiting the huge barriers to entry into our market.

The Competition Bureau must encourage the Government to act as a significant stakeholder if it is to participate in a collaborative effort to increase competition in Canada. It must develop greater knowledge of the structure and fabric of our industry and its vastly different components.

Finally, it must recognize that some of the market segments are just too small to sustain greater competition and must be supported by Government to ensure reliable service and accessibility for its citizens.

We appreciate the opportunity to comment on the scope of the study to be conducted by the Competition Bureau and we look forward to collaborating with them once the study gets underway. ■

The northern, rural and remote regions of Canada face an entirely different reality than that of the major market destinations in Canada.

Aviation Services

Aviation Services

Aviation Services

Flight of the Griffon

The Canadian Air Force's modernized MK II Griffon Helicopter is now up and running a mere five months after Bell was awarded the military fleet service contract.

Above:
The GLLE First Flight Ceremony.

Left:
The CH-146 Griffon helicopter.

BELL TEXTRON CANADA announced in late June the successful first flight of one of the Royal Canadian Air Force's modernized CH-146 Griffon helicopters, a variant of the Bell 412EP, under the Griffon Limited Life Extension (GLLE) project. Under GLLE, Bell will provide aircraft modifications to a series of the fleet's aeronautical components, including its avionics systems, cockpit displays, engines, and sensor systems. This news comes nearly five months after Bell was awarded the In-Service Support (ISS) contract that is positioned to sustain the Force's fleet through 2039.

"The Bell 412 remains a venerable aircraft of choice for militaries across the world, with the Royal Canadian Air Force operating the largest and best equipped militarized fleet of 412s," said Danny Maldonado, chief commercial officer, Bell. "Bell is honoured to continue our relationship with the Royal Canadian Air Force as they expand their mission capabilities with next generation technologies."

To commemorate this flight milestone, Bell hosted an event at Bell's Commercial Centre of Excellence for attendees to witness the first flight of the upgraded platform.

The RCAF deploys their fleet of CH-146 Griffons for a multitude of missions, from the provision of world-wide humanitarian relief in support to the United Nations to the provision of Reassurance measures under NATO. The fleet is also extensively employed in Canada for the provision of Search and Rescue services and support to first responders. Last year, the CH-146 Griffon fleet surpassed half a million flight hours.

"As Canada's only helicopter manufacturer in-country, Bell is a proud partner of the Canadian Armed Forces. Our facility's local presence provides us with the ability to work closely with the Canadian government, as well as other local customers to address their aircraft needs," said Michael Nault, General Manager, Bell Textron Canada. "The GLLE program will help ensure that the Royal Canadian Air Force is equipped with cutting-edge defence technologies for years to come."

The first upgraded CH-146 Griffon completed under the GLLE project is expected to be delivered to the Canadian government in 2026 pending military certification.

Founded in 1986 and based in Mirabel, Quebec, Bell Textron Canada is represented by more than 1,500 employees and 550 suppliers based from coast to coast to coast, BTCL has built and delivered nearly 6,000 aircraft, with 1,000 provided to Canadian operators. Bell's Canadian Supply Centre located in Calgary sustains the fleets of local operators including the Canadian Armed Forces, Transport Canada and the Canadian Coast Guard. ■

RAPCO, inc.

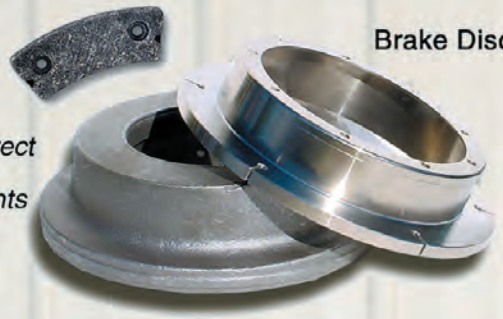
REPLACEMENT AIRCRAFT PARTS CO.

Rapco, Inc. can help you reduce maintenance costs...this is good for you and your customer. With the impact fuel prices have had on general aviation flying, and the resulting impact on maintenance facilities, everyone needs to find a way to decrease their operating costs, without sacrificing quality or safety. Rapco can help.

All Rapco parts are FAA-Approved, warranted better than the OEM, to save you and your customers money. Call now to see how we can help you - 1-800-527-2726

Vacuum Pumps

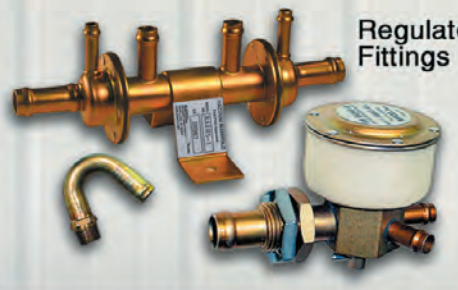
Easily check vane wear



Brake Discs

Over 80 direct brake disc replacements

Electroless Nickel plating



Regulator & Fittings

De-Ice Components

Leads, boots, modules, brushes & more

Visit: http://www.rapcoinc.com/acappguides.html for individual specific application guides for most popular aircraft

Request an e-card at www.rapcoinc.com

PARTS DEPARTMENT

RAPCO, inc. REPLACEMENT AIRCRAFT PARTS CO.

1-800-527-2726

RAPCO, inc.

REPLACEMENT AIRCRAFT PARTS CO.

www.rapcoinc.com

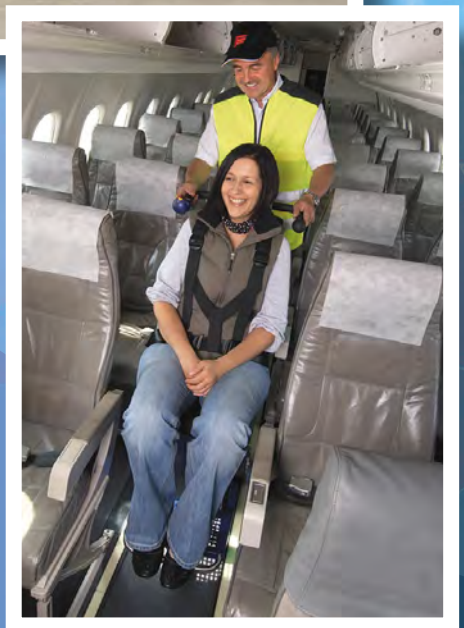
NO PLANE NO GAIN

visit www.noplanenogain.org

the Amazon stairclimber

the AUTOMATED lifting solution

- safe, dignified passenger transfer
- self-propelled: no lifting required
- versatile: used on commercial and corporate aircraft
- simple and easy to operate: training provided
- lifts 350 lbs. / 160 kg with the push of a button
- portable: use at base or take it with you



- compact and lightweight
- transports passeners quickly
- ensures fast and efficient turn times
- reduces risk of injury to staff and passengers
- unique, specialized design
- patented braking system

Tel: (604) 247-2128
Fax: (604) 214-9825

BKD AEROSPACE INDUSTRIES INC.

Call us for a quote or visit our website for more details.
Watch our online videos at www.bkdaerospace.com

info@bkdaerospace.com
Unit 100 — 6660 Graybar Road
Richmond BC V6W 1H9 Canada